



Cairo University International Publications Awards







Cairo University International Publications Awards

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Dear colleagues,

We are pleased to introduce vol. 9 (1) issue of the international publications of Cairo University. It is a further step and distinct contribution, reflecting the scientific ability of staff members, which conforms to international quality standards.

The purpose of issuing these publications is mainly to introduce this work to the academic community, demonstrate the different research abilities of Cairo University researchers, and encourage them to increase the quality and quantity of their research.

We would like to assure you that the administration will spare no effort to support and reinforce these goals.

We congratulate all colleagues who were granted the awards for their international publications of the year 2014 and wish them all the best for their future endeavors.

Also, we refer that there is a list of book and chapters, which internationally Published by the Staff members in the end of this issue.

We are also pleased to inform you that this policy will continue to be in effect for the years to come.

Prof. Gamal Esmat

Prof. Gaber Nassar

Vice - President for post-graduate studies and research Cairo university President Cairo university

Table of Contents

	Page
Preface	i
List of Publication in Journals	
1. Basic Sciences Sector	1
1-1 Faculty of Science	3
1-2 Faculty of Agriculture	10
1-3 Faculty of Veterinary medicine	13
1-4 National Institute of Laser Sciences	15
2. EngineeringSciences Sector	19
2-1 Faculty of Engineering	21
2-2 Faculty of Computers and Information	
2-3 Institute of Statistical Studies and Research	
3. Medical Sciences Sector	27
	2,
3-1 Faculty of Medicine	29
3-2 Faculty of Oral & Dental Medicine	39 40
3-5 Faculty of Pharmacy 3-4 National Cancer Institute	40
2.5 Eaculty of Dhysical Therapy	41
2. Character of Neuring	47
3-6 Faculty of Nursing	48
4. Social Sciences Sector	51
4-1 Faculty of Economics and Political Science	53
4-2 Faculty of Commerce	53
5. Humanity Sciences Sector	61
5-1 Faculty of Arts	54
5-2 Faculty of Archaeology	55
5-3 Institute of Educational Research and Studies	
5-4 Faculty of Kindergarten	54
5-5 Institute of African Research and Studies	55
List of Publication in Books and chapters	
Authors' Index	57



International Publications Awards Cairo University



(1) Basic Sciences Sector

1-1 Faculity of Science
1-2 Faculty of Agriculture
1-3 Faculty of Veterinary Medicine
1-4 National Institute of Laser Enhanced Sciences

Publicatin in Journals

Faculty of Science

Dept. of Astronomy and Meteorology

1. Deuterium Chemistry of Dense Gas in the Vicinity of Low-Mass and Massive Star-Forming Regions

Zainab Mohamed Awad, Serena Viti, Estelle Bayet and Paola Caselli

Monthly Notices of the Royal Astronomical Society, 443: 275-287 (2014) IF: 5.226

The standard interstellar ratio of deuterium to hydrogen (D/H) atoms is 1.5×10^{-5} . However, the deuterium fractionation is in fact found to be enhanced, to different degrees, in cold, dark cores, hot cores around massive star-forming regions, lukewarm cores, and warm cores (hereafter hot corinos) around low-mass star-forming regions. In this paper, we investigate the overall differences in the deuterium chemistry between hot cores and hot corinos. We have modelled the chemistry of dense gas around low-mass and massive star-forming regions using a gas-grain chemical model. We investigate the influence of varying the core density, the depletion efficiency of gaseous species on to dust grains, the collapse mode and the final mass of the protostar on the chemical evolution of star-forming regions. We find that the deuterium chemistry is, in general, most sensitive to variations of the depletion efficiency on to grain surfaces, in agreement with observations. In addition, the results showed that the chemistry is more sensitive to changes in the final density of the collapsing core in hot cores than in hot corinos. Finally, we find that ratios of deuterated sulphur bearing species in dense gas around hot cores and corinos may be good evolutionary indicators in a similar way as their non-deuterated counterparts.

Keywords: Astrochemistry; Stars; Formation; Stars low-mass; Stars massive; Ism abundances; Ism molecules.

2. A Climatological Analysis of Saharan Cyclones

K. Ammar, Mossad El-Metwally, Mansour Almazroui and M. M. Abdel Wahab

Climate Dynamics, 43: 483-501 (2014) IF: 4.619

In this study, the climatology of Saharan cyclones is presented in order to understand the Saharan climate, its variability and its changes. This climatology includes an analysis of seasonal and interannual variations, the identification and classification of cyclone tracks, and a presentation of their chief characteristics. The data used are drawn from the 1980–2009, $2.5^{\circ} \times 2.5^{\circ}$, NCEP/NCAR reanalysis (NNRP I) dataset. It is found that cyclone numbers increase in September-October-November (SON) at 4.9 cyclones per decade, while they decrease in June-July-August at 12.3 cyclones per decade. The identification algorithm constructed 562 tracks, which are categorized into 12 distinct clusters. Around 75 % of the Saharan cyclones originate south of the Atlas Mountains. The percentage of tracks that move over the Sahara is around 48 %. The eastern Mediterranean receives 27 % of the Saharan tracks, while the western basin receives only 17 and 8 % of all the Saharan cyclones decay over the Arabian Peninsula. The maximum cyclonic activity occurs in April. There is a general decrease in the number of tracks in all categories between 1993 and 2009, compared with the period between 1980 and 1992. About 72 % of the Saharan cyclones do not live more than 3 days, and about 80 % of the cyclones in the tracks never reach central pressures 1,000 hPa during their

lifetimes. The maximum deepening in the tracks occurs over the western Mediterranean and over northern Algeria. **Keywords:** Saharan cyclones; Climatology; Tracks.

3. Climatological Simulations of Ozone and Atmospheric Aerosols in the Greater Cairo Region

A. L. Steiner, Tawfik, A. Shalaby, A. S. Zakey, M. M. Abdel-Wahab, Z. Salah, F. Solmon, S. Sillman and R. A. Zaveri

Climate Research, 59: 207-228 (2014) IF: 2.707

An integrated chemistry-climate model (RegCM4-CHEM) simulates present-day climate, ozone and tropospheric aerosols over Egypt with a focus on northern Africa and the Greater Cairo (GC) region. The densely populated GC region is known for its severe air quality issues driven by high levels of anthropogenic pollution in conjunction with natural sources such as dust, and agricultural burning events. We find that current global emission inventories underestimate key pollutants such as nitrogen oxides and anthropogenic aerosol species. In the GC region, average ground-based observations of the daily July maximum nitrogen dioxide (NO2) are 40 to 60 parts per billion by volume (ppbv) and are about 10 ppbv higher than modeled estimates, likely due to model grid cell resolution, improper boundary layer representation, and poor emissions inventories. Observed July daily maximum ozone concentrations range from 30 ppbv (winter) to 90 ppbv (summer). The model reproduces the seasonal cycle fairly well, but modeled July ozone is underestimated by approximately 10 ppbv and exhibits little interannual variability. For aerosols, springtime dust events dominate the seasonal aerosol cycle. The chemistry-climate model captures the springtime peak aerosol optical depth (AOD) of 0.7 to 1 but is slightly greater than satellite-derived AOD. Observed AOD decreases in the summer and increases again in the fall due to agricultural burning events in the Nile Delta; however, the model underestimates this observed AOD peak in fall, as standard emissions inventories underestimate the extent of this burning and the resulting aerosol emissions. Our comparison of modeled gas and particulate phase atmospheric chemistry in the GC region indicates that improved emissions inventories of mobile sources and other anthropogenic activities, specifically NOx and organic aerosols, are needed to improve air quality simulations in this region.

Keywords: Ozone; Mediterranean; Urban; Air quality.

4. A Field Theory with Curvature and Anticurvature

M. I. Wanas and Mona M. Kamal

Advances in High Energy Physics, 2014: (2014) IF: 2.624

The present work is an attempt to construct a unified field theory in a space with curvature and anticurvature, the PAP-space. The theory is derived from an action principle and a Lagrangian density using a symmetric linear parameterized connection. Three different methods are used to explore physical contents of the theory obtained. Poisson's equations for both material and charge distributions are obtained, as special cases, from the field equations of the theory. The theory is a pure geometric one in the sense that material distribution, charge distribution, gravitational and electromagnetic potentials, and other physical quantities are defined in terms of pure geometric objects of the structure used. In the case of pure gravity in free space, the spherical symmetric solution of the field equations gives the Schwarzschild exterior field. The weak equivalence principle is respected only in the case of pure gravity in free space; otherwise it is violated. **Keywords:** Geometric field theories; Geometric material Distribution; Poisson's equations.

5. Detailed Surface Photometry of the CD Galaxies NGC 4839 and NGC 4874

Gamal B. Ali, Eman A. Shaban, Magdy Y. Amin and M.A. Rassem

Astrophys Space Sci, 352:789–800 (2014) IF: 2.401

We present a detailed photometric study of the cD galaxies NGC 4839 and NGC 4874 based on the technique of surface photometry by fitting ellipses to the isophotes of the galaxies in the u, g, r, i, and z bands using Data Release 7 (DR7) of the Sloan Digital Sky Survey (SDSS). The motivation of this paper is to study the properties (e.g. break radius and surface brightness, color gradient, etc.) of the extended envelope of the two cD galaxies. The surface brightness profile in each band is obtained and fitted to the de Vaucouleurs r1/4 model. A deviation of the observed profile brighter than the fitted r1/4 model is noticed especially in the outer part of each galaxy. The profiles of ellipticity, position angle, B4 and shifts with respect to the center of each isophote are also obtained. The color index profiles, u-g, g-r, r-i, and i-z are also obtained and no significant color gradients are noticed except in the outer parts of the two galaxies. The integrated magnitude in each band and color indices are obtained and found to be in good agreement with the published ones.

Keywords: Galaxies; Elliptical galaxies; cD galaxies; Galaxies; photometric parameters; surface brightness profiles; color distribution; Galaxies; individual (NGC 4839, NGC 4874).

6. Relativistic and the First Sectorial Harmonics Corrections in the Critical Inclination

W.A. Rahoma, E.H. Khattab and F.A. Abd El-Salam

Astrophysics and Space Science, 351: 113-117 (2014) IF: 2.401

The problem of the critical inclination is treated in the Hamiltonian framework taking into consideration post-Newtonian corrections as well as the main correction term of sectorial harmonics for an earth-like planet. The Hamiltonian is expressed in terms of Delaunay canonical variables. A canonical ransformation is applied to eliminate short period terms. A modified critical inclination is obtained due to relativistic and the first sectorial harmonics corrections.

Keywords: Critical inclination; Post-newtonian effects; Sectorial harmonics.

7. Torsion and Particle Horizons

M. I. Wanas and H. A. Hassan

International Journal of Theoretical Physics, 53: 3901-3909 (2014) IF: 1.186

In the present work we show that the existence of non-vanishing torsion field may solve, at least, one of the problems FRW-cosmology, the particle horizons problem. The field equations of general relativity (GR) are written in a space having non-vanishing torsion, the absolute parallelism (AP) space. An AP-Structure, satisfying the cosmological principle, is used to

construct a world model. Energy density and pressure, purely induced by torsion, are defined from the building blocks of the AP-geometry using GR. When these quantities are used in the FRW-dynamical equations, we get a world model free from particle horizons.

Keywords: Cosmology; General relativity; Inflation.

8. Derivation of the Schemes of Lateral and Vertical Dispersion Parameters: Application in Gaussian Plume Model

M. Abdel-Wahab, Khaled S. M. Essa, M. Embaby and Sawsan E. M. Elsaid

Mausam, 65: 253-260 (2014) IF: 0.152

The main objective of this paper is to estimate the plume dispersion parameters in lateral (sy) and vertical (sz) direction by using power law of wind speed and the scheme of eddy diffusivity in unstable condition. Comparison among our model and algebraic (Lidiane Buligon et al., 2008) and integral (Pasquill and Smith, 1983) formulations were made. We find that besides our model two other models are in agreement with observed data. **Keywords:** Dispersion parameters; Gaussian plume model; Eddy diffusivity.

Dept. of Biophysics

9. Structure-Based Mechanism for Na⁺/Melibiose Symport by MelB

Abdul S. Ethayathulla, Mohammad S. Yousef, Anowarul Amin, Ge´rard Leblanc, H. Ronald Kaback and Lan Guan

Nature Communications, 4 (2014) IF: 10.742

The bacterial melibiose permease (MelB) belongs to the glycoside-pentoside-hexuronide:cation symporter family, a part of the major facilitator superfamily (MFS). Structural information symporter regarding glycoside-pentoside-hexuronide:cation family transporters and other Na(+)-coupled permeases within MFS has been lacking, although a wealth of biochemical and biophysical data are available. Here we present the threedimensional crystal structures of Salmonella typhimurium MelBSt in two conformations, representing an outward partially occluded and an outward inactive state of MelBSt. MelB adopts a typical MFS fold and contains a previously unidentified cationbinding motif. Three conserved acidic residues form a pyramidalshaped cation-binding site for Na(+), Li(+) or H(+), which is in close proximity to the sugar-binding site. Both cosubstratebinding sites are mainly contributed by the residues from the amino-terminal domain. These two structures and the functional data presented here provide mechanistic insights into Na(+)/melibiose symport. We also postulate a structural foundation for the conformational cycling necessary for transport catalysed by MFS permeases in general.

Keywords: Melibiose permease; Structure; Membrane transport.

10. Germline Mutations in BAP1 Impair its Function in DNA Double-strand Break Repair

Ismail Hassan Ismail, Riley Davidson, Jean-Philippe Gagn, Zhi Zhong Xu, Guy G. Poirier and Michael J. Hendzel

Cancer Research, 74(16): 4282-4294 (2014) IF: 9.284

The BRCA1-associated deubiquitylase BAP1 is mutated in several cancers, most notably mesothelioma and melanoma, where it is thought to promote oncogenesis. In this study, we present evidence that BAP1 functions as part of the DNA damage response (DDR). We found that BAP1 mediates rapid poly(ADP-ribose)-dependent recruitment of the polycomb deubiquitylase complex PR-DUB to sites of DNA damage. Furthermore, we identified BAP1 as a phosphorylation target for the DDR kinase ATM. Functionally, BAP1 promoted repair of DNA double-strand breaks, enhancing cell survival after DNA damage. Our results highlight the importance of ubiquitin turnover at sites of DNA damage, and they provide a mechanism to account for the tumor-suppressive function of BAP1.

Keywords: DNA repair; Radiation; BAP1; H2A; Ubiquitination.

11. Mesoporous Silica Coated Gold Nanorods Loaded Doxorubicin for Combined Chemo– Photothermal Therapy

A. Soltan Monem, Nihal Elbialy and Noha Mohamed

International Journal of Pharmaceutics, 470: 1-7 (2014) IF: 3.785

The efficacy of the combined chemo-photothermal therapy, using a mesoporous silica-coated gold nanorods loaded DOX (pGNRs@mSiO2-DOX), was consistently tested both in vitro and in vivo. The prepared nanoparticles that were characterized using transmission electron microscopy (TEM), UV-vis absorption spectroscopy and zeta potential showed high doxorubicin loading capacity in addition to its pH-responsive release. The pGNRs@mSiO2-DOX photo-heat conversion characteristic found to be stable for several repeated NIR irradiated doses was tested in simulated body fluid. In vitro results showed that pGNRs@mSiO2-DOX causes a significant damage in breast cancer cell line MCF-7 compared to free DOX. Contrary to this, it showed low toxicity to human amnion wish cells compared to CTAB coated GNRs and free DOX. In vivo results showed that intravenous administration of pGNRs@mSiO2-DOX (1.7 mg/kg) markedly suppresses the growth of subcutaneous Ehrlich carcinoma in female Balb mice (p < 0.0001). Consistently, histopathological examination revealed a complete loss of tumor cellular details for mice that received the combined treatment. Based on the obtained results, this passively targeted pGNRs@mSiO2-DOX could specifically deliver drug and excessive local heat to tumor sites achieving high combined therapeutic efficacy.

Keywords: Gold nanorods; Mesoporous silica; Combined chemo–Photothermal therapy; Drug delivery; Ph responsive drug Release; Mcf-7 cell line.

12. Comparative Molecular Dynamics Simulation of Hepatitis C Virus NS3/4A Protease (Genotypes 1B, 3A and 4A) Predicts Conformational Instability of the Catalytic Triad in Drug Resistant Strains

Mitchell Kramer, Daniel Halleran, Moazur Rahman, Mazhar Iqbal, Muhammad Ikram Anwar, Salwa Sabet, Edward Ackad and Mohammad Yousef

Plos one, 9(8):e104425, (2014) IF: 3.534

The protease domain of the Hepatitis C Virus (HCV) nonstructural protein 3 (NS3) has been targeted for inhibition by several direct-acting antiviral drugs. This approach has had

marked success to treat infections caused by HCV genotype 1 predominant in the USA, Europe, and Japan. However, genotypes 3 and 4, dominant in developing countries, are resistant to a number of these drugs and little progress has been made towards understanding the structural basis of their drug resistivity. We have previously developed a 4D computational methodology, based on 3D structure modeling and molecular dynamics simulation, to analyze the active sites of the NS3 proteases of HCV-1b and 4a in relation to their catalytic activity and drug susceptibility. Here, we improved the methodology, extended the analysis to include genotype 3a (predominant in South Asia including Pakistan), and compared the results of the three genotypes (1b, 3a and 4a). The 4D analyses of the interactions between the catalytic triad residues (His57, Asp81, and Ser139) indicate conformational instability of the catalytic site in HCV-3a and 4a compared to that of HCV-1b NS3 protease. The divergence is gradual and genotype-dependent, with HCV-1b being the most stable, HCV-4a being the most unstable and HCV-3a representing an intermediate state. These results suggest that the structural dynamics behavior, more than the rigid structure, could be related to the altered catalytic activity and drug susceptibility seen in NS3 proteases of HCV-3a and 4a. Keywords: HCV; Catalysis; Structure; Dynamics; Genotype 4.

13. Synthesis, Characterization and Application of Gold Nanoshells Using Mesoporous Silica Core

Nihal Elbialy, Noha Mohamed and Ahmed Soltan Monem

Microporous and Mesoporous Materials, 190: 197-207 (2014) IF: 3.209

The present study developed a novel multifunctional nanoparticle capable of being targeted passively to the tumor site, mediating sustained drug release as well as providing photothermal therapy. This fabricated nanoparticle is mesoporous silica-loaded doxorubicin covered with a thin layer of pegylated gold (PEGprepared nanoparticles DOX-MPS-GNSs). The were characterized using transmission electron microscopy, energy dispersive X-ray analysis, UV-VIS absorption spectroscopy, dynamic light scattering, zeta potential measurements and small angle X-ray diffraction. The prepared mesoporous silica nanoparticles (MPS) were approximately 150 nm in diameter and were characterized by its well-ordered mesoporosity of d-spacing 4.5 nm, which enabled a high doxorubicin-loading capacity. Laser scanning confocal microscopy was used to study the dynamics and cellular uptake of PEG-DOX-MPS-GNSs, in addition to its therapeutic efficiency upon NIR irradiation. Superior cytotoxicity in MCF-7 cells was obtained for irradiated PEG-DOX-MPS-GNSs compared with other experimental groups. Intravenous application of PEG-DOX-MPS-GNSs (1 mg/kg), followed by NIR irradiation of the tumor area, inhibited the growth of subcutaneous Ehrlich carcinoma in vivo (p < 0.0001) and induced a stronger anticancer effect compared to other applied oncological histopathological modalities. Moreover, examination demonstrated a high percentage of necrosis in PEG-DOX-MPS-GNSs-treated group (97%) compared with NIR (34%) or control (18%) groups, which was consistent with the in vitro and in vivo findings. Thus, in this context, we present a novel strategy for preparing a photothermal responsive formulation (PEG-DOX-MPS-GNSs), demonstrating the controlled DOX-release behavior and its therapeutic effect. These prepared multifunctional nanoparticles can efficiently convert laser energy into heat, which in turn induces thermal damage and delivery of doxorubicin to the tumor site with a subsequent high therapeutic efficacy.

Keywords: Gold nanoshells; Mesoporous silica; Doxorubicin; Photo heat Conversion; Passive targeting.

14. Qsar Analysis and Molecular Docking Simulation of Suggested Peptidomimetic Ns3 Protease Inhibitors

Hamdy I.A. Mostafa, Nihal. S. El-bialy, Ahmed A. Ezat, Noha A. Saleh and Medhat A. Ibrahim

Current Computer Aided-Drug Design, 10: 28-40 (2014) IF: 1.942

Based on the N-terminal hexapeptide product of hydrolysis (EDVVCC) at HCV NS5A/5B junction, three modified groups of compounds are built. The first group contains linear peptides while the second and third groups contain P1-P3 and P2-P4 macrocyclic structures, respectively. Quantitative Structure Activity Relationship (QSAR) characterization and docking simulations are performed in order to investigate the potential of these compounds as HCV NS3/4A protease inhibitors. Based on the QSAR properties, the three most stable compounds due to their lowest total energy are P1-P3 and P2-P4 macrocycles of azahexapeptide sequence (DDIVP vinyl amino cyclopropane) and P2-P4 macrocycle of azahexapeptide sequence (DDIVP norvaline). They also have high surface area, solvent accessible surface area, volume, molar refractivity and polarizabilty. They have moderately low dipole moment and good log P values, as well. The docking scores of the best two P2-P4 macrocycles are just acceptable. The two compounds 5A/5B hexapeptide sequence (DDIVP vinyl amino cyclopropane) and P2-P4 macrocycle of azapentapeptide sequence (DIVP vinyl amino cyclopropane) yielded the best docking scores.

Keywords: Docking; Hcv;Macrocyclic; Ns3 protease; Pm3; Qsar See .

15. Preparation and Characterization of Magnetic Gold Nanoparticles to be Used as Doxorubicin Nanocarriers

Elbialy NS, Fathy MM and Khalil WM.

Physica Medica: European Journal of Medical Physics, 30: 843-848 (2014) IF: 1.849

Magnetic targeted drug delivery (MTD), using magnetic gold nanoparticles (Fe3O4@Au NPs) conjugated with an anti-cancer drug is a promise modality for cancer treatment. In this study, Fe3O4@Au NPs were prepared and functionalized with thiolterminated polyethylene glycol (PEG), then loaded with anticancer drug doxorubicin (DOX). The physical properties of the prepared NPs were characterized using different techniques. Transmission electron microscopy (TEM) revealed the mono dispersed nature of Fe3O4@Au NPs with an average size of 20 nm which was confirmed using Dynamic light scattering (DLS) measurements. Zeta potential measurements along with UVeVIS spectroscopy demonstrated surface DOX loading on Fe3O4@Au NPs. Energy Dispersive X-ray Spectroscopy (EDX) assured the existence of both iron and gold elements in the prepared NPs. The paramagnetic properties of the prepared NPs were assessed by vibrating sample magnetometer (VSM). The maximum DOXloading capacity was 100 mg DOX/mg of Fe3O4@Au NPs. It was found that DOX released more readily at acidic pH. In vitro studies on MCF-7 cell line elucidated that DOX loaded Fe3O4@Au NPs (Fe3O4@Au-PEG-DOX) have more potent therapeutic effect than free DOX. Knowledge gained in this study

may open the door to pursue Fe3O4@Au NPs as a viable nanocarriers for different molecules delivery in many diagnostic and therapeutic applications.

Keywords: Nanoparticles doxorubicin drug delivery iron oxide nanoparticles.

16. X-Ray Scattering: A Structure Based Method for the Assessment of Fat Quality and Fat Content in Beef Products

Wael M Elshemey, Aya S Rady and Amira Dakrory

Food Biophysics, 2: 2037-2045 (2014) IF: 1.551

X-ray scattering measurements are carried out on freshly prepared mixtures of fat and beef tissues having different fat content in addition to some beef product samples. Two distinguishable peaks corresponding to adipose tissue and lean beef muscle are observed at d-spacing of about 0.45 nm and 0.31 nm respectively. The ratio of intensities and areas of both peaks (I1/I2 and A1/A2) are calculated. The x-ray scattering profiles and fat content of purchased beef products are compared to those of the prepared mixtures with similar fat content. Results show a high correlation between I1/I2 and A1/A2 parameters and fat content of freshly prepared mixtures over the range from 0 g/100 g to 50 g/100 g (added fat/pure beef). The comparison between the x-ray scattering profiles of purchased meat products and freshly prepared mixtures reflects a high sensitivity of fat peak position and shape to the deterioration in microstructure of fat. Keywords: Fat content; Fat quality; X-Ray scattering.

17. Quantitative Evaluation of the Administrated Dose Affecting Image Quality in Myocardial Perfusion Spect

Reem H. El-Gebaly, Islam K. Maamoun and Noha G. Madian

Journal of X-Ray Science and Technology, 22: 529-537 (2014) IF: 1.462

Background: Myocardial perfusion imaging (MPI) can provide the valuable cardiac functions.Image quality in nuclear medicine tomography is critically dependent on the activity administered into patients.

Objective: This study was designed to evaluate the optimum injected dose of 99mTc-MIBI for quantitative assessment of image quality as compared with standard injected dose used for that purpose.

Methods: The image quality parameters (Contrast, relative noise and contrast to noise ratio) were determined in 32 patients (21 male, 11 female, age 45–60 y) with weight 60 ± 15 kg. Patients were classified into four groups; each one consisted of 8 patients. The first group received 370 MBq, the second one received 555 MBq, the third group received 740 MBq and the last group received 925 MBq.

Results: Qualitative assessments of the images revealed equivalent scintigraphic patterns in all patients. There was a significant difference in the image contrast. The image contrast in the 370 MBq group was greater than other groups. The image noise between the four groups was significantly different. It increased with injected dose reduction. Contrast to noise ratio (CNR) was significantly different between 370 MBq and other groups.

Conclusion: It is concluded that results from the first group which received 370 MBq are sufficiently similar to those of the

fourth group (standard group) which received 925 MBq. onsequently, accurate estimations of differential cardiac functions are possible with the 370 MBq dose.

Keywords: 99Mtc-Mibi; Image quality parameters; Image quality; Qualitative assessment; Image contrast; Image noise.

18. Molecular Docking Investigation of the Binding Interactions of Macrocyclic Inhibitors with HCV NS3 Protease and its Mutants (R155K, D168A and A156V)

Ahmed A. Ezat, Nihal S. El-Bialy, Hamdy I. A. Mostafa and Medhat A. Ibrahim

The Protein Journal, 33: 32-47 (2014) IF: 1.039

Hepatitis C Virus (HCV) non-structural protein 3 (NS3) protease drug resistance poses serious challenges on the design of an effective treatment. Substrate Envelope Hypothesis, "the substrates of HCV NS3/4A protease have a consensus volume inside the active site called substrate envelope" is used to design potent and specific drugs to overcome this problem. Using molecular docking, we studied the binding interaction of the different inhibitors and protein and evaluated the effect of three different mutations (R155K, D168A and A156V) on the binding of inhibitors. P2-P4 macrocycles of 5A/5B and modified 5A/5B hexapeptide sequences have the best scores against the wild-type protein -204.506 and -206.823 kcal/mole, respectively. Also, charged P2-P4 macrocycles of 3/4A and 4A/4B hexapeptide sequences have low scores with the wild-type protein -200.467 and -203.186 kcal/mole, respectively. R155K mutation greatly affects the conformation of the compounds inside the active site. It inverts its orientations, and this is because the large and free side chain of K155 which restricts the conformation of the large P2-P4 macrocycle. The conformation of charged P2-P4 macrocycle of 3/4A hexapeptide sequence in wild-type, A156V and D168A proteins is nearly equal; while that of charged P2-P4 macrocycle of 4A/4B hexapeptide sequence is different. Nevertheless, these compounds have a slight increase of Van der Waals volume compared to that of substrates, they are potent against mutations and have good scores. Therefore, the suggested drugs can be used as an effective treatment solving HCV NS3/4A protease drug resistance problem.

Keywords: Hcv; Drug resistance; Substrate envelope; Molecular docking; Macrocyclic and Ns3 Protease.

19. Molecular Modelling Analyses of the Substituted 3"-Azido-2",3" Dideoxythymidine

Zarrag Al-Fifi, May Eid, Noha A. Saleh and Medhat Ibrahim

Journal of Computational and Theoretical Nanoscience, 11: 409-412 (2014) IF: 1.032

NCHAr substituted 3-azido-3-deoxythymidine derivative has been theoretically investigated by performing the B3LYP/6-31G** to obtain vibrational spectra as well as some important physical parameters. As a result of substitution total dipole moment is increased from 0.78 to 9.42 Debye; energy band gap is decreased from 5.51 to 1.92 eV; the molecular dimension increased from 10.34 to 14.78 . This physical data plus calculated thermodynamical parameters reflect the stability of the substituted AZT.

Keywords: 3'-Azido-2',3'dideoxythymidine (AZT); B3lyp/6-31g**; Nchar substitution; Thermodynamical parameters; Vibrational assignment.

20. Molecular Spectroscopic Study of **Fulleropyrrolidine Carbodithioic Acid**

Hanan Elhaes, Noha Saleh, Amina Omar and Medhat Ibrahim

Journal of Computational and Theoretical Nanoscience, 11: 2136-2140 (2014) IF: 1.032

This work is conducted to calculate the electronic properties of fulleropyrrolidine carbodithioic acid. This system is subjected to optimization and vibrational frequency calculations at B3LYP / STO-3G. To minimize the computational time, the active part of the structure is recalculated at HF / 3 - 21G *, HF/3-21G**, HF / 6 -31G**, B3LYP/3-21G*, B3LYP/3-21G**, B3LYP / 6-31G ** and MP2 / 6-31G **. A comparison between active structure and total structure indicate a shift in the calculated bands. These may be attributed not only for the modification of the structure, but also for the effect of basis set.

Keywords: Fulleropyrrolidine; Hf; B3lyp; Mp2; Vibrational frequency.

21. The Electronic and Quantitative Structure **Activity Relationship Properties of Modified Telaprevir Compounds as HCV NS3 Protease** Inhibitors

Noha A. Saleh, Abdo A. Elfiky, Ahmed A. Ezat, Wael M. Elshemey and Medhat Ibrahim

Journal of Computational and Theoretical Nanoscience, 11: 544-548 (2014) IF: 1.032

This work investigates the possibility of improving the biological activity of Telaprevir; an HCV NS3 protease inhibitor. This is carried out through the suggestion of 11 modified compounds of Telaprevir and calculating their electronic and Quantitative Structure Activity Relationship (QSAR) parameters using molecular modeling via PM3 method. Results show that the compound number 6 (with 1,3- dithiolane ring at position R2) has more favorable electronic and QSAR parameters compared to Telaprevir. Therefore, this modified compound would be considered as a promising novel HVC NS3 protease inhibitor. Keywords: HCV; NS3 protease inhibitor; PM3, Qsar; Telaprevir.

Dept. of Botany

22. Proposed Nomenclature for Pseudallescheria, **Scedosporium and Related Genera**

Tarek Moussa, Omar Almaghrabi, Hassan Al-Zahrani, Michaela Lackner, G. Sybren de Hoog, Liyue Yang, Leandro Ferreira Moreno and Sarah A. Ahmed, Et..

Fungal Diversity, 67: 1-10 (2014) IF: 6.938

As a result of fundamental changes in the International Code of Nomenclature on the use of separate names for sexual and asexual stages of fungi, generic names of many groups should be reconsidered. Members of the ECMM/ISHAM working group on Pseudallescheria/Scedosporium infections herein advocate a novel nomenclature for genera and species in Pseudallescheria, and allied taxa. The Scedosporium generic names

Parascedosporium, Lomentospora, Petriella, Petriellopsis, and Scedosporium are proposed for a lineage within Microascaceae with mostly Scedosporium anamorphs producing slimy, annellidic conidia. Considering that Scedosporium has priority over Pseudallescheria and that Scedosporium prolificans is phylogenetically distinct from the other Scedosporium species, some name changes are proposed. Pseudallescheria minutispora and Petriellidium desertorum are renamed as Scedosporium minutisporum and S. desertorum, respectively. Scedosporium prolificans is renamed as Lomentospora prolificans.

Keywords: Graphium ; Lomentospora ; Petriella; Scedosporium Apiospermum complex ; Microascaceae ; Nomenclature.

23. Susceptibility and Diversity in the Therapy-Refractory Genus Scedosporium

Lackner M, Hagen, Meis J, Gerrits van den Ende AH, Vu D, Robert V, Fritz J, Moussa TA and de Hoog GS.

Antimicrobial Agents and Chemotherapy, 58: 5877-5885 (2014) IF: 4.451

Scedosporium species show decreased susceptibility to the majority of systemic antifungal drugs. Acquired resistance is likely to disseminate differentially with the mode of exchange of genetic material between lineages. Inter - and intraspecific diversities of Scedosporium species were analyzed for three partitions (rDNA internal transcribed spacer gene [ITS], partial tubulin gene, and amplified fragment length polymorphism profiles), with the aim to establish distribution of resistance between species, populations, and strains. Heterogeneity of and recombination between lineages were determined, and distances between clusters were calculated using a centroid approach. Clinical, geographic , and antifungal data were plotted on diversity networks. Scedosporium minutisporum, Scedosporium desertorum, and Scedosporium aurantiacum were distinguished unambiguously in all partitions and had differential antifungal susceptibility profiles (ASP). Pseudallescheria fusoidea and Pseudallescheria ellipsoidea were indistinguishable from Scedosporium boydii . Pseudallescheria angusta took an intermediate position between Scedosporium apiospermum and S. boydii . Scedosporium boydii and S. apiospermum had identical ASP. Differences in (multi)resistance were linked to individual strains. S. apiospermum and S. boydii showed limited interbreeding and were recognized as valid, sympatric species. The S. apiospermum/S. boydii group, comprising the main clinically relevant Scedosporium species, consists of separate lineages and is interpreted as a complex undergoing sympatric evolution with incomplete lineage sorting. In routine diagnostics, the lineages in S. apiospermum/S. boydii are indicated with the umbrella descriptor "S. apiospermum complex"; individual species can be identified with rDNA ITS with 96.3% confidence. Voriconazole is recommended as the first - line treatment ; resistance against this compound is rare.

Keywords: Susceptibility; Diversity; Therapy-refractory; Scedosporium.

24. Phenotypic Characteristics and Genetic Diversity of Rhizobia Nodulating Soybean in Egyptian Soils

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European Journal of Soil Biology, 60: 34-43 (2014) IF: 2.146

Twenty rhizobial strains isolated from the root nodules of soybean (Glycine max L.) were collected from nine governorates representing different agro-climatic and soil conditions in Egypt. The strains were characterized using a polyphasic approach, including nodulation pattern, phenotypic characterization, 16S rDNA sequencing, nifH and nodA symbiotic genes sequencing, and rep-PCR fingerprinting. Symbiotic properties assay revealed that all local rhizobial strains showed a wide spectrum of prolific nodulation and a marked increase in plant growth parameters compared to the un-inoculated control.

Complete sequencing of 16S rRNA demonstrated that, native soybean nodulating rhizobia are phylogenetically related to Bradyrhizobium, Ensifer and Rhizobium (syn. Agrobacterium) genera. Study of tolerance ability to environmental stresses revealed that local strains survived in a wide pH ranges (pH 5–11) and a few of them tolerated high acidic conditions (pH 4). Agrobacterium strains were identified as the highest salt-tolerant and were survived under 6% NaCl, however Ensifer strains were the uppermost heat-tolerant and can grow at 42 °C. Agrobacterium strains have been shown to harbor nifH and nodA genes similar to those in other fast growing soybean symbionts and were largely distinct from symbiotic genes of slow growing bradyrhizobia.

The symbiotic effectiveness stability of Agrobacterium strains to nodulate soybean roots was confirmed using plant nodulation assay.

Keywords: Rhizobium; Agrobacterium; 16S Rrna; Nifh; Noda; Soybean; Egypt.

25. Cytotoxic and Antioxidant Properties of Active Principals Isolated from Water Hyacinth Against four Cancer Cells Lines

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Bmc Complementary and Alternative Medicine, 14: 397-408 (2014) IF: 1.877

Background: Eichhornia crassipes (Mart) solms is an invasive macrophyte causing serious problems to the network of irrigation and drainage canals in the Nile Delta region. The present study aim to evaluate the potential anticancer and antioxidant activities of Eichhornia crassipes crude extract and its pure compounds. Methods: The macrophyte was collected from El-Zomor canal, River Nile (Egypt), cleaned, air dried, grinded then extracted with methanol (crude extract). The extract was fractionated using precoated silica gel plates (TLC F254) with hexane/ethyl acetate (8.5: 1.5 v/v) as mobile phase. Nine fractions were separated (A-I) then scratched, eluted with the same mobile phase, filtered and the separated fractions were determined and identified using spectroscopic methods (Mass spectrum (MS), Infra red (IR) and Proton H-Nuclear magnetic resonance (H-NMR). Both the crude extract and its nine identified compounds were tested for their antioxidant (using 2, 2 diphenyl-1-picrylhydrazyl (DPPH), 2, 2'azino-bis {ethylbenzthiazoline - 6 - sulfonic acid (ABTS.)} methods) and anticancer activity (using MCF-7, HeLa, Hep .G2 and EACC cell lines).

Results: The antioxidant and anticancer activities of the crude extract exhibited the highest effect while the compounds showed variable effects which depend on the type of compound and cancer cell line. The antioxidant activity of the crude extract exhibited the highest followed in descending order by compounds D, E, G and H respectively. Concerning the anticancer potency,

the crude extract showed also the highest effect while the identified compounds (A , B, C, D, E, F, G, H and I) showed variable anticancer activities against the four different cell lines. In addition, Compound I exhibited the most potent anticancer activity against HepG2 cell line while compound D exhibited high anticancer activity against HeLa cells and EACC. The results revealed the presence of different compounds (Alkaloids and terpenoids) with variable antioxidant and anticancer activities which elicited an auto-augmentation in the crude extract leading to its greatest activities. The action of the identified anticancer compounds on DNA fragmentation was studied.

Conclusion: The study illustrated the potential of Eichhornia as a valuable resource for natural compounds of desirable medicinal properties (e.g. antioxidants and anticancer).

Keywords: Eichhornia crassipes; Cytotoxicity; Anticancer; Antioxidant; Active ingredients.

26. Fecal Carriage of Extended-Spectrum β - Lactamases and Ampc-Producing Escherichia Coli in A Libyan Community

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Annals of Clinical Microbiology and Antimicrobials, 13:22: 13-22 (2014) IF: 1.514

Background: Extended - spectrum β - lactamases (ESBLs) , including the AmpC type , are important mechanisms of resistance among Enterobacteriaeceae . CTX-M type extendedspectrum β - lactamases, of which there are now over 90 variants, are distributed globally, yet appear to vary in regional distribution. AmpC β - lactamases hydrolyze third generation cephalosporins, but are resistant to inhibition by clavulanate or other β -lactamase inhibitors in vitro . Fecal carriage and rates of colonization by bacteria harboring these resistance mechanisms have been reported in patients with community-acquired infections and in healthy members of their households. Expression of these ESBLs compromises the efficacy of current antibacterial therapies, potentially increasing the seriousness of hospital- and community-acquired Escherichia coli (E. coli) infections.To investigate the occurrence of ESBL-producing E. coli in human fecal flora isolated from two pediatric populations residing in the Libyan cities Zleiten and Abou El Khoms. Isolates were further studied to characterize genes encoding -lactam resistance, and establish genetic relationships.

Methods: Antibiotic resistance profiles of phenotypically characterized E. coli isolates recovered from the stools of 243 Libyan children during two surveillance periods in 2001 and 2007 were determined by the disk diffusion method. ESBL-screening was performed using the cephalosporin/clavulanate double synergy disc method, and the AmpC-phenotype was confirmed by the aminophenyl-boronic acid test. ESBL genes were molecularly characterized. Phylogenetic group and multilocus sequence typing (MLST) were determined for ESBL-producing isolates and PFGE was performed to compare banding profiles of some dominant strains.

Results: ESBLs were identified in 13.4% (18/134) of E. coli isolates, and nine isolates (6.7%) demonstrated AmpC activity; all 18 isolates contained a CTX-M gene. Three CTX-M gene families (CTX-M-1, n=9; CTX-M-15, n=8 and CTX-M-3, n=1) were distributed in diverse E. colibackgrounds (phylogenetic group D, 39%; B2, 28%; B1, 22% and A, 11%). MLST analysis revealed 14 sequence type (ST) with six new sequence types. The

gene encoding the CMY-2 enzyme was detected in five AmpC-positive E. coli.

Conclusions: These results identified heterogeneous clones of CTX-M-producing E. coli in the fecal isolates, indicating that the intestinal tract acts as a reservoir for ESBL-producing organisms, and a trafficker of antibiotic resistance genes.

Keywords: Esbls; Libya; Ctxm; Ampc; Fecal carriage; E. Coli; Mlst.

27. Enteroaggregative Escherichia Coli in Diarrheic Children in Egypt: Molecular Characterization and Antimicrobialsusceptibility

Mostafa Mohamed M Ali, Salwa Fouad Ahmed, John D Klena, Zienat Kamel Mohamed, Tarek AA Moussa, Khalifa Sifaw Ghenghesh

Journal of Infection in Developing Countries, 8(5): 589-596 (2014) IF: 1.267

Introduction: Little information is available regarding the significance of enteroaggregative Escherichia coli (EAEC) in pediatric diarrhea in Egypt.

Methodology: Escherichia coli was isolated from stool samples of 62 diarrheic and 43 non-diarrheic (control) Egyptian children. Samples were screened for genes specific for enteroaggregative E. coli (EAEC), enteropathogenic E. coli (EPEC), enterotoxigenic E. coli (ETEC), Shiga toxin-producing E. coli (STEC), and enteroinvasive E. coli (EIEC) using polymerase chain reaction (PCR). Diarrheagenic E. coli were grouped phylogenetically using PCR and tested for their susceptibility to antibiotics using the disk diffusion method. Isolates designated as EAEC were examined for eight virulence factors (VFs) using PCR.

Results: EAEC was detected in 19 (30.7%) and 4 (9.3%), EPEC in 2 (3.2%) and 1 (2.3%), and ETEC in 2 (3.2%) and 0 (0.0%) diarrheic and control children, respectively; STEC and EIEC were not detected. Only EAEC was significantly isolated from diarrheic children compared with controls (p < 0.01, OR = 4.31).Three or more VFs (multivirulent isolates) were found in 52.6% and 50% of EAEC isolated from diarrheic children and controls, respectively. More than 73% (17/23) of EAEC isolates were identified as belonging to phylogenetic group D. Multiple-antibiotic resistance (resistance to three or more drugs) was observed in more than 91% of EAEC.

Conclusions: Multivirulent EAEC is a significant causative agent of pediatric diarrhea in Egypt, with the majority of isolated EAEC belong to phylogenetic group D. Multiple-antibiotic resistance among EAEC has the potential to be a serious public health problem for the country.

Keywords: Enteroaggregative escherichia coli; Virulence genes; phylogenetic grouping; Antibiotic susceptibility; Diarrhea; Children; Egypt.

28. Flavonoids from Allium Myrianthum Boiss

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Biochemical Systematics and Ecology, 56: 125-128 (2014) IF: 1.17

The first phytochemical investigation of Allium myrianthum Boiss. led to the isolation of ten Flavonoids . They were characterized as three flavonoid aglycones and seven flavonoid glycosides . Their structures were established on the basis of chemical and spectroscopic analysis. The chemosystematic relationships of A. myrianthum and its significance were also discussed.

Keywords: Allium myrianthum boiss; Alliaceae; Allioideae; Amaryllidaceae; Flavonoid glycosides; Chemosystematics.

29. Detection and Molecular Identification of Aster Yellows Phytoplasma in Date Palm in Egypt

Maha AlKhazindar

Journal of Phytopathology, 162: 621-625 (2014) IF: 0.921

Phytoplasma - like symptoms were detected in date palm trees (Phoenix dactylifera L.) in Al-Giza Governorate in Egypt. Symptoms varied from leaf chlorotic streaks, stunting and marked reduction in fruit and stalk sizes. Direct and nested PCR of symptomatic samples using P1/P7 and R16F2n/R16R2n primers, respectively, of the 16S rRNA gene, resulted in a DNA amplification product of c. 1.3 kbp. Symptomless samples collected from the same location and the healthy control produced no product upon amplification. Products were cloned into TOPO TA vector for sequencing. Data generated were deposited in the GenBank (Accession KF826615) . A BLAST search showed that the sequence of the 16SrRNA gene shared 'Candidatus Phytoplasma asteris' (16SrI group) with other isolates. Phylogenetic analysis revealed that the isolate clustered with the date palm phytoplasma causing Al-Wijam disease in Saudi Arabia.

Keywords: 16Sri group; Candidatus phytoplasma asteris; Date palm (phoenix dactylifera L.); Nested-Pcr;Sequencing.

30. Production and Characterization of Di-Rhamnolipid Produced by Pseudomonas Aeruginosa TMN

T. A. A. Moussa, M. S. Mohamed and N. Samak

Brazilian Journal of Chemical Engineering, 31: 867-880 (2014) IF: 0.912

Pseudomonas aeruginosa TMN was used to produce rhamnolipid (RL) from a variety of carbonand nitrogen substrates. The most favorable carbon sources for RL production were glucose and glycerol (both at 40 g/L), giving a RL yield of 0.3 and 0.25 g/L, respectively. Meanwhile, sodium nitrate appeared to be the preferable nitrogen source, resulting in a RL production of 0.34 g/L. Rhamnolipid production from P.aeruginosa TMN was affected by temperature, pH and agitation rate, with 37 °C, pH 7 and 200 rpm agitation favorable for rhamnolipid production. Fourier transform infrared spectroscopy (FTIR), nuclear magnetic resonance (NMR) and electro spray ionization - mass spectrometry (ESI-MS) analyses indicated that the purified product contained one type of commonly found rhamnolipid , which is L-rhamnosyl - L - rhamnosyl - hydroxydecanoyl hydroxydecanoate. The rhamnolipid product can reduce the surface tension of water to 34 mN / m with a critical micelle concentration of nearly 18.75 mg / L and emulsified kerosene by 46% . P.aeruginosa TMN strain is a potential source of rhamnolipid biosurfactant, which could be used for the development of bioremediation processes in the marine environment.

Keywords: Rhamnolipid ; Pseudomonas aeruginosa ; Optimization; Purification; Glucose.

31. Allelopathic Effects of Sonchus Oleraceus L. on the Germination and Seedling Growth of Crop and Weed Species

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Acta Botanica Brasilica, 28: 408-416 (2014) IF: 0.553

We assessed the allelopathic effects of the aqueous extract of Sonchus oleraceus dry shoots on the germination and seedling growth of Trifolium alexandrinum, three weed species (Brassica nigra, Chenopodium murale and Melilotusindicus) and S. oleraceus itself. We assayed four different concentrations of the aqueous extract (w v-1): 1%, 2%, 3% and 4%. To determine whether the effects of the extract were attributable to the presence of allelopathic compounds, its osmotic potential or both, we prepared concentrations of polyethylene glycol (PEG) with osmotic potentials equivalent to those of the aqueous extract. All concentrations of the plant extract completely inhibited the germination and seedling growth of C. murale. The lowest concentration of the plant extract partially inhibited germination and seedling growth of B. nigra, M. indicus and S. oleraceus, whereas the higher concentrations inhibited those parameters completely. The germination of T. alexandrinum was not affected by the aqueous extract at 1% or 2%. In general, the aqueous extracts were more effective in inhibiting seed germination and seedling growth than were the PEG solutions.Phytochemical analyses revealed that phenols and alkaloids were the most abundant compounds in S. oleraceus dry matter. Our results suggest that the aqueous extract of S. oleraceus has an allelopathic effect on some weeds, and its usefulness as a bioherbicide therefore merits further study.

Keywords: Allelochemicals; Aqueous extract; Bioherbicide; Phytotoxicity.

32. Antifungal Activity of Silver ion on Ultrastructure and Production of Aflatoxin B1 and Patulin by two Mycotoxigenic Strains, Aspergillus Flavus OC1 and Penicillium Vulpinum Cm1

A.A. Ismaiel and N.A. Tharwat

Journal of Medical Mycology, 24: 193-204 (2014) IF: 0.4

Objective: The antifungal activity of silver ion from silver nitrate solution was tested against two pathogenic and toxigenic fungal strains. The first was Aspergillus flavus OC1, a clinical aflatoxigenic strain that causes fungal keratitis and the second was Penicillium vulpinum CM1, a maize-pathogenic strain that is positive for patulin (PAT) producing ability. Materials and methods Agar well diffusion assays on yeast sucrose (YES) agar were applied for determination of the antifungal activity of silver ions either filter- or autoclaved-sterilized. Transmission electron microscopy was used to analyze the cellular effects of silver ion. The mycotoxins AFB1 and PAT were analyzed in the fungal strains cultures treated with silver ion. Results Filter-sterilized ions have a greater potential for growth inhibition of both fungal strains than autoclaved-sterilized ions. The minimal inhibitory concentration of the filter-sterilized ions against A. flavus OC1 was 70 µg mL-1 and against P. vulpinum CM1 was 60 µg mL-1 and that the minimum fungicidal concentration was 120 µg mL-1 against the first strain and 80 µg mL-1 against the second strain. Hyphal cells treated with silver ion showed considerable changes

Vol. 9(1), May 2015

in the nature of cell membranes and cytoplasmic organelles. Silver applied to YES broth inhibited mycelial growth and AFB1 and PAT formation of both strains. Growth and mycotoxin production appeared to be correlated processes. Conclusion These findings indicate the future possibility to use silver ion as substitute for synthetic fungicides to control the growth of pathogenic fungi and their mycotoxin production.

Keywords: Aspergillus flavus; Penicillium vulpinum;

Mycotoxins; Aflatoxin B1 (AFB1); Patulin (PAT); Silver ion; Antifungal; Ultrastructure.

Dept. of Chemistry

33. Direct Laser Writing of Graphene Electronics

Maher F. El-Kady and Richard B. Kaner

Acsnano, 8(9): 8725-8729 (2014) IF: 12.033

One of the fundamental issues with graphene for logic applications is its lack of a band gap. In this issue of ACS Nano, Shim and colleagues introduce an effective approach for modulating the current flow in graphene by forming pn junctions using lasers. The findings could lead to a new route for controlling the electronic properties of graphene-based devices. We highlight recent progress in the direct laser synthesis and patterning of graphene for numerous applications. We also discuss the challenges and opportunities in translating this remarkable progress toward the direct laser writing of grapheme electronics at large scales.

Keywords: Graphene ; Laser.

34. Vapor-Phase Polymerizationof Nanofibrillar Poly (3,4 - Ethylenedioxythiophene) for Supercapacitors

Maher Fathy Mohamed El-kady, Julio M. D'Arcy, Pwint P. Khine, Linghong Zhang, Sun Hwa Lee, Nicole R. Davis, David S. Liu, Michael T. Yeung, Sung Yeol Kim, Christopher L. Turner, Andrew T. Lech, Paula T. Hammond and Richard B. Kaner

Acsnano, 8(2): 1500-1510 (2014) IF: 12.033

Nanostructures of the conducting polymer poly(3,4ethylenedioxythiophene) with large surface areas enhance the performance of energy storage devices such as electrochemical supercapacitors. However, until now, high aspect ratio nanofibers of this polymer could only be deposited from the vapor-phase, utilizing extrinsic hard templates such as electrospun nanofibers and anodized aluminum oxide. These routes result in low conductivity and require postsynthetic template removal, conditions that stifle the development of conducting polymer electronics. Here we introduce a simple process that overcomes these drawbacks and results in vertically directed high aspect ratio poly(3,4-ethylenedioxythiophene) nanofibers possessing a high conductivity of 130 S/cm. Nanofibers deposit as a freestanding mechanically robust film that is easily processable into a supercapacitor without using organic binders or conductive additives and is characterized by excellent cycling stability, retaining more than 92% of its initial capacitance after 10 000 charge/discharge cycles. Deposition of nanofibers on a hard carbon fiber paper current collector affords a highly efficient and stable electrode for a supercapacitor exhibiting gravimetric capacitance of 175 F/g and 94% capacitance retention after 1000 cycles.

Keywords: Supercapacitor; Vapor-Phase polymerization; Poly (3,4-Ethylenedioxythiophene); Nanofibers; Conducting polymer.

35. Biodegradation Behavior of Bacterial-Based Polyhydroxyalkanoate (PHA) and DDGS Composites

Samy Abbas Madbouly Faragg, James A. Schrader, Gowrishankar Srinivasan, Kunwei Liu, Kenneth G. McCabe, David Grewell, William R. Gravesb and Michael R. Kessler

Green Chemistry, 16: 1911-1920 (2014) IF: 6.852

The extensive use of plastics in agriculture has increased the need for development and implementation of polymer materials that can degrade in soils under natural conditions. The biodegradation behavior in soil of polyhydroxyalkanoate (PHA) composites with 10 wt% distiller's dried grains with solubles (DDGS) was characterized and compared to pure PHA over 24 weeks. Injection-molded samples were measured for degradation weight loss every 4 weeks, and the effects of degradation times on morphological, thermomechanical, and viscoelastic properties were evaluated by scanning electron microscopy (SEM), dynamic mechanical analysis (DMA), and small-amplitude oscillatory shear flow experiments. Incorporation of DDGS had a strong effect on biodegradation rate, mechanical properties, and production cost. Material weight loss increased linearly with increasing biodegradation time for both neat PHA and the PHA/DDGS 90/10 composites. Weight loss after 24 weeks was approximately six times greater for the PHA/DDGS 90/10 composites than for unaltered PHA under identical conditions. Rough surface morphology was observed in early biodegradation stages (=8 weeks). With increasing biodegradation time, the composite surface eroded and was covered with well-defined pits that were evenly distributed, giving an areolate structure. Zero shear viscosity, Tg, gelation temperature, and cold crystallization temperature of the composites decreased linearly with increasing biodegradation time. Addition of DDGS to PHA establishes mechanical and biodegradation properties that can be utilized in sustainable plastics designed to end their lifecycle as organic matter in soil. Our results provide information that will guide development of PHA composites that fulfill application requirements then degrade harmlessly in soil.

Keywords: Biodegradation; Bacterial-Based polymer; Polyhydroxyalkanoate; Ddgs; Composites.

36. The Anti-Apoptotic form of Tyrosine Kinase Lyn That is Generated by Proteolysis is Degraded by the N-End Rule Pathway

Mohamed A. Eldeeb and Richard P. Fahlman

Oncotarget., 5: 2714-2722 (2014) IF: 6.627

The activation of apoptotic pathways results in the caspase cleavage of the Lyn tyrosine kinase to generate the N-terminal truncated LynN. This LynN fragment has been demonstrated to exert negative feedback on imatinib induced apoptosis in chronic myelogenous leukemia (CML) K562 cells. Our investigations focus on LynN stability and how reduced stability reduces imatinib resistance. As the proteolytical generated LynN has a leucine as an N-terminal amino acid, we hypothesized that LynN would be degraded by the N-end rule pathway. We demonstrated that LynN is unstable and that its stability is dependent on the identity of its N-terminus. Additionally we established that LynN degradation could be inhibited by either inhibiting the proteasome or knocking down the UBR1 and UBR2 ubiquitin E3 ligases. Importantly, we also demonstrate that LynN degradation by the N-end rule counters the imatinib resistance of K562 cells

provided by LynN expression. Together our data suggest a possible mechanism for the N - end rule pathway having a link to imatinib resistance in CML. With LynN being an N-end rule substrate, it provides the first example that this pathway can also provide a pro - apoptotic function as previous reports have currently only demonstrated anti-apoptotic roles for the N-end rule pathway.

Keywords: Lyn;N-End rule; Ubiquitination;Protein degradation; Ubr.

37. Modified Carbon Paste Sensor for the Potentiometric Determination of Neostigmine Bromide in Pharmaceutical formulations, Human Plasma and Urine

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Biosensors Andbioelectronics, 51: 143-149 (2014) IF: 6.451

A novel, simple, rapid, selective and sensitive method for the determination of neostigmine (Ns) ion in its bulk powder, different pharmaceutical dosage forms, and biological fluids (plasma and urine) using four modified carbon paste electrodes was developed. Sensor1 is based on ion-association Ns-TPB, sensor 2 used Ns-PT, sensor3 comprises amixture of (Ns-PT+Ns-TPB) and sensor 4 was constructed using (Ns- PT+ β -CD). Solvent mediator2-NPPE exhibited a proper behavior including Nernstian slope ranging from 61.570.5 to 64.570.5 mV per decade over the pH range of 3.8-10 for the four sensors. Linear responses of Nswithintheconcentrationrange1.0 x 10-7-1.0 x 10-2 mol/L were obtained. The response time is very short (=10s) with a detection limit 6.3 x 10-8 M. In flow injection analysis (FIA), sensor 3 shows a Nernstian slope value 75.570.5 mV per decade within the concentration range of $1 \ge 10-6 - 1 \ge 10-2$ mol/L and with a detection limit 7.5 x 10-7 mol/L. The utility of mixed or additives of β -CD had a significant influence on increasing the sensitivity of sensors 3 and 4 compared to sensors 1 and 2. The sensors were applied for the determination of neostigmine (Ns) ion in its bulk powder, different pharmaceutical dosage forms, and biological fluids (plasma and urine). The results obtained were satisfactory with excellent percentage recovery comparable with official method for the assay based on non-aqueous titration using perchloricacid as a titrant.

Keywords: Neostigmine bromide; carbon-paste electrode; sensor; potentiometry; ion-Associate; flow Injection analysis.

38. New Thiocyanate Potentiometric Sensors Based on Sulfadimidine Metal Complexes: Experimental and Theoretical Studies

Ola R.Shehab and Ahmed M.Mansour

Biosensors and Bioelectronics, 57(5): 77-84 (2014) IF: 6.451

Three sulphadimidine metal complexes (M = Fe(III), Cu(II), and Ag(I)) were prepared, characterized, and examined as neutral carriers for the determination of SCN- using modified carbon paste electrode. These sensors were successfully applied in the pure samples, and biological fluids. The electrode mechanism was investigated by UV-Vis. and FT IR. The experimental studies were complemented by quantum chemical calculations at DFT/B3LYP level of theory. The best performance was observed for Cu(II) electrode (C) containing 7.0 % complex, 53.0 % onitrophenyloctyl ether, 37.0 % graphite and 3.0 % cetylpyridinium chloride, and also for Fe(III)-electrode (A)

having 6.0 % complex, 52.0 % o-nitro phenyloctyl ether, 40.5 % graphite and 2.5 % cetylpyridinium chloride.

Keywords: Modified carbon paste; Thiocyanate; Potentiometry; Sulphadimidine; DFT; Complexes.

39. Microwave Heated Synthesis of Carbon Supported Pd, Ni and Pd–Ni Nanoparticles for Methanol Oxidation in KOH Solution

R.S. Amin, R.M. Abdel Hameed and K.M. El-Khatib

Applied Catalysis B: Environmental, 148–149: 557-567 (2014) IF: 6.007

Pd, Ni and Pd-Ni nanoparticles uniformly dispersed on Vulcan XC-72R carbon black are prepared by microwave-irradiation using NaBH4 as a reducing agent. Pd/C, Ni/C and Pd-Ni/C electrocatalysts were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM) and energy-dispersive X-ray spectroscopy (EDX). Pd-Ni alloy was formed with an average particle size of 3 nm. Kinetic parameters such as the electron transfer coefficient value () and electron transfer rate constant of Ni/C and Pd-Ni/C electrocatalysts in 0.5 M KOH solution were calculated. The prepared electrocatalysts were examined for methanol oxidation in alkaline medium. The longterm stability of electrocatalysts in (0.6 M MeOH + 0.5 M KOH) solution was studied using repeated cyclic voltammetry and chronoamperometry. Two methanol oxidation peaks were observed at Pd-Ni/C at 0 and +913 mV. Their current density values are higher than those at Pd/C and Ni/C electrocatalysts by 3.84 and 1.43 times, respectively. The catalytic rate constant at and Pd-Ni/C was estimated using double-step Ni/C chronoamperometry as 1.80×103 and 5.88×103 cm3 mol-1 s-1, respectively. Pd-Ni/C showed better stability performance when compared to Pd/C and Ni/C electrocatalysts.

Keywords: Methanol; Alkaline medium; Nickel; Palladium; Carbon.

40. Unraveling the Nature of Interaction Between Substituted Phenol and Amiodarone

Walid M. I. Hassan and Ahmed S. Abo Dena

Analytical Chemistry, 86: 1881-1886 (2014) IF: 5.825

A comprehensive study of the interaction between nitrophenols (π -acceptors) and amiodarone (AM) was performed using electronic absorption spectra. The key point is to clarify the erroneous interpretation of the interaction between nitrophenols and one of the basic organic drugs. Matching of the experimental UV-vis spectra and the theoretical ones obtained by DFT calculations revealed that the tertiary amino group of AM reacts with the phenol compounds under investigation via proton-transfer but not charge-transfer (C.T.) mechanisms, unlike what is commonly known about this type of interaction. The interaction was carried out in solutions of different basic pH values to study the effect of hydrogen ion concentration on the reaction. The results show that the reaction is a simple acid-base reaction. As a result, this reaction cannot be used by analytical chemists for determination of one of the studied compounds due to its very low selectivity. TD-DFT as well as geometry optimization of the nitrophenols were calculated with the B3LYP functional, using aug-cc-pvDZ and LanL2DZ as basis sets for ionic and neutral compounds, respectively. The theoretical spectra of possible interactions between AM and nitrophenols result in the same spectra of

ionized nitrophenols alone, indicating no possibility for the formation of charge-transfer complexes.

Keywords: Amiodarone; Substituted phenol; DFT; Protontransfer; Uv-Vis spectra.

41. Acrylonitrile-Contamination Induced Enhancement of Formic Acid Electro-Oxidation at Platinum Nanoparticles Modified Glassy Carbon Electrodes

Gumaa A. El-Nagar, Ahmad M. Mohammad , Mohamed S. El-Deab , Takeo Ohsaka and Bahgat E. El-Anadouli

Journal of Power Sources, 265: 57-61 (2014) IF: 5.211

Minute amount (1 ppm) of acrylonitrile (AcN), a possible contaminant, shows an unexpected enhancement for the direct electro-oxidation of formic acid (FAO) at Pt nanoparticles modified GC (nano-Pt/GC) electrodes. This is reflected by a remarkable increase of the current intensity of the direct oxidation peak (I_{p}^{d} , at ca. 0.3 V) in the presence of AcN, concurrently with a significant decrease of the second (indirect) oxidation current ¹_p, at ca. 0.7 V), compared to that observed in the absence of (I^{ind} AcN (i.e., at the unpoisoned Pt electrode). The extent of enhancement depends on the surface coverage (0) of AcN at the surface of Pt nanoparticles. AcN is thought to favor the direct FAO by disturbing the contiguity of the Pt sites, which is necessary for CO adsorption. Furthermore, XPS measurements revealed a change in the electronic structure of Pt in presence of AcN, which has a favorable positive impact on the charge transfer during the direct FAO.

Keywords: Formic acid fuel cell; Impurities; Nanoparticles; Carbon monoxide; XPS.

42. Electrocatalytic Oxidation of Formic Acid on Nano/Micro Fibers of Poly(P-Anisdine) Modified Platinum Electrode

R.H. Tammam and Mahmoud M. Saleh

Journal of Power Sources, 246: 178-183 (2014) IF: 5.211

Poly(p-anisidine) (PPA) modified platinum (Pt) electrode shows an extraordinary electrocatalytic activity towards formic acid oxidation in acid medium compared to bare Pt electrode. The Pt/PPA is prepared by electropolymerization of the monomer on Pt electrode in salycilate aqueous solution. The PPA has a fiberlike structure with a thread size of nano- to micrometers. The cyclic voltammogram for formic acid electrooxidation on the Pt/PPA shows no peak for the indirect current and the peak current in the backward sweep is almost equal to that in the forward sweep indicating high electrocatalytic activity for FA oxidation compared to the Pt electrode which shows lower tolerance to CO poisoning. The loading level affects both the onset potential and the peak current of formic acid oxidation. Optimization of the loading level shows that a 5 cycles of polymerization (11.8 µg cm-2) is the best loading level of the PPA under the prevailed experimental conditions. The stability of the Pt/PPA towards FA oxidation confirms the higher tolerance to CO poising. SEM images and data analysis demonstrate the facilitated oxidation of FA on the Pt/PPA. Interpretation of the enhancement of FA oxidation on the Pt/PPA electrode is introduced.

Keywords: Poly(P-Anisidine); Platinum; Formic acid; Fuel cell; Electrocatalysis.

43. Hydrogen Production on Molybdenum in H₂SO₄ Solutions

W.A. Badawy, H.E. Feky, N.H. Helal and H.H. Moham

Journal of Power Sources, 271: 480-488 (2014) IF: 5.211

Molybdenum was used as cathode for the hydrogen production from acid solutions. The effect of acid concentration, cathodic potential and temperature on the rate of hydrogen evolution was investigated and discussed.

The results were compared with those of platinum. Open circuit potential measurements, polarization technique and EIS were used. Impedance measurements under open circuit conditions and under cathodic polarization were carried out and the data were fitted to theoretical data according to a proposed electronic circuit model.

The results reveal that molybdenum is a good candidate for hydrogen production for long time. The rate of hydrogen evolution is constant and no electrode deterioration was noticed. The process is economic and convenient and does not need any special treatments.

Keywords: Molybdenum; Eis; Hydrogen overpotential; Polarization; Sulfuric acid.

44. Impurities Contributing to Catalysis: Enhanced Electro-Oxidation of Formic Acid At PT/GC Electrodes in the Presence of Vinyl Acetate

Mohamed Saada El-Deab, Ahmad M. Mohammad, Gumaa A. El-Nagar and Bahgat E. El-Anadouli

The Journal of Physical Chemistry C, 118: 22457-22464 (2014) IF: 4.835

Here we demonstrate a remarkable enhancement of the direct formic acid electro-oxidation (FAO) to CO_2 (dehydrogenation pathway, Ipd) at Pt nanoparticle-modified GC (nano-Pt/GC) electrodes, in the presence of minute amount (~ppm) of vinyl acetate (VA), while suppressing the dehydration pathway (producing the poisoning intermediate CO, I_p^{ind}).

An excellent electrocatalytic activity of the nano-Pt/GC catalyst for FAO was found in the presence of VA (a possible contaminant) as revealed by comparing the intensity of the corresponding two oxidation peaks I_p^{d} and I_p^{ind} observed respectively at 0.25 and 0.75 V vs Ag/AgCl/KCl(sat.). The degree of enhancement of I_p^{d} depends on the surface coverage (0) of VA at Pt nanoparticles. VA is believed to adsorb and consequently interrupt the surface contiguity of the Pt active sites favorable for CO poisoning. XPS measurements revealed a change in the electronic properties of Pt in the presence of VA in such a way that favors the charge transfer during the FAO and/or impedes/weakens the adsorption of the poisoning CO. Interestingly, VA (in ppm concentration) improves the electrode's stability during FAO and also its catalytic tolerance against poisoning with chloride ions.

Several indices were developed to measure the catalytic activity of the electrode in the absence and presence of VA, and several techniques as FESEM, XRD, EDX, and XPS were employed in the revelation of the electrode's morphology, crystal structure, composition, and binding energy.

Keywords: Impurities; Fuel cells; Electrocatalysis; Nanomaterials; Formic acid.

45. Dark Conglomerate Phases of Azobenzene **Derived Bent-Core Mesogens – Relationships** Between the Molecular Structure and Mirror Symmetry Breaking in Soft Matter

Mohamed Alaasar, Marko Prehm, Marcel Brautzscha and Carsten Tschierske

Soft Matter, 10: 7285-7296 (2014) IF: 4.151

New 4-bromoresorcinol based bent-core molecules with peripheral fluoro substituted azobenzene wings have been synthesized and the liquid crystalline self-assembly was investigated by differential scanning calorimetry (DSC), optical polarizing microscopy (POM), electro-optic studies and X-ray diffraction (XRD). A new type of optically isotropic mesophase composed of chiral domains with opposite handedness (dark conglomerate phases, DC phases) is observed, which for some homologues with medium alkyl chain length is stable down to ambient temperature. It is proposed that these DC phases are formed by helical twisted nano-domains of limited size and composed of the crystallized aromatic cores which are separated by the disordered alkyl chains. This structure is distinct from the previously known soft helical nano-filament phases (HNF phases, B4 phases) formed by extended crystalline nano-filaments and also distinct from the fluid sponge phases composed of deformed fluid layers. Comparison with related bent-core molecules having H, F, Cl, I, CH3 and CN groups in the 4-position at the resorcinol core, either with or without additional peripheral fluorines, provided information about the effects of these substituents on the tendency to form DC phases. Based on these relationships and by comparison with the minimum energy conformations obtained by DFT calculations a hypothesis is provided for the formation of DC phases depending on the molecular structure.

Keywords: Bent-core liquid crystals (Bclcs); Azobenzene; 4-Bromoresorcinol; Dark congolomerate phases.

46. Development of Polar Order and Tilt in Lamellar Liquid Crystalline Phases of A Bent-Core Mesogen

Mohamed Ahmed Alsaved Alaasar, Marko Prehm, Marco Poppe, Mamatha Nagaraj, Jagdish K. Vij and Carsten Tschierske

Soft Matter, 10: 5003-5016 (2014) IF: 4.151

A new bent-core mesogen combining a 4-cyanoresorcinol unit with two terephthalate based rod-like wings and terminated by two long alkyl chains, was synthesized and investigated by DSC, XRD, optical, electrooptical and dielectric methods. A series of liquid crystalline phases in the unique sequence SmA-SmA(P) - $SmCP_{R}-(M_{1}/SmCP_{a}) - SmC_{s}P_{A} - SmC'_{a}P_{A} - SmC_{a}P_{A}$, mainly distinguished by the degree and mode of correlation of tilt and polar order, was observed. The development of polar order is associated with the emergence of a small tilt ($<10^\circ$). With decreasing temperature the tilt changes from random (SmA) via synclinic to anticlinic, while the coherence length of the polar domains grows. This small tilt gives rise to an only weak layer coupling which is in competition with the polar coupling and this leads to new modes of self assembly in lamellar phases of bentcore mesogens, among them the $SmCP_R$ and the $SmCP_a$ phases. The SmCP_R phase is an only slightly tilted biaxial smectic phase with randomized polar order and the SmCP_a phase is a slightly tilted and antiferroelectric switching, but uniaxial smectic phase. For this phase a regular change of the in-plane polarization vector

between the layers by an angle between $>0^{\circ}$ and $<90^{\circ}$ is proposed.

Keywords: Bent-core liquid crystals (BCLCS); 4-Cyanoresorcinol; Terephthalate.

47. Crystal Structure, DFT, Spectroscopic and **Biological Activity Evaluation of Analgin Complexes** with CO(Ii), Ni(Ii) and Cu(Ii)

Ahmed M. Mansour

Dalton Transactions, 43: 15950-15957 (2014) IF: 4.097

Reaction of analgin (NaL) with Co(II), Ni(II) and Cu(II) salts in ethanol affords complexes of the type [ML2], which were characterized by elemental analysis, FT IR , UV-Vis., EPR, TG / DTA, magnetic susceptibility and conductance measurements. The copper(II) complex crystallizes in the orthorhombic Pbca space group. Analgin behaves as a mono-negatively tridentate ligand via pyrazolone O, sulfonate O and tertiary amino group. The interaction of the tertiary nitrogen with Mn+ ions is the main factor, which determines the stability of complexes as revealed from natural bond orbital analysis data, where the binding energy decreases with an increase in the bond length of M-N bond. Timedependent density functional theory calculations were applied in order to realize the electronic structures and to explain the related experimental observations. The anti-bacterial activity was studied on Staphylococcus aureus and Escherichia coli. Coordination of analgin to Ni(II) and Cu(II) leads to a significant increase in its antibacterial activity compared with the Co(II) complex.

Keywords: Dipyrone; Crystal structure; Nbo; Biological activity.

48. Nano-Perovskite Carbon Paste Composite **Electrode for the Simultaneous Determination of Dopamine, Ascorbic Acid and Uric Acid**

Nada F. Atta, Shimaa M. Ali, Ekram H. El-Ads and A. Galal

Electrochimica Acta, 128: 16-24 (2014) IF: 4.086

A perovskite, SrPdO3, of the type ABO3 was used in the form of a composite with carbon paste as an electrode (CpE/SrPdO3) for the electrochemical sensing of dopamine (DA) in biological fluids. The CpE/SrPdO3 electrode showed a unique long term stability and low detection limit for (DA) determination. The structural characteristics of the modifier (SrPdO3) that were prepared by a green method revealed a primary orthorhombic perovskite phase of SrPdO3 and a secondary phase of SrPd3O4. The electrocatalytic activity of the CpE/SrPdO3 electrode toward DA oxidation is relatively higher when compared to electrodeposited palladium nanoparticles modified CpE (CpE/Pd) with equivalent loading of Pd4+ salt . The prepared perovskite was characterized by XRD and SEM . Electrochemical characterization of CpE / SrPdO3 was done using cyclic voltammetry, differential pulse voltammetry and electrochemical impedance spectroscopy. The redox behavior of DA follows a quasi reversible mechanism and two linear ranges of 7-70 mol L-1 and 90-160 mol L-1 with low detection limits of 9.3 nmol L-1 and 25 nmol L-1, respectively, and good correlation coefficient of 0.9981 could be determined. The electrocatalytic behavior is explained in terms of an oxygen-surface interaction between the oxygen atoms of the hydroxyl groups and the transition element in the perovskite. The protocol of DA sensing using this method was simple, sensitive and successfully applied for direct determination of DA in human urine samples with excellent

recovery results. CpE / SrPdO3 showed also high reproducibility, enhanced sensitivity, selectivity and anti-interference ability. **Keywords:** Sensor; Nano-perovskites; Palladium; Based; Electrodes; Carbon paste electrode; Dopamine.

49. Synergistic Effects of Alloying Elements in Cu-Ternary Alloys Inchloride Solutions

W.A. Badawy, M.M. El-Rabiei and H. Nady

Electrochimica Acta, 120: 39-45 (2014) IF: 4.086

Copper alloys are important materials for many industrial applications. The addition of Al, Ni and Zn to Cueither as single alloying element in binary alloys like brasses and bronzes or the well-known Cu-Ni alloysor as couples in ternary alloys leads to specific properties important for different applications. In thispaper we are interested to investigate the effect of the presence two alloying elements with copper andto investigate the electrochemical behavior of these alloys in chloride containing solutions. It is importantto compare the corrosion behavior and the stability of each alloy in these media. For this reason we haveused Cu-10Al-10Ni, Cu-10Al-10Zn and Cu-10Ni-10Zn, in which the ratio of Cu is kept constant and the twoalloying elements of equal percentage. All investigations were carried out in stagnant naturally aeratedneutral 3.5 mass to volume % NaCl solutions . Different electrochemical techniques and electro chemicalimpe dance spectroscopy, EIS , were used. It was found that the Cu-10Al-10Zn alloy is more stable than both the Cu-10Al-10Ni and Cu-10Al-10Zn alloys in this chloride solution. EIS measurements have shown that athicker and more resistive passive film is formed on the Cu-10Ni-10Zn alloy surface. The formation of suchpassive film was discussed and the different alloy surfaces examined by scanning electron microscopyand subjected to EDAX analysis. The surface analysis has shown the participation of the different alloying elements in the passive film according to the alloy constituents and also that the chloride ions are deeplypenetrated in the alloy.

Keywords: Copper alloys; EIS; Passive films; Polarization.

50. Towards the Epitaxial Growth of Silver on Germanium by Galvanic Displacement

Sayed Yossef Sayed

Crystengcomm, 16: 10028-10033 (2014) IF: 3.858

This work focuses on the synthesis and interfacial characterization of silver films grown on Ge(111) surfaces. The synthetic approach uses galvanic displacement, a type of electroless deposition that takes place in an efficient manner under aqueous and room temperature conditions. The case of silver-on-germanium has been widely studied and used for several applications, and yet a number of important fundamental questions remain in order to address the nature of these interfaces. Interfacial characterization reveals no evidence for the intermetallic nature of Ag-Ge interfaces and suggests the diffusion of silver into the germanium substrate. The texture nature of the grown silver films was investigated via pole figure X-ray diffraction (XRD) and cross-section nano-beam-diffraction transmission electron microscope (TEM) analyses, indicating the epitaxial growth of silver films on germanium lattices by galvanic displacement at ambient conditions.

Keywords: Germanium; Galvanic displacement; Silver.

51. Determination of Mn(II) Ion by A Modified Carbon Paste Electrodebased on Multi-Walled Carbon Nanotubes (MWCNTS) in Differentwater Samples

Tamer Awad Ali and Gehad G. Mohamed

Sensors and Actuators B, 202: 699-707 (2014) IF: 3.84

For the first time a novel derivatized multi-walled carbon nanotubes-based on Mn (II) carbon paste electrodes is reported. At optimum values of variable conditions , the proposed electrodes responded toward Mn (II) ion linearly in the range of $7.8 \times 10-7-1.0 \times 10-1$ and $2.7 \times 10-8-1.0 \times 10-1$ mol L-1 with slope of 27.72±0.8 and 30.04±0.5 mV decade-1of Mn(II) ion concentration and detection limit of 7.8×10 -7 and 2.7×10 -8 mol L-1for KTpClPB-CPE (electrode (IV)) and KTpClPB/MWCNTs-CPE (electrode (VIII)), respec-tively. The electrodes response is independent of pH in the range of 4-8 and 3-9, with a fast response time (8 and 5 s) at 25C for electrode (IV) and electrode (VIII), respectively. Moreover, the electrodes also showed high selectivity and long life time (more than 3 and 4 months) for electrode (IV) and electrode(VIII), respectively. The electrodes showed good selectivity for Mn(II) ion toward wide variety of metalions. The proposed sensors were successfully applied for the determination of Mn(II) ion in different realand environmental samples and as indicator electrodes. The results obtained compared well with those obtained using atomic absorption spectrometry.

Keywords: Multi-walled carbon nanotubes; Manganese; Water samples; Carbon paste sensors.

52. Thiol Surfactant Assembled on Gold Nanoparticles ion Exchanger Forscreen-Printed Electrode Fabrication. Potentiometric Determination of Ce (III) in Environmental Polluted Samples.

Tamer Awad Ali, Gehad G. Mohamed, E.M.S. Azzam and Ali A. Abd-elaal

Sensors and Actuators B, 191: 192-203 (2014) IF: 3.84

A new modified screen-printed electrode (SPE) based on a recently synthesized ligand 1,4-bis-(8-mercaptooctyloxy)-benzene (I), self-assembled to gold nanoparticles (GNP) as suitable carrier for Ce (III)ion determination with potentiometric method is described. The proposed potentiometric method wasbased on the fabrication of modified gold nanoparticles-screen-printed (GNPs-SPE) and modified screen-printed (MSPE) sensors. These potentiometric sensors respond to Ce(III) ions in the wide linear range of $3.25 \times 10\text{-}10$ to $1.0 \times 10\text{-}1$ and $1.0 \times 10\text{-}7$ to $1.0 \times 10\text{-}2$ mol L-1with Nernstian slopes of 19.95 \pm 0.97and 17.04 \pm 1.02 mV decade-1 for GNPs-SPE and MSPE, respectively. The detection limit of $3.25 \times 10\text{--}10$ and $9.5 \times 10\text{--}8$ mol L-1 was obtained at pH range 2.8-8.5 and 3.5-7.5 for GNPs-SPE and MSPE, respectively. It has a fast response with response time of about 4 and 7 s, and can be used for at least 7 and5 months without any considerable divergences in the potentials for GNPs-SPE and MSPE, respectively.Such abilities promote new opportunities for determining Ce(III) ions in a wide range of real samples. Theresults obtained compared well with those obtained using inductively coupled plasma atomic absorptionspectrometry (ICP-AES).

Keywords: Gold nanoparticles screen; Printed sensorsscreenprinted sensorscerium (III) Ionpotentiometric determination .

53. Bio-Inspired Green Surface Functionalization of Pmma for Multifunctional Capacitors

Vijay Kumar Thakur, Danny Vennerberg, Samy A. Madbouly and Michael R. Kessler

Rsc Advances, 4: 6677-6684 (2014) IF: 3.708

Poly (methyl methacrylate) (PMMA)-based dielectric materials are of prime interest for many electronic and power devices. However, the low dielectric constant and hydrophobic nature of PMMA limit its success in many applications. This work presents an environmentally friendly approach to surface-functionalize PMMA, exploring the use of dopamine (DOPA) , to develop multifunctional polymers with enhanced dielectric properties. The reaction of dopamine with plasma pre-activated PMMA was carried out in an aqueous medium without using any toxic chemicals. The functionalized PMMA films exhibited enhanced dielectric properties compared to pristine PMMA films. As an example, below 100 Hz, the dielectric constant of functionalized PMMA films increased by 70% compared to pristine PMMA films. Interestingly, functionalization changed the storage modulus and the Tg of PMMA. The enhanced dielectric properties of the functionalized PMMA films may originate from the excellent intrinsic properties of DOPA, which was effectively functionalized on the surface of PMMA.

Keywords: Poly(methyl methacrylate); Dielectric materials; Surface functionalization; Multifunctional capacitors.

54. Novel Bio-Based Composites of Polyhydroxy alkanoate (Pha)/Distillers Dried Grains with Solubles (Ddgs)

Hong Lu, Samy A. Madbouly, James A. Schrader, Micheal R. Kessler, David Grewell and William R. Graves

Rsc Advances, 4: 39802-39808 (2014) IF: 3.708

The PHA/DDGS composite is a promising low-cost, bio-based material for use in crop containers for the horticulture industry. This research effort has quantified the effects on mechanical and thermal properties of adding different amounts of DDGS to a PHA matrix. PHA and DDGS were mixed using a twin-screw microcompounder. Fracture surface morphology and thermal and rheological properties were evaluated using scanning electron microscopy (SEM), thermogravimetric analysis (TGA), dynamic mechanical analysis (DMA), differential scanning calorimetry (DSC), and rheometer measurements. The adhesion between PHA and DDGS decreased with an increase in DDGS content from 10% to 30%. Melting temperature and crystalline temperature decreased with the increasing content of DDGS filler, indicating that PHA and DDGS interacted favorably. The complex viscosity and elastic shear modulus of the blends were increased by the increasing DDGS content. The storage modulus and glass transition temperature showed little change across the different ratios of DDGS, indicating that DDGS should be a useful filler that can decrease the cost of PHA-based materials significantly while preserving the dynamic mechanical properties and glass transition temperature.

Keywords: Bio-Based materials; Morphology; Crystallization; X-Ray; Degradation.

55. Pmma-G-SOY as a Sustainable Novel Dielectric Material

Vijay Kumar Thakur, Mahendra Thunga, Samy A. Madbouly and Michael R. Kessler

Rsc Advances, 4: 18240-18249 (2014) IF: 3.708

Soy protein (and associated carbohydrate) (SOY) is graft copolymerized with poly(methyl methacrylate) (PMMA) to synthesize novel low cost dielectric materials for multifunctional applications. Graft copolymerization of methyl methacrylate onto pre-activated SOY is carried out using a simple reflux method to form covalently bonded PMMA-g-SOY copolymers. The resulting PMMA-g-SOY is processed into films without employing any toxic chemical solvents. The PMMA-g-SOY films exhibited enhanced storage modulus and a low loss tangent together with promising dielectric properties compared to the pristine PMMA polymer. This strategy may open a new avenue to efficiently use green co-products for multifunctional applications in traditional and structural capacitors.

Keywords: Soy protein; Copolymerization; Sustainable materials; Structural capacitors.

56. Semi-Interpenetrating Polymer Networks Prepared from in Situ Cationic Polymerization of Bio-Based Tung Oil with Biodegradable Polycaprolactone

Samy A. Madbouly, Kunwei Liu, Ying Xiaa and Michael R. Kessler

Rsc advances, 4: 6710-6718 (2014) IF: 3.708

In situ cationic polymerization of bio-based tung oil in the presence of poly (3 - caprolactone) , a crystallizable, biodegradable, and biocompatible polymer, was performed to produce novel semi-interpenetrating polymer networks (IPNs) . The macromolecular structure and properties of these IPNs were investigated as a function of composition using small amplitude oscillatory shear flow rheology , FT-IR spectroscopy, dynamic mechanical analysis (DMA), differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and scanning electron microscopy (SEM). This versatile and low-cost strategy successfully produced bio - polymer blends with various degrees of miscibility, morphology, and crystallization behavior. The carbon-carbon double bonds in tung oil were consumed quickly after adding the cationic initiator to form a three-dimensional (3D) crosslinked network in all measured samples as confirmed by FT-IR. A complete miscible structure with a single glass transition temperature and one-phase morphology was observed for a tung oil/PCL 90/10 blend. On the other hand, a two-phase structure exhibiting a nanoscale morphology of the dispersed minor phase as small as 100 nm was observed for blends with 20 and 30 wt% PCL. For a 50 wt% PCL blend, an interconnected, co-continuous microstructure of the two phases was also detected. DMA and DSC measurements confirmed the miscibility (or partial miscibility) of the blends by following the changes in the glass transitions of phases as a function of the composition. The value of the elastic modulus (E0) in the glassy state as obtained from the DMA measurements was strongly dependent on the composition, reaching a maximum at 20 wt% PCL.

Keywords: Tung oil; Polycaprolactone; Polymer blends; Cationic polymerization; Curing kinetics.

57. Degradation Behaviour of AZ80E Magnesium Alloy Exposed to Phosphate Buffer Saline Medium

F. El-Taib Heakal, O.S. Shehata and N.S. Tantawy

Corrosion Science, 86: 285-294 (2014) IF: 3.686

Corrosion behaviour of AZ80E alloy in comparison with pure Mg was investigated in phosphate buffer saline (PBS) solution in order to assess its bioactivity. Open circuit potential and EIS results reveal that both samples exhibit self-passivation with time. The higher corrosion resistance of the alloy is discussed from the perspective of its microstructure. Anodic oxidation for the alloy surface in borate buffer solution was also attempted potentiostatically to modify its corrosion behaviour. Anodised specimen at controlled potential of 1.0 V(SCE) can improve the durability of the alloy in PBS medium. The results were further confirmed by SEM and EDX analyses.

Keywords: A. Alloy; A. magnesium; B. is; B. sem; C. Hydrogen overvoltage; C. passivity.

58. Rapid and Simple Electrochemical Detection of Morphine on Graphene–Palladium-Hybrid-Modified Glassy Carbon Electrode

Nada F. Atta, Hagar K. Hassan and Ahmed Galal

Analytical and Bioanalytical Chemistry, 406: 6933-6942 (2014) IF: 3.578

A hybrid of reduced graphene oxide-palladium (RGO-Pd) nanoto submicron-scale particles was simultaneously chemically prepared using microwave irradiation . The electrochemical investigation of the resulting hybrid was achieved using cyclic voltammetry and differential pulse voltammetry. RGO-Pd had a higher current response than unmodified RGO toward the oxidation of morphine. Several factors that can affect the electrochemical response were studied, including accumulation time and potential, Pd loading, scan rate , and pH of electrolyte. At the optimum conditions, the concentration of morphine was determined using differential pulse voltammetry in a linear range from 0.34 to 12 µmol L-1 and from 14 to 100 µmol L-1, with detection limits of 12.95 nmol L-1 for the first range. The electrode had high sensitivity toward morphine oxidation in the presence of dopamine (DA) and of the interference compounds ascorbic acid (AA) and uric acid (UA). Electrochemical determination of morphine in a spiked urine sample was performed, and a low detection limit was obtained. Validation conditions including reproducibility, sensitivity, and recovery were evaluated successfully in the determination of morphine in diluted human urine.

Keywords: Electrochemical sensor; Reduced graphene oxide; Palladiumnanoparticles; Morphine.

59. Diphenylpyrroles: Novel P53 Activators

Gomha SM, Eldebss TM, Abdulla MM and Mayhoub AS.

European Journal of Medicinal Chemistry, 82: 472-479 (2014) IF: 3.432

Cellular tumor antigen p53 is crucial for cancer prevention via different mechanisms. E3 ubiquitinprotein ligase HDM2 binds to p53, blocks its ability to activate transcription, and therefore acts as a negative regulator. Blocking p53 binding site on HDM2 was believed to generate efficient antitumor agents. So far, limited

scaffolds were reported with HDM2 antagonist activity. Herein, diphenylpyrroles were introduced and evaluated as a novel scaffold in the field of p53 activators. An efficient synthesis of novel 3-heteroaryl-pyrroles is described via reactions of E-3-(dimethylamino)-1-(2-methyl-4,5- diphenyl-1H-pyrrol-3-yl)prop-2-en-1-one or E-1-(2-methyl-4,5-diphenyl-1H-pyrrol-3-yl)-3-morpholinoprop-2-en-1-one with hydrazine hydrate, phenyl hydrazine, hydroxylamine, various heterocyclic amines and active methylene compounds.

Keywords: Benzimidazopyrimidine; Pyrazolopyrimidine; Pyrroles; Triazolopyrimidine; p53-specific ubiquitin E3 ligase HDM2.

60. How Soil Organic Matter Composition Controls Hexachlorobenzene– Soil-Interactions: Adsorption Isotherms and Quantum Chemical Modeling

Ahmed AA, Kühn O, Aziz SG, Hilal RH and Leinweber P.

Science of the Total Environment, 476–477: 98-106 (2014) IF: 3.163

Hazardous persistent organic pollutants (POPs) interact in soil with the soil organic matter (SOM) but this interaction is insufficiently understood at the molecular level.We investigated the adsorption of hexachlorobenzene (HCB) on soil samples with systematically modified SOM. These samples included the original soil, the soil modified by adding a hotwater extract (HWE) fraction (soil + 3HWE and soil + 6HWE), and the pyrolyzed soil. The SOMcontents increased in the order pyrolyzed soil b original soil b soil + 3HWE b soil + 6HWE. For the latter three samples this order was also valid for the HCB adsorption. The pyrolyzed soil adsorbed more HCB than the other samples at lowinitial concentrations, but at higher concentrations the HCB adsorption becameweaker than in the samples with HWE addition. This adsorption combined with the differences in the chemical composition between the soil samples suggested that alkylated aromatic, phenol, and lignin monomer compounds contributed most to the HCB adsorption. To obtain a molecular level understanding, a test set has been developed on the basis of elemental analysis which comprises 32 representative soil constituents. The calculated binding energy for HCB with each representative system shows that HCB binds to SOM stronger than to soil minerals. For SOM, HCB binds to alkylated aromatic, phenols, lignin monomers, and hydrophobic aliphatic compounds stronger than to polar aliphatic compounds confirming the above adsorption isotherms. Moreover, quantitative structure-activity relationship (QSAR) of the binding energy with independent physical properties of the test set.

Keywords: Soil organic matter (SOM); Persistent organic pollutants; Hexachlorobenzene; Adsorption som modeling quantum chemical; Calculations QSAR.

61. Preparation, Characterization and Antibacterial Activity ofchitosan-G-PolyAcrylonitrile/Silver Nanocomposite

A.A. Hebeish, M.A. Ramadan, A.S. Montaser and Ahmed M. Farag

International Journal of Biological Macromolecules, 68: 178-184 (2014) IF: 3.096

Chitosan-grafted-poly acrylonitrile silver nanocomposites (Cs-g-PAN/Ag) were prepared via in-situchemical reduction of Ag ions in graft copolymerization of acrylonitrile onto chitosan. Graft copolymer - ization process was provided by FTIR and gravimetric methods. UV spectra and TEM images show silvernanoparticles with average 15 – 20 nm dispersed homogeneously in CS- g – PAN / Ag nanocomposite - ray and TGA evident the change in crystallography and thermal stability in consequence of presence Ag nanopar-ticles. Cs-g-PAN / Ag nanocomposite showed excellent antimicrobial performance towards bacteria suchas Escherichia coli and Staphylococcus aureus.

Keywords: Nanocomposite; Chitosan; Poly acrylonitrile; Silver nanoparticles; Antibacterial activity.

62. Synthesis and Characterization of Antimicrobial Crosslinked Carboxymethyl Chitosan Nanoparticles Loaded with Silver

Riham R. Mohamed and Magdy W. Sabaa

International Journal of Biological Macromolecules, 69: 95-99 (2014) IF: 3.096

Carboxymethyl chitosan (CMCh)-silver nanoparticle (Ag) hydrogels with high antibacterial activity against three Gram + ve bacteria (Staphylococcus aureus , Bacillus subtilis and Streptococcus faecalis), three Gram - ve bacteria (Escherichia coli, Pseudomonas aeruginosa and Neisseria gonorrhoeae) and a Candida albicans fungus were prepared. The in situ preparation reaction involved crosslinking of CMCh with epichlorohydrin in alkaline medium containing silver nitrate to yield silver nanoparticles loaded CMCh hydrogel giving pale brown or darker hydrogels when the silver content increases . FTIR spectroscopy, SEM and TEM were done for the prepared hydrogels.Silver nanoparticles hydrogels exhibited higher antimicrobial activity than virgin CMCh . TEM analysis showed the small size of the prepared hydrogels to be in the range of 9-16nm in size. Keywords: Hydrogels; Silver; Carboxymethyl chitosan; Antimicrobial activity.

63. Synthesis and Characterization of Some Acyl Thiourea Derivatives of Chitosan and Their Biocidal Activities

Said S. Elkholy, Hend A. Salem, Mohamed Eweis and Maher Z. Elsabee

International Journal of Biological Macromolecules, 70: 199-207 (2014) IF: 3.096

Three acyl derivatives of chitosan (CS) with different side chains were synthesized and their structures were characterized. Their swelling behavior was investigated. The antifungal behavior of these chitosan derivatives was investigated in vitro on the mycelial growth, sporulation and germination of conidia or sclerotia of the sugar-beet pathogens, Rhizoctonia solani K"uhn (AG2-2) and Sclerotium rolfsii Sacc. All the prepared derivatives had a significant inhibiting effect on the different stages of development on the germination of conidia or sclerotia of all the investigated fungi. In the absence of chitosan and its derivative, R. solani exhibited the fastest growth of the fungi studied. **Keywords:** Chitosan thiourea; Characterization; Swelling behavior; Antifungal activity.

64. Synthesis and Characterization of Some Novel Antimicrobial Thiosemicarbazone O-Carboxymethyl Chitosan Derivatives

Nadia A. Mohamed, Riham R. Mohamed and Rania S. Seoudi

International Journal of Biological Macromolecules, 63: 163-169 (2014) IF: 3.096

Three novel thiosemicarbazone O - carboxymethyl chitosan derivatives were obtained via a condensation reaction of thiosemicarbazide O - carboxymethyl chitosan with o hydroxybenzaldehyde , p - methoxybenzaldehyde , and p chlorobenzaldehyde respectively . Their structures were characterized by elemental analysis, FTIR, (13)C NMR and Xray diffraction . The antimicrobial behaviors of the prepared derivatives against three types of bacteria Staphylococcus aureus (S. aureus, RCMBA 2004), Bacillus subtilis (B. subtilis, RCMBA 6005), and Escherichia coli (E. Coli, RCMBA 5003) and three crops-threatening pathogenic fungi Aspergillus fumigatus (A. fumigatus, RCMBA 06002), Geotrichum candidum (G. candidum, RCMB 05098), and Candida albicans (C. albicans , RCMB 05035) were investigated . The results indicated that the antibacterial and antifungal activities of the investigated derivatives are much higher than those of the parent O-carboxymethyl chitosan. They were more potent in case of Gram-positive bacteria than Gram-negative bacteria. The presence of electron withdrawing chlorine atom on the aryl moiety of the aldehyde portion improved greatly antimicrobial activity to be nearly equivalent to the used standard drugs. **Keywords:** Thiosemicarbazone O-carboxymethyl chitosan;

Synthesis; Characterization; Antibacterial activity; Antifungal activity.

65. Inhibitory Action of Quaternary Ammonium Bromide on Mild Steel and Synergistic Effect with other Halide Ions in 0.5 M H₂SO₄

A. Khamis , Mahmoud M. Saleh, Mohamed I. Awad, B.E. El-Anadouli

Journal of Advanced Research, 5: 637-646 (2014) IF: 3

The corrosion inhibition of mild steel in 0.5M H2SO4 solution has been investigated using electrochemical methods, X-ray diffraction (XRD) and scanning electron microscope (SEM). The adsorption and inhibition action of acid corrosion of mild steel using cetyltrimethylammonium bromide (CTABr) and different halides (NaCl, NaBr and NaI) has shown synergetic effect. The results showed that the protection efficiency (P%) has high values at considerable high concentration of CTABr. However, in the presence of the different halides, the P increases dramatically at low concentration of CTABr. Physisorption was proposed from the the values of G0 ads. The synergism parameter is found to be greater than unity indicating that the enhanced P% caused by the addition of the halides to the CTABr is due to a co-operative adsorption of both species. Corrosion products phases and surface morphology were studied using X-ray diffraction (XRD) and scanning electron microscopy (SEM), respectively.

Keywords: Corrosion;Surfactant; Polarization; SEM; XRD.

66. Chalcones Incorporated Pyrazole Ring Inhibit Proliferation, Cell Cycle Progression, Angiogenesis and Induce Apoptosis of MCF7 Cell Line

Magda F. Mohamed, Mervat S. Mohamed, Mohamed M. Fathi, Samia A. Shouman and Ismail Abdelshafy Abdelhamid

Anti-Cancer Agents in Medicinal Chemistry, 14: 1282-1292 (2014) IF: 2.939

A Series of chalcone derivatives containing pyrazole ring was prepared and their cytotoxicity against different human cell lines, including breast (MCF-7), colon (HCT-116) liver (HEPG2) cell lines, as well as normal melanocyte HFB4 was evaluated. Two of these chalcone derivatives with different IC50 and chemical configuration were chosen for molecular studies in detail with MCF-7 cells. Our data indicated that the two compounds prohibit proliferation, angiogenesis, cell cycle progression and induce apoptosis of breast cancer cells. This inhibition is mediated by up regulation of tumor suppressor p53 associated with arrest in S-G2 / M of cell cycle . This work provides a confirmation of antitumor activity of the novel chalcones and assists the development of new agents for cancer treatment.

Keywords: Angiogenesis; Apoptosis; Breast carcinoma cell line Mcf-7; Caspases; Cell cycle arrest; Chalcones; P53.

67. Cathodic Hydrogen Evolution in Acidic Solutions

W.A. Badawy , H. Nady and M. Negem

I N T E Rna T I Onal Journal oF Hydrogen Energy, 39: 10824-10832 (2014) IF: 2.93

Nano-crystalline Ni and Nie Co electrodes were prepared by electrodeposition on copper substrates. The obtained materials were characterized morphologically and chemically by XRD and scanning electron microscopy, SEM, coupled with EDX analysis. The incorporation of Co into the Ni matrix causes surface modification, which catalyzes the hydrogen evolution reaction, HER. The electro-catalytic performance of the prepared electrode layers was studied by means of polarization techniques and electrochemical impedance spectroscopy, EIS, in acidic solutions. The Results reveal a decrease in the hydrogen overpotential by increasing the Co content up to z50 at% in the deposited cathode layer. The Nyquist impedance plots of the different investigated materials at different potentials in the hydrogen evolution region showed a single semicircle, which means that a single time constant is controlling the HER. NieCo deposits with z50 at% Co contents show the highest rate of hydrogen evolution as a consequence of the synergetic combination of Ni and Co. The increase of the Co content more than z50 at% was accompanied by a decrease in the rate of HER. The low hydrogen overpotential and high hydrogen adsorption on the Ni-50 at% Co is attributed to the synergetic effects of Co and Ni together. Keywords: Nano - Crystalline electrodes; Nieco deposit; Hydrogen evolution; Eis; Polarization.

68. Electrocatalytic Activity of Nanostructured Ni and Pd–Ni on Vulcan XC-72R Carbon Black for Methanol Oxidation in Alkaline Medium

R.S. Amin, R.M. Abdel Hameed, K.M. El-Khatib and M. Elsayed Youssef

International Journal of Hydrogen Energy, 39: 2026-2041 (2014) IF: 2.93 Ni and PdeNi nanoparticles were chemically deposited on Vulcan XC-72R carbon black by impregnation method using NaBH4 as a reducing agent. The prepared electrocatalysts were characterized by X-ray diffraction (XRD), transmission electron microscopy (TEM) and energy- dispersive X-ray spectroscopy (EDX). The electrocatalytic activity of Ni/C and Pd eNi/C electrocatalysts towards methanol oxidation in 0.5 M KOH solution was examined using cyclic voltammetry and chronoamperometry. Two methanol oxidation peaks were observed on the PdeNi / C at 0 and 860 mV. Their current density values are higher than those at Pd/C and Ni / C electrocatalysts by 1.92 and 1.68 times, respectively. The catalytic rate constant of methanol oxidation reaction at Ni / C and PdeNi/C electrocatalysts in (0.2 M MeOH 0.5 M KOH) solution was estimated using double-step chronoamperometry as 5.64 -103 and 6.25 - 103 cm3 mol-1 s-1, respectively. PdeNi / C is more stable than Pd / C and Ni / C electrocatalysts . Therefore , PdeNi / C is a suitable as a less expensive electrocatalyst for methanol oxidation in alkaline medium.

Keywords: Methanol; Alkaline medium; Nickel; Palladium; Carbon.

69. Electrocatalytic Oxidation of Methanol at Nanoparticle-Based MnOx / NiOx / Pt Ternary Catalysts: Optimization of Loading Level and Order of Deposition

Ahmad M. Mohammad, Ghada H. El-Nowihy, Mostafa M. H. Khalil and Mohamed S. El-Deab

Journal of the Electrochemical Society, 161 (2014) IF: 2.859

A nanoparticle-based ternary catalyst composed of Pt (nano-Pt), nickel oxide (nano-NiOx) and manganese oxide (nano-MnOx), all were assembled on a glassy carbon (GC) substrate, was developed for the direct methanol electro-oxidation reaction (MOR) in an alkaline medium. The electrocatalytic activity of the modified electrodes toward MOR depended on the loading level of nano-Pt, nano-NiOx and nano-MnOx onto the GC electrode. Moreover, the order of deposition of nano-NiOx and nano-MnOx has critically influenced the catalytic activity and stability of MOR. The highest electrocatalytic activity was obtained at the MnOx/NiOx/Pt/GC electrode with nano-Pt directly deposited onto the GC surface followed by nano-NiOx and nano-MnOx sequentially. The catalytic activity of MOR at this electrode was about five times higher than that obtained at Pt/GC electrode. The stability and the effect of the operating pH on the catalytic activity of the proposed catalyst were investigated. Several techniques such as the cyclic voltammetry, field-emission scanning electron microscopy and energy dispersive X-ray spectroscopy (EDS) were used to address the catalytic activity of the catalyst and to reveal its surface morphology and bulk composition.

Keywords: Nanomaterials; Methanol oxidation; Electrocatalysis; Fuel cells.

70. Heterocyclic Ring Extension of Androstenedione: Synthesis and cytotoxicity of Fused Pyran, Pyrimidine and Thiazole Derivatives

Rafat M.Mohareb, Nermeen S.Abbas and Mahmoud A. Abdelaziz

Steroids, 86: 45-55 (2014) IF: 2.716

The reaction of androstenedione with either malononitrile or ethyl cyanoacetate and aromatic aldehydes 2a-c gave the pyran derivatives 4a-f, respectively. On the other hand, the reaction of androstenedione with thiourea and the aromatic aldehydes 2a-c gave the pyrimidine derivatives 6a-c, respectively. Compound 6b reacted with 2-bromo-1-arylethanone derivatives 7a-d to give the indeno[2,1-e]thiazole derivatives 8a-d. Some of the produced compounds were used for further heterocyclization reactions.

The cytotoxicity of the newly obtained products was evaluated against some cancer cell lines and a normal cell line.

Keywords: Androstenedione; Pyran; Pyrimidine; Thieno [2,3-B] Pyridine; Ctotoxocity.

71. Heterocyclic Ring Extension of Estrone: Synthesis and Cytotoxicity of Fused Pyran, Pyrimidine and Thiazole Derivatives

Rafat M. Mohareb, Fatima Al-Omran and Rasha A. Azzam

Steroids, 84: 46-56 (2014) IF: 2.716

The one pot reaction of estrone with the aromatic aldehydes 2a–c and either of malononitrile or ethyl cyanoacetate afforded the fused pyran derivatives 4a–f. On the other hand , carrying the same reaction using thiourea instead of the cyanomethylene reagent gave the fused pyrimidine derivatives 6a–c. The latter compounds reacted with phenacyl bromide to give the thiazolo[3,2-a] pyrimidine derivatives 8a–c. The reaction of the title compound with bromine gave the monobromo derivative 13 which in turn reacted with either thiourea or cyanothioacetamide to give the thiazole derivatives 14 and 16, respectively. The cytotoxicity of the newly synthesized products was evaluated against six human cancer and normal cell lines where the results showed that compounds 4c, 4f, 6b, 8b, 8c, 10, 13, 16, 18c and 19c exhibited optimal cytotoxic effect against the cancer cell lines, with IC50's in the nM range.

Keywords: Estrone; Pyran; Pyridine; Thiazole; Cytotoxicity.

72. Multicomponent Reactions for Synthesis of Bioactive Polyheterocyclic Ring Systems Under Controlled Microwave Irradiation

Eman M.H. Abbas, Sobhi M. Gomha and Thoraya A. Farghaly

Arabian Journal of Chemistry, 7: 623-629 (2014) IF: 2.684

The multi-component reaction of 1-benzothiopyran-4-ones with heterocyclic amines and dimethylformamide - dimethylacetal (DMFDMA) in DMF at 150 C under controlled microwave heating afforded novel poly-heterocyclic ring systems . Also , reaction of 3-dimethylaminomethylene - 1- benzothiopyran -4-one with activemethylene derivatives was investigated. The structure of all products was established on the bases of spectral data and elemental analyses and alternative synthesis if possible. The prepared compounds were screened for their antitumor activity against HCT-116 "colon" cancer cell line and some derivatives showed promising activity.

Keywords: Multi-component reactions (Mcr); Microwave irradiation; Enaminone; 1-Benzothiopyran – 4 - One; Antitumor activity.

73. Novel Anti-HIV-1 NNRTIs Based on A Pyrazolo [4,3- D] Isoxazole Backbone Scaffold: Design , Synthesis and Insights Into the Molecular Basis of Action

Sobhi M. Gomha, Mohamed G. Badrey, Mohamed M. Abdalla and Reem K. Arafa

Med. Chem. Commun., 5: 1685-1692 (2014) IF: 2.626

A series of novel pyrazolo[4,3-d]isoxazoles was synthesized synthon **3** to obtain employing the thioamide the phenyldiazenylthiazolyl derivatives **7a–f**, the thiazolyl derivative 9, the carbohydrazonamide 12 and the triazinyl counterparts 14ac. The prepared compounds were screened for their antiviral activities against two viral strains of HIV-1 (RF and IIIB). All the compounds exhibited a highly potent antiviral capacity, having submicromolar to subnanomolar EC50 values with all derivatives being more active against the tested HIV strains than the reference drug efavirenz. The therapeutic index of these novel pyrazoloisoxazoles was also evaluated against the host cells CEM-SS or MT-4 and they exhibited a high therapeutic window. To further investigate the molecular basis of their actions, the inhibitory ability of these compounds was bioscreened against the HIV-1 viral enzyme reverse transcriptase (RT). The observed very potent inhibitory power of the pyrazolo[4,3-d]isoxazoles against RT prompted a molecular docking study to try exploring the potential binding modes of these compounds with their respective molecular targets. Finally, in vitro exploration of the metabolic stability of this series of compounds was evaluated by employing a rat-plasma half-life assay and they demonstrated reasonable hydrolytic resistance.

Keywords: Pyrazoloisoxazole; Hydrazonyl Halides; Phenyldiazenylthiazoles; Phenyldiazenyltriazines and antiviral activity.

74. Construction and Performance Characterization of Ion-Selective Electrodes for Potentiometric Determination of Paroxetine Hydrochloride in Pharmaceutical Preparations and Biological Fluids

Mohamed M. Khalil, Yousry M. Issa and Ali G. Mohamed

Electroanalysis, 26: 2789-2800 (2014) IF: 2.502

Three types of ion-selective electrodes: PVC membrane, modified carbon paste (CPE), and coated graphite electrodes (CGE) have been constructed for determining paroxetine hydrochloride (Prx). The electrodes are based on the ion pair of paroxetine with sodium tetraphenylborate (NaTPB) using dibutyl phthalate as plasticizing solvent. Fast, stable and potentiometric response was obtained over the concentration range of 1.1x10-5-1x10-2 molL-1 with low detection limit of 6.9x10-6 molL-1 and slope of a 56.70.3 mV decade-1 for PVC membrane electrode, the concentration range of 2x 10-5-1x10-2 molL-1 with low detection limit of 1.2x10-5 molL-1 and slope of a 57.70.6 mV decade-1 for CPE, and the concentration range of 2x10-5-1x10-2molL-1 with low detection limit of 8.9x10-6 molL-1 and slope of a 56.10.1 mV decade-1 for CGE. The proposed electrodes display good selectivity for paroxetine with respect to a number of common inorganic and organic species. The electrodes were successfully applied to the potentiometric determination of paroxetine hydrochloride in its pure state, its pharmaceutical preparation, human urine and plasma.

Keywords: Ion-Selective electrodes; Potentiometry; Paroxetine Hydrochloride; Biological fluids.

75. Multicomponent Synthesis of Novel Penta-Heterocyclic Ring Systems Incorporating Benzopyranopyridines Scaffold

Sobhy M. Gomaa and Sayed M. Riyad

Synthesis, 46: 258-262 (2014) IF: 2.443

A simple one-pot method is reported for the synthesis of several novel series of chromeno[4',3':4,5]pyrido[2,3-d][1,2,4] triazolo [4,3-a] pyrimidine - 6,14 - diones, chromeno [4',3':4,5] pyrido [2,3-d] thiazolo [3,2-a] pyrimidine-6,14-diones, and chrom-eno[4'',3'':4',5'] pyrido [2',3':4,5] pyrimido [2,1-b] [1,3] thiazine - 6,15- dione by a multicomponent reaction of salicylaldehyde , ethyl acetoacetate , and the appropriate fused heterocyclic amines in refluxing glacial acetic acid . The structures of the newly synthesized compounds were established by spectroscopy and elemental analyses. The mechanism of the single-step reaction was elucidated.

Keywords: Multicomponent reaction; Penta-heterocyclic; Benzopyranopyridines.

76. Synthesis of Oxazolo-, Thiazolo-, Pyrazolo- and Imidazo-Fused Heterocycles by Multi-Component Reactions (Part 2)

R. Shaaban Mohamed and H.M. Elwahy Ahmed

Current Organic Synthesis, 11: 471-525 (2014) IF: 2.439

Development of efficient routes to many kinds of fused heterocycles is an attractive area of research since these compounds constitute one of the most interesting divisions of organic chemistry. A majority of the compounds produced by nature as well as significant numbers of compounds synthesized in the industrial sector each year have heterocyclic rings as part of their structures. This survey research works on the specific synthesis of oxazolo-, thiazolo-, pyrazolo- and imidazo-fused heterocycles by multi-component reactions over the last ten years. Different approaches for the synthesis of such systems are discussed.

Keywords: Fused heterocycles; Imidazole; Multicomponent reactions; Oxazole; Pyrazole; Thiazole.

77. Synthesis of Pyrido- and Pyrimido-Fused Heterocycles by Multi-Component Reactions (Part 3)

H.M. Elwahy Ahmed and R. Shaaban Mohamed

Current Organic Synthesis, 11: 835-873 (2014) IF: 2.439

Heterocycles constitute the largest diversity of organic molecules of chemical, biomedical, and industrial significance. They widely exist in numerous natural products, such as vitamins, hormones, antibiotics, alkaloids, herbicides, and dyes. They are also among the most frequently encountered scaffolds in numerous drugs and pharmaceutically relevant substances. This review highlights some remarkable achievements made recently in the application of multicomponent reactions (MCRs) to the design of pyrido- and pyrimidofused heterocycles by multi-component reactions that have appeared in the last ten years. MCRs reactions can dramatically reduce the generation of chemical wastes, costs of starting materials, and the use of energy as well as manpower. Moreover, the reaction period can be substantially shortened. **Keywords:** Fused heterocycles; Metal catalyst; Microwave; Multicomponent reactions; Pyridine; Pyrimidine .

78. Effect of Exchange of Terminal Substituents on the Mesophase Behaviour of some Azo / Ester Compounds

Magdi M. Naoum, Abdelgawad A. Fahmi, Amira H. Abaza and Gamal R. Saad

Liquid Crystals, 41(11): 1559-1568 (2014) IF: 2.349

Six homologous series of 4-(4'-alkoxy phenylazo) phenyl 4substituted benzoates (Ina-f) were prepared in which, within each homologous series, the length of the terminal alkoxy chain varies between 6, 8, 10, and 12 carbons, while the other terminal substituent, X, is a polar group that alternatively changed from CH3O, CH3, H, Br, NO2 and CN. Compounds prepared were characterised by spectroscopic methods, and their mesophase behavior investigated by differential scanning calorimetry (DSC) and polarised optical microscopy (POM). The results were discussed in terms of mesomeric and polarisability effects. In each group of compounds, bearing the same alkoxy substituent, the nematic-to-isotropic transition temperatures (TC) were successfully correlated with the polarisability anisotropy of bonds to the substituent X. A comparative study was made between the investigated compounds and their previously prepared isomers, namely, 4-(4'-substituted phenylazo) phenyl 4-alkoxybenzoates (IIna-f) in which the two terminal (alkoxy- and X) groups are exchanged.

Keywords: Phenylazo phenyl benzoates; Mesophase behaviour; Exchange of terminal groups; Polarisability anisotropy.

79. New Azobenzene Containing Bent-Core Liquid Crystals Based on Disubstituted Resorcinol

M. Alaasar, M. Prehm and C. Tschierske

Liquid Crystals, 41: 126-136 (2014) IF: 2.349

New bent-core molecules with 4,6-dichlororesorcinol or 4-chloro-2-methylresorcinol as the central unit, and azobenzene with different alkyloxy chain length as side arms were synthesised. The mesophase behaviour of the new compounds was investigated by polarising optical microscopy, differential scanning calorimetry , X-ray diffraction studies and electrooptical measurements. It is found that 4,6 - dichlororesorcinol is more conducive towards mesomorphism than 4- chloro -2 methylresorcinol. The liquid crystalline properties of all of the prepared compounds are greatly affected by the lateral substitution on the outer ring. 4,6 - Dichlororesorcinol - based compounds without lateral substitution show nematic phases with cybotactic cluster of the SmC - type (NCybC) . Moreover, depending on the chain length , the nematic phase appears as enantiotropic phase for the shortest homologue and as monotropic phase for the higher homologues.

Keywords: Bent-Core liquid crystals (Bclcs) ; Azobenzene; 4,6-Dichlororesorcinol; 4- Chloro-2- Methylresorcinol; Nematic phase.

80. Does Prop-2-Ynylideneamine, HC=CCH=NH, Exist in Space ? A Theoretical and Computational Investigation

Osman I. Osman, Shaaban A. Elroby , Saadullah G. Aziz and Rifaat H. Hilal

International Journal of Molecular Sciences, 15: 11064-11081 (2014) IF: 2.339

MP2, DFT and CCSD methods with 6-311++G** and aug-ccpvdz basis sets have been used to probe the structural changes and relative energies of E-prop-2-ynylideneamine (I), Z-prop-2ynylideneamine (II), prop-1,2- diene-1-imine (III) and vinyl cyanide (IV). The energy near-equivalence and provenance of preference of isomers and tautomers were investigated by NBO calculations using HF and B3LYP methods with 6-311++G** and aug-cc-pvdz basis sets. All substrates have Cs symmetry. The optimized geometries were found to be mainly theoretical method dependent. All elected levels of theory have computed I/II total energy of isomerization (E) of 1.707 to 3.707 kJ/mol in favour of II at 298.15 K. MP2 and CCSD methods have indicated clearly the preference of II over III; while the B3LYP functional predicted nearly similar total energies. All tested levels of theory yielded a global II/IV tautomerization total energy (E) of 137.3-148.4 kJ/mol in support of IV at 298.15 K. The negative values of S indicated that IV is favoured at low temperature . At high temperature, a reverse tautomerization becomes spontaneous and II is preferred. The existence of II in space was debated through the interpretation and analysis of the thermodynamic and kinetic studies of this tautomerization reaction and the presence of similar compounds in the Interstellar Medium (ISM). Keywords: Z-Prop-2-Ynylideneamine; Tautomerization;

Thermodynamic; Interstellar medium; Dft; Mp2; Ccsd; Nbo.

81. Synthesis and Antimicrobial Evaluation of Some Novel Thiazole, Pyridone, Pyrazole, Chromene, Hydrazone Derivatives Bearing A Biologically Active Sulfonamide Moiety

Elham S. Darwish, Azza M. Abdel Fattah, Fawzy A. Attaby and Oqba N. Al-Shayea

International Journal of Molecular Sciences, 15: 1237-1254 (2014) IF: 2.339

This study aimed for the synthesis of new heterocyclic compounds incorporating sulfamoyl moiety suitable for use as antimicrobial agents via a versatile, readily accessible N- [4-(aminosulfonyl) phenyl] -2- cyanoacetamide (3). The 2- pyridone derivatives were obtained via reaction of cyanoacetamide with acetylacetone or ary lidenes malononitrile . Cycloaddition reaction of cyanoacetamide with salicyaldehyde furnished chromenederivatives . Diazotization of 3 with the desired diazonium chloride gave the hydrazone derivatives 13a - e. Also, the reactivity of the hydrazone towards hydrazine hydrate to give Pyrazole derivatives was studied. In addition, treatment of 3 with elemental sulfur and phenyl isothiocyanate or malononitrile furnished thiazole and thiophene derivatives respectively. Reaction of 3 with phenyl isothiocyanate and KOH in DMF afforded the intermediate salt 17 which reacted in situ with 3-(2bromoacetyl)-2H-chromen-2-one and methyl iodide afforded the thiazole and ketene N,S-acetal derivatives respectively. Finally, reaction of 3 with carbon disulfide and 1,3-dibromopropane afforded the N-[4-(amino-sulfonyl) phenyl]-2-cyano-2-(1,3dithian-2-ylidene)acetamide product 22. All newly synthesized compounds were elucidated by considering the data of both elemental and spectral analysis. The compounds were evaluated for both their in vitro antibacterial and antifungal activities and showed promising results.

Keywords: Sulfamoyl; Acrylamide; Pyrazole; Pyridones; Thiophene; Thiazole; Antimicrobial activity.

82. Tolerance of Glucose Electrocatalytic Oxidation on NiO_x/MnO_x/GC Electrode to Poisoning by Halides

S. M. El-Refaei , M. M. Saleh and M. I. Awad

Journal of Solid State Electrochemistry, 18: 5-12 (2014) IF: 2.234

This paper is devoted to the investigation of the tolerance of glucose oxidation on NiOx/MnOx/GC binary catalyst to poisoning by halide ions. NiOx / MnOx / GC electrode was prepared by the consecutive electrodeposition of MnOx followed by the deposition of NiOx nanoparticles atop the previously deposited MnOx nanoparticles . The electrode was characterized electrochemically and morphologically Interestingly experimental results showed that the NiOx / MnOx / GC electrode shows a superior electrocatalytic activity compared with the NiOx / GC electrode and a behavior comparable to the NiOx/GC electrode regarding tolerance to poisoning by halides, even in the presence of high concentrations of Cl- and Br- up to 0.3 M. On the other hand, it was found that iodide ions have a significant effect on glucose electrooxidation under the prevailing operating conditions and even at concentrations lower than those of the other two halide ions.

Keywords: Glucose; Manganese oxide; Nickel oxide; Halide; Nanoparticles.

83. DFT Studies, Spectral and Biological Activity Evaluation of Binary and Ternary Sulfamethazine Fe(III) Complexes

Ahmed M. Mansour

Journal of Coordination Chemistry, 67(16): 2680-2687 (2014) IF: 2.212

[FeL3]•H2O (1) and [FeL2Q]•3H2O (2) (HL = sulfamethazine, and HQ = 8-hydroxyquinoline) complexes have been synthesized, characterized (elemental analysis, FT IR, UV-Vis., TGA, magnetic and conductivity) and tested for their antibacterial activity against

Staphylococcus aureus and Escherichia coli.

Theoretical calculations involving geometry optimization, natural orbital analysis, electronic spectra, and molecular electrostatic potential have been done at DFT/B3LYP level of theory.

The high 3d-electron contribution of 6.71 is accounted to LdFe charge transfer.

Coordination of HL to Fe(III) center in 1 led to a significant decrease in the antibacterial activity, but presence of a secondary ligand 2 completely abolished it.

Keywords: Mixed-Ligand complex; Td-Dft; Nbo; 8-Hydroxyquinoline.

84. Synthesis, Characterization, Equilibrium Studies, and Biological Activity of Complexes Involving Copper(II), 2-Aminomethylthiophenyl-4-Bromosalicylaldehyde Schiff Base, and Selected Amino Acids

Mutlaq S. Aljahdali, Abeer T. Abedelkarim, Ahmed A. El-Sherif and Mahmoud M. Ahmed

Journal of Coordination Chemistry, 67: 870-890 (2014) IF: 2.212

The present paper reports on the synthesis, characterization, and the electronic absorption spectra of Cu(II) ternary complexes involving ATS-Schiff base, and some selected amino acids. The antibacterial, antifungal, and antitumor activities were investigated. The geometry of the studied Cu (II) complexes has been fully optimized using parameterized PM3 semiempirical method. Protonation and complex formation equilibria were investigated. Ternary complexes of copper(II) with 2aminomethylthiophenyl-4-bromosalicylaldehyde (ATS) and some amino acids have been isolated and characterized by elemental analyses, IR, magnetic moment, molar conductance, UV-vis, mass spectra, and ESR. The proposed general formulas of the prepared complexes are $[Cu(ATS)(AA)] \cdot nH2O$ (where AA = glycine, alanine, and valine). The low molar conductance values suggest the non-electrolytic nature of the complexes. IR spectra show that ATS is coordinated to copper in a bidentate manner through azomethine-N and phenolic-OH. The amino acids also are monobasic bidentate ligands via amino and ionized carboxylate groups. The magnetic and spectral data indicate the square-planar geometry of Cu(II) complexes. The geometry of the Cu(II) complexes has been fully optimized using parameterized PM3 semiempirical method. The Cu-N bond length is longer than that of Cu-O in the isolated complexes. Also, information is obtained from calculations of molecular parameters for all complexes including net dipole moment of the metal complexes, values of binding energy, and lipophilicity value (log P). The antimicrobial activity studies indicate significant inhibitory activity of complex 3 against the selected types of bacteria. The mixed ligand complexes have also been studied in solution state. Protonation constants of ATS and amino acids were determined by potentiometric titration in 50% (v/v) DMSO-water solution at ionic strength of 0.1 M NaCl. ATS has two protonation constants. The binary and ternary complexes of copper(II) involving ATS and some selected amino acids (glycine, alanine, and valine) were examined. Copper(II) forms [Cu(ATS)], [Cu(ATS)2], [Cu(AA)], [Cu (AA)2], and [Cu (ATS) (AA)] complexes. The ternary complexes are formed in a simultaneous mechanism. Keywords: Schiff base; Copper (Ii); Amino acid; Electronic spectra; Stability constants; Antibacterial activity .

85. The Influence of Different Anions on the Corrosion Resistance of Ti- 6Al-4V Alloy in Simulated Acid Rainwater

Amany M. Fekry and Reham H. Tammam

Indusrial and Engineering Chemistry Research, 53: 2911-2916 (2014) IF: 2.206

Corrosion behavior of Ti-6Al-4V alloy has been investigated in acid rainwater (ARW) at different pH values using various electrochemical techniques and scanning electron microscope examination. This work is important environmentally and industrially. The results obtained from polarization measurements showed that corrosion current density, icorr, decreases with increasing pH of the ARW from 1.0 to 3.5. Electrochemical impedance measurements are in good agreement with polarization measurements. Also, the effects of adding different anions (Cl-, F- or SO4 2-) to ARW of pH = 1 were tested. It was found that increasing fluoride ion concentration leads to an increase in the corrosion rate of Ti alloy. For the chloride anion, the corrosion rate increases up to 0.05 M then decreases again at 0.1 M concentration. However, adding SO4 2- anion leads to a decrease in corrosion rate with increasing concentration. Scanning electron microscope images confirm well electrochemical impedance spectroscopy and polarization results.

Keywords: Corrosion; Acid rain water; Sem; Polarization; Impedance .

86. Thermal and Spectroscopic Investigation of Novel Schiff Base, its Metal Complexes, and Their Biological Activities

Ehab M. Zayed, M. A. Zayed and Ahmed M. M. Hindy

Journal of Thermal Analysis and Calorimetry, 116: 391-400 (2014) IF: 2.206

The complexing behavior ofH2L ((N,N'Z,N,N'E)- N,N'-(ethane-1,2- diylbis (oxy) bis (2,1-phenylene) bis (methanylylidene) bis (1-hydrazinylmethanethioamide)) toward the transition metal ions namely Fe (III), Co (II), Ni (II), Cu (II), Cd(II), and Zn(II) have been examined by elemental analyses, magnetic measurements, electronic , IR , and 1H-NMR . Thermal properties and decomposition possibilities of all complexes are suggested. The interpretation of all thermal decomposition stages has been evaluated . The free ligand and its metal complexes have been tested in vitro against Escherichiacoli , Proteus vulgaris, Bacillus subtilis, and Staphylococcus aurous bacteria in order to assess their antimicrobial potential. The results indicate that the metal complexes are also found to have more antimicrobial activity than the parent ligand.

Keywords: Spectral studies; Transition metal complexes; Thermal analyses biological activity.

87. Thermal Decomposition and Biological Activity Studies of Some Transition Metal Complexes Derived from Mixed Ligands Sparfloxacin and Glycine

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Journal of Thermal Analysis and Calorimetry, 115(2): 987-1001 (2014) IF: 2.206

The synthetic method of novel ternary M(II)/(III)/(IV) complexes, with fluoroquinolone drug sparfloxacin (HSFX) and glycine (HGly) containing nitrogen and oxygen donor ligand have been synthesized and characterized. The prepared complexes fall into stoichiometric formulae of [M(SFX)(Gly)(H2O)2]Cl (M = Cr(III) and Fe(III), [M(SFX)(Gly)(H2O)2] (M = Mn(II), Co(II), Ni(II), Cu(II), Zn(II) and UO2(II) and [Th(SFX)(Gly)(H2O)2]Cl2. The chelate rings are six-membered and six coordinate with 1:1:1 [M]:[SFX]:[Gly]. The important bands in the IR Spectra and main 1H NMR signals are tentatively assigned and discussed in relation to the predicted molecular structure. The IR data of the HSFX and HGly ligands suggested the existing of a bidentate binding involving carboxylate O and carbonyl O for HSFX ligand and amino N and carboxylate O atoms for HGly ligand. The coordination geometries and electronic structures are determined from the diffused reflectance spectra and magnetic moment measurements. The complexes exist in octahedral form. The complexes decomposed in four to six steps within the temperature range 30 - 1,000 °C with metal oxides as residues of decomposition. The decomposition steps are accompanied by endothermic or exothermic peaks in the DTA . The HSFX drug, HGly and metal complexes have been screened for their in vitro antibacterial activities against Staphylococcus aureus and Escherichia coli, and antifungal activities against Aspergillus niger and Candida albicans by MIC method . The metal complexes were found to have higher antimicrobial activity than the HSFX drug and HGly ligand and their activity are comparable with the antibacterial and antifungal standards.

Keywords: Sparfloxacin; Glycine; Metal complexes; Thermal analyses; Ir biological activity.

88. Electrochemical Impedance Spectroscopy of Chitosan Coated Magnesium Alloys in a Synthetic Sweat Medium

Amany Mohamed Fekry Mohamed, A.A. Ghoneim and M.A. Ameer

Surface and Coatings Technology, 5: 126-132 (2014) IF: 2.199

Pure magnesium and/or its alloys (AZ31E, AZ91E) are the optimum shell materials for electronic products that contact the hands of the users, and are corroded by the sweat solution (0.1% urea, 0.5% NaCl and 0.5% lactic acid). The corrosion behavior of the tested electrodes was investigated in artificial sweat solution as function of immersion time. In the electrochemical cell Mg or its alloy acts as the anode and NaCl in sweat solution is the corrosive medium. Results showed that themost corroded electrode was puremagnesium while the least corroded was AZ91E alloy. Chitosan was used as coating with different concentrations for AZ91E alloy to protect it against corrosion. The resultswere carried out using various electrochemical techniques such as potentiodynamic polarization, electrochemical impedance (EIS) and surface examination via scanning electronmicroscope (SEM). After coating AZ91E alloy with 5% chitosan the formed film was thicker than that formed on the uncoated one and its thickness increased with increasing chitosan concentration. Themicrographs showed that the coatedAZ91E alloy has superior corrosion resistance properties as compared to the uncoated alloy and that corrosion decreases with increasing the polymer concentration. EIS and polarization results were confirmed by SEM micrographs.

Keywords: Coating; Sem; Polarization; Eis; Magnesium alloys.

89. Synthesis and Characterization of Cross-Linked Polyethylene Glycol / Carboxymethyl Chitosan Hydrogels

Riham R. Mohamed, Rania S. Seoudi and Magdy W. Sabaa

Advances in Polymer Technology, (2014) IF: 2.147

Cross-linked hydrogels of polyethylene glycol (PEG) and carboxymethyl chitosan (CMCh) were synthesized using a blending technique . Several analysis tools were used to characterize the physical and thermal properties of CMCh / PEG hydrogels, namely, Fourier transform infrared , scanning electron microscope, X-ray diffraction, and thermogravimetric analysis.

Some applications were carried out for the prepared cross-linked hydrogels; swelling behavior of the CMCh/PEG hydrogels was studied in different buffered solutions and different salt solutions. Metal ions uptake was studied for CMCh/PEG hydrogels. The biological activity of CMCh/PEG towards Escherichia coli has been examined in this study.

Keywords: Biological activity; Chitosan; Hydrogels; Metal Uptake; Swelling; Thermal analysis.

90. Analytical Studies on the Charge Transfer Complexes of Loperamide Hydrochloride and Trimebutine Drugs. Spectroscopic and Thermal Characterization of CT Complexes

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Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 129: 84-95 (2014) IF: 2.129

Charge transfer complexes of loperamide hydrochloride (LOP.HCl) and trimebutine (TB) drugs as electron donor with 2,3 dichloro - 5,6 - dicyano - p- benzoquinone (DDQ), tetracyanoethylene (TCNE) and 7, 7, 8. 8 tetracyanoquinodimethane (TCNQ) as π -acceptors in acetonitrile were investigated spectrophotometrically to determine the cited drugs in pure and dosage forms. The reaction gives highly coloured complex species which are measured spectrophotometrically at 460, 415 and 842nm in case of LOP.HCl and at 455, 414 and 842nm in case of TB using DDQ, TCNE and TCNQ reagents, respectively. The optimum experimental conditions have been studied carefully and optimized. Beer's law was obeyed over the concentration ranges of 47.70-381.6, 21.50-150.5 and 10.00-100.0µgmL(-1) for LOP.HCl and 37.85-264.9, 38.75-310.0 and 7.75-155.0µgmL(-1) for TB using DDQ, TCNE and TCNQ reagents, respectively. Sandell sensitivity, standard deviation, relative standard deviation, limit of detection and quantification were calculated. The obtained data refer to high accuracy and precision of the proposed method. These results are also confirmed by inter and intra-day precision with percent recovery of 99.18-101.1% and 99.32-101.4% in case of LOP.HCl and 98.00-102.0% and 97.50-101.4% in case of TB using DDQ, TCNE and TCNQ reagents for intra- and inter-day, respectively. These data were compared with those obtained using official methods for the determination of the cited drugs. The stability constants of the CT complexes were determined. The final products of the reaction were isolated and characterized using FT-IR, (1)H NMR, elemental analysis and thermogravimetric analysis (TG). The stoichiometry and apparent formation constant of the complexes formed were determined by applying the conventional spectrophotometric molar ratio method. Kevwords: Spectrophotometry; Loperamide hydrochloride ; Trimebutine; P-Acceptors ; Spectroscopy; Ct complexes.

91. Complex Formation Equilibria of Binary and Ternary Complexes Involving 3,3-Bis (1-Methylimidazol-2YI)Propionic Acid And Bio-Relevant Ligands as 1-Aminocyclopropane Carboxylic Acid with Reference to Plant Hormone

Mohamed M. Shoukry and Safaa S. Hassan

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 118: 146-153 (2014) IF: 2.129 The formation equilibria for the binary complexes of Cu(II) with 1- aminocyclopropane carboxylic acid (ACC) and 3,3-bis (1methylimidazol-2-yl) propionic acid (BIMP) were investigated. ACC and BIMP form the complexes 110, 120 and 11-1. The ternary complexes of Cu(II) with BIMP and biorelevant ligands as some selected amino acids, peptides and DNA constituents are formed in a stepwise mechanism. The stability constants of the complexes formed were determined and their distribution diagrams were evaluated. The kinetics of hydrolysis of glycine methyl ester in presence of [Cu(BIMP)] (+) was investigated by pH-stat technique and the mechanism was discussed.

Keywords: 1-aminocyclopropane carboxylic acid; 3,3- bis (1methylimidazol-yl) propionic acid; Equilibrium studies; Plant hormone.

92. Coordination Modes of Bidentate Lornoxicam Drug with Some Transition Metal Ions. Synthesis, Characterization and in Vitro Antimicrobial and Antibreastic Cancer Activity Studies

Walaa H. Mahmoud, Gehad G. Mohamed and Maher M.I. El-Dessouky

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 122: 598-608 (2014) IF: 2.129

The NSAID lornoxicam (LOR) drug was used for complex formation reactions with different metal salts like Cr(III), Mn(II), Fe(III) and Ni(II) chlorides and Fe(II), Co(II), Cu(II) and Zn(II) borates. Mononuclear complexes of these metals are obtained that coordinated to NO sites of LOR ligand molecule. The nature of bonding and the stereochemistry of the complexes have been deduced from elemental analyses, IR, UV-Vis, 1H NMR, mass, electronic spectra, magnetic susceptibility and ESR spectral studies, conductivity measurements, thermogravimetric analyses (TG-DTG) and further confirmed by X-ray powder diffraction. The activation thermodynamic parameters are calculated using Coats-Redfern and Horowitz-Metzger methods. The data show that the complexes have composition of ML2 type except for Fe(II) where the type is [ML3]. The electronic absorption spectral data of the complexes suggest an octahedral geometry around the central metal ion for all the complexes. The antimicrobial data reveals that LOR ligand in solution show inhibition capacity less or sometimes more than the corresponding complexes against all the species under study. In order to establish their future potential in biomedical applications, anticancer evaluation studies against standard breast cancer cell lines (MCF7) was performed using different concentrations. The obtained results indicate high inhibition activity for Cr(III), Fe(II) and Cu(II) complexes against breast cancer cell line (MCF7) and recommends them for testing as antitumor agents.

Keywords: Lornoxicam; Metal complexes; Spectroscopy; Tg– Dtg ; Antimicrobial activity; Antitumor agents.

93. DFT Calculations and Electronic Absorption Spectra of Some, A- and C-Pyrone Derivatives

Walid M.I. Hassan, Hussein Moustafa, Mohamed N.H. Hamed, Laila I. Ali and Shimaa Abdel Halim

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 117: 587-597 (2014) IF: 2.129

The electronic absorption spectra of 6-ethyl-4-hydroxy-2,5-dioxopyrano[3,2-c] quinoline 1, 6-ethyl-4- hydroxy-3-nitro-2,5-dioxopyrano[3,2-c] quinoline 2, 6-ethyl-4-chloro-2,5-dioxo-pyrano[3,2c] quinoline 3, 6-ethyl-3-nitro-4-chloro-2,5-dioxo-pyrano[3,2-c] quinoline 4, 6-ethyl-4,5-dioxopyrano[3,2-c] quinoline 5, and 6ethyl-3-nitro-6H-pyrano [3,2-c]quinoline-4,5-dione 6, were measured in polar (methanol) as well as nonpolar (dioxane) solvents. The geometries were optimized using B3LYB/6-311G (p,d) method. The most stable geometry of the studied compounds, 1-6, is the planar structure as indicates by the values of the dihedral angles. The insertion of a nitro group in position 3 in both a- and c-pyrone ring decreases the energy gap and hence increases the reactivity of 3 and 6 compounds. Assignment of the observed bands as localized, delocalized and/or of charge transfer (CT) has been facilitated by TDDFT calculations. The correspondences between the calculated and experimental transition energies are satisfactory. The solvent and substituent effects have been investigated. Chloro-substituent has a higher band position and intensity effects on the spectra more than hydroxyl or nitro groups.

Keywords: Td-Dft; Solvent effect; Uv spectra; Alpha and Gamma pyrone Derivatives; Mo-calculations.

94. Dft Calculations, Spectroscopic, Thermal Analysis and Biological Activity of Sm(III) and Tb(III) Complexes with 2-Aminobenzoic and 2-Amino-5-Chloro-Benzoic Acids

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Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 131: 388-397 (2014) IF: 2.129

The complexes of Sm(III) and Tb(III) with 2-aminobenzoic acid (anthranilic acid, AA) and 2-amino-5- chlorobenzoic acid (5chloroanthranilic acid, AACl) were synthesized and characterized based on elemental analysis, IR and mass spectroscopy. The data are in accordance with 1:3 [Metal]:[Ligand] ratio. On the basis of the IR analysis, it was found that the metals were coordinated to bidentate anthranilic acid via the ionised oxygen of the carboxylate group and to the nitrogen of amino group. While in 5chloroanthranilic acid, the metals were coordinated oxidatively to the bidentate carboxylate group without bonding to amino group; accordingly, a chlorine-affected coordination and reactivitydiversity was emphasized. Thermal analyses (TGA) and biological activity of the complexes were also investigated. Density Functional Theory (DFT) calculations at the B3LYP/6-311++G (d,p)_ level of theory have been carried out to investigate the equilibrium geometry of the ligand. The optimized geometry parameters of the complexes were evaluated using SDDALL basis set. Moreover, total energy, energy of HOMO and LUMO and Mullikan atomic charges were calculated. In addition, dipole moment and orientation have been performed and discussed. Keywords: Anthranilic acid; Chloroanthranilic acid; Lanthanide complexes; Spectral studies ;Dft calculation ; Biological activity.

95. Selective Coordination Ability of Sulfamethazine Schiff-Base Ligand Towards Copper(II): Molecular Structures, Spectral and Sar Study

Ahmed M. Mansour

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 123: 257-266 (2014) IF: 2.129 In the present work, a combined experimental and theoretical study of the N-(4,6-Dimethyl-pyrimidin-2-yl)-4-[(2-hydroxybenzylidene)amino]benzenesulfonamide ligand (H2L) and its mononuc--lear and magnetically diluted binuclear CuII complexes has been performed using IR, TG/DTA, magnetic, EPR, and conductivity measurements. Calculated g-tensor values showed best agreement with experimental values from EPR when carried out using the MPW1PW91 functional. Coordination of H2L to a CuII center, regardless of the binding site and Cu:L stoichiometry, leads to a significant decrease in the antibacterial activity compared to the free ligand as well as reference drugs in the case of Staphylococcus aureus. Structural-activity relationship suggests that ELUMO, ΔE , dipole moment, polarizability and electrophilicity index were the most significant descriptors for the correlation with the antibacterial activity.

Keywords: Antibacterial activity; Copper complexes; DFT; EPR; Schiff-base ligand; Sulfamethazine.

96. Spectroscopic and Biological Activities Studies of Bivalent Transition Metal Complexes of Schiff Bases Derived from Condensation of 1,4-Phenylenediamine and Benzopyrone Derivatives

Omaima E. Sherif and Nora S. Abdel-Kader

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 117: 519-526 (2014) IF: 2.129

Many tools of analysis such as elemental analyses, infrared, ultraviolet-visible, electron spin resonance (ESR) and thermal analysis, as well as conductivity and magnetic susceptibility measurements were used to elucidate the structures of the newly prepared Co(II), Ni(II) and Cu(II) complexes with Schiff bases derived from the condensation of 1,4-phenylenediamine with 6formyl-7-hydroxy-5-methoxy-2-methylbenzo- pyran-4-one (H2L) or 5,7-dihydroxy-6-formyl-2-methylbenzopyran-4-one (H4L). The data showed that all formed complexes are 1:1 or 2:2 (M:L) and non-electrolyte chelates. The Co(II) and Cu(II) complexes of the two Schiff bases were screened for antibacterial activities by the disk diffusion method. The antibacterial activity was screened using Escherichia coli and Staphylococcus capitis but the antifungal activity was examined by using Aspergillus flavus and Candida albicans. The Results showed that the tested complexes have antibacterial, except CuAH4L, but not antifungal activities. Keywords: Schiff bases; Transition metal complexes; Biological activities.

97. Spectroscopic, Electrochemical, and Alkylation Reactions: Tert-Butyl N-(2-Mercaptoethyl) Carbamate Copper(II) and Nickel(II) Complexes as Structural Mimics for the Active Site of Thiolate-Alkylating Enzymes

Mohamed M. Ibrahim , Gaber A.M. Mersal , Nagi El-Shafai, Abdel-Motaleb M. Ramadan and Mohamed M. Youssef

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 120: 574-584 (2014) IF: 2.129

Two new dithiolate copper(II) and nickel(II) complexes with the ligand tert-butyl N-(2-mercaptoethyl)-carbamate (Boc-SH) were prepared. Their structures were established to be [(Boc-S)2M], where M = Cu (1) and Ni (2) by using elemental analysis, thermal analysis, molar conductivity, FT-IR, Raman, UV/VIS,

and ESR as well as EI-mass spectroscopic methods. The X-ray structure of the ligand Boc-SH was also determined. Spectral data showed that the carbamate ligand act as anioinic bidentate through one immine nitrogen and one thiolate sulfur donor atoms. The spectral techniques suggest that both complexes appear to have square planar geometries. The very low electrical conductance of the two complexes supports their neutral nature.

The redox behaviors of the obtained complexes were also investigated by cyclic voltammetry. The monomeric nature of both complexes was assessed from their magnetic susceptibility values. The thermoanalytical data evidence that complex (2) is stable up to 165 °C and undergo complete decomposition, resulting in NiO as a residual product.

The TEM image of the obtained oxide residue showed its nanosize cluster, suggesting that complex (2) may be used as a precursor for the formation of nanooxide.

The methylation reactions of the two dithiolate complexes (1) and (2) with methyl iodide appear to occur intramolecularly at the metal (II) - bound dithiolates , forming the metal (II) - bound dithioether complexes [M (Boc-SCH3) 2]I2 with clean second - order constants of 7.95 \times 10-2 and 10.59 \times 10-2 M-1 s-1, respectively.

Keywords: Biomimetic; Transition metal(Ii)-Bound dithiolate Complexes; Spectroscopic; X-Ray crystallography; Electrochemical; Thiolate alkylating enzymes.

98. Trapping of Muscle Relaxant Methocarbamol Degradation Product by Complexation with Copper (II) Ion: Spectroscopic and Quantum Chemical Studies

Mansour AM and Shehab OR

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 128: 263-271 (2014) IF: 2.129

Structural properties of methocarbamol (Mcm) were extensively studied both experimentally and theoretically using FT IR, 1H NMR, UV-Vis, geometry optimization, Mulliken charge, and molecular electrostatic potential. Stability arises from hyperconjugative interactions, charge delocalization and H-bonding was analyzed using natural bond orbital (NBO) analysis. Mcm was decomposed in ethanol/ water mixture at 80 C to guaifenesin [(RS)-3-(2-methoxyphenoxy)propane-1,2-diol] and carbamate ion [NH2COO-], where the degradation mechanism was explained by trapping the carbamate ion via the complexation with copper(II) ion. The structure of the isolated complex ([Cu(NH2COO)2 (H2O)] • 4H2O) was elucidated by spectral, thermal, and magnetic tools. Electronic spectra were discussed by TD-DFT and the descriptions of frontier molecular orbitals and the relocations of the electron density were determined. Calculated gtensor values showed best agreement with experimental values from EPR when carried out using both the B3LYP and B3PW91 functional.

Keywords: Methocarbamol; Copper complex; Epr; Nbo; Td-Dft

99. Mesophase Behavior of Binary and Ternary Mixtures of Benzoic Acidsbearing Terminal Substituents of Different Polarity and Chain-Lengthsh

H.A. Ahmed and M.M. Naoum

Thermochimica Acta, 575: 122-128 (2014) IF: 2.105

The thermal and mesophase behavior of all possible 1:1 mixtures (Im/In) formed from any two derivatives of 4-n-alkoxy benzoic acids bearing different alkoxy chains (m and n vary between 6 and 16 carbons), were investigated by differential scanning calorimetry (DSC) and phases identified by polarized light microscopy (PLM). Phase transitions were investigated as a function of the average alkoxy-chain length ($^n = (m + n)/2$) of the mixed acids.

In order to investigate whether a supramolecular complex is formedbetween the mixed acids , phase diagrams were constructed for the binary mixtures of 4 - n -hexyloxybenzoic acid (I6) with the two homologues bearing extreme alkoxy- chain lengths, namely, 8 and 16 car-bons. Investigation of the mesophase behavior of ternary mixtures, made from the two eutectic mixtures (I6/18 or I6/116) with 4 - methoxy or 4 - cyanobenzoic acids revealed that the stability of the SmC and Nmesophases of the eutectic mixtures is affected in a way that is dependent on both the polarity of thesubstituent and the difference in the alkoxy-chain lengths.

Keywords: 4-Alkoxybenzoic acid; Supramolecular hydrogen-Bonded carboxylic acid; Phase transition; Binary phase diagram.

100. Non-Isothermal Crystallization Kinetics of Bacterial Poly(3-Hydroxybutyrate) in Poly(3-Hydroxybutyrate-Co-Butylene Adipate) Urethanes

Mohamed S. Abdel Aziz, Hala F. Naguib and Gamal R. Saad

Thermochimica Acta, 591: 130-139 (2014) IF: 2.105

The non-isothermal melt crystallization kinetics of a series of copoly(ester-urethane)s, PUs, based on poly (3-hydroxybutyrate), PHB, and poly(butylene adipate), PBA, of different PHB content 20, 40, and 60 wt% were studied using DSC at different cooling rates . Various macrokinetic models , namely, Avrami , Tobin , Ozawa , and Mo models were applied to describe the crystallization process of PHB in the PU matrices. Avrami, Tobin, and Mo models could successfully describe the non-isothermal crystallization behavior of PHB segments in all samples, while Ozawa model provides a fair description of the nonisothermal crystallization process of PUs containing only 20 and 40 wt% PHB. The Avrami exponent was found to range from 3.6 to 4.0, while the Tobin exponent was found to range from 2.3 to 3.0. The spherulites shape and size were analyzed using polarized optical microscopy (POM). The results of kinetic parameters showed that the crystallization rate of PHB segments in the investigated PUs was increased with increasing the PHB content. The isoconversional method of Friedman was used to determine the effective activation energy of crystallization of the PUs and the Lauritzen-Hoffman parameters (Kg and U*) were calculated by applying the Vyazovkin method.

Keywords: Copoly (ester-urethane) S; Poly (3-

Hydroxybutyrate); Non-isothermal crystallization kinetics; Effective activation energy.

101. Microwave-Assisted Synthesis of Novel 2H-Chromene Derivatives Bearing Pheny Ithiazolidinones and Their Biological Activity Assessment

Islam H. El Azab, Mohamed M. Youssef and Mahmoud A. Amin

Molecules, 19: 19648-19664 (2014) IF: 2.095

6-Hydroxy -2- oxo -2H-chromene-4-carbaldehyde (2), 6- chloro -2 -oxo -2H- chromene-4-carbaldehyde (3) and 6-hydrazinyl - 4 – methyl -2H- chromen -2- one (5) were prepared as single pharmacophore motif key intermediates. Compounds 2, 3 and 5 were incorporated in a series of multicomponent reactions (MCRs), under microwave assistance as well as conventional chemical synthesis processes, to afford a series of three and/or four-pharmacophoric - motif conjugates 8a,b, 11, 13, 16, 17, 19 and 20 in good yields.

The newly synthesized compounds were characterized by IR , NMR , 13C-NMR, MS and elemental analyses . Finally the synthesized compounds have been screened for their biological activity whereupon they exhibited remarkable antimicrobial activity on different classes of bacteria and the fungus.

Keywords: Multicomponent reactions (Mcrs); Green synthesis; Microwave irradiation; 2-H-Chromene; Thiazolidenone; Biological activity.

102. Synthesis of 2-Phenylazonaphtho[1,8-Ef][1,4] Diazepines and 9-(3-Arylhydrazono) Pyrrolo [1,2-A] Perimidines as Antitumor Agents

Thoraya A. Farghaly, Eman M. H. Abbas, Kamal M. Dawood and Tarek B. A. El-Naggar

Molecules, 19: 740-755 (2014) IF: 2.095

Two series of naphtha [1,8-ef] [1,4] diazepines and pyrrolo [1,2 - a] perimidines were prepared starting from 1,8 - diaminonaphthalene and hydrazonoyl chlorides. The structures of the products were determined on the basis of their spectral data and elemental analyses. The mechanism of formation of such products was also discussed. The prepared compounds were screened for their antitumor activity against three cell lines, namely, MCF-7, TK-10 and UACC-62, and some derivatives showed promising activity.

Keywords: 1,8-Diaminonaphthalene; Naphtho[1,8-Ef] [1,4] Diazepines; Pyrrolo[1,2-A] Perimidines; Hydrazonoyl chloride; Antitumor activity.

103. Potentiometric Determination of Iron in Polluted Water Samples Using New Modified Fe(Iii)-Screen Printed Ion Selective Electrode

Tamer Awad Ali, Ahmed A. Farag and Gehad G. Mohamed

Journal of Industrial and Engineering Chemistry, 20(4): 2394-2400 (2014) IF: 2.063

This article is focused on the determination of Fe(III) ion as an important factor in water pollution. A potentiometric method based on screen-printed ion-selective electrode was described for the determination of Fe(III) ion in different polluted water samples. It is based on incorporation of the Fe-phosphotungstate ion-associate in a screen-printed electrode (SPE) composition and tricresylphosphate (TCP) as plasticizer. The influences of the paste composition, different conditioning parameters and foreign ions on the electrode performance were investigated. The reversibility and also response time of the electrode have been studied. The electrode showed Nernstian response of 19.20 ± 0.73 mV decade-1 in the concentration range of $1 \times 10-7-2.5 \times 10-2$ mol L-1. The electrode was found to be usable within the pH range of 3-7.5 and exhibited a fast response time (about 7 s), low detection limit $(1.57 \times 10-7 \text{ mol L}-1)$, long lifetime (>6 months) and good stability. The isothermal temperature coefficient

(dE0/dt) of the electrode was calculated. The electrode was successfully applied for the determination of Fe(III) ion in pure solutions and polluted water samples (formation, tab and sea water samples) using potentiometric determination technique. The results obtained applying this potentiometric electrode is comparable with those obtained using inductive coupled plasma technique.

Keywords: Screen-Printed sensors; Fe(Iii)-Selective electrodes ; Formation water; Water samples.

104. Synthesis, Spectroscopic, Electrochemical, DFT and SAR Studies of Nifuroxazide Complexes with Pd(II), Pt(II) and Ru(II)

Ahmed M. Mansour

Polyhedron, 78: 10-17 (2014) IF: 2.047

 $[Ru(NIF)Cl_2(OH_2)_2].4H_2O$ (1), and $[M(NIF)Cl_2].zH_2O$ (M(II) = Pd (2), z = 6; and Pt (3), z = 4) complexes (NIF = nifuroxazide) were synthesized, and characterized using elemental analysis, FT IR, ¹H NMR, UV-Vis., TG/DTA, magnetic, and conductivity measurements. NIF coordinated to the metal ions as a neutral bidentate ligand via C=O, and hydrazone N. The experimental studies were correlated with the quantum chemical calculations performed at DFT/B3LYP/LANL2DZ level of theory. The natural charge of the Ru(II) ion was more reduced than the Pd(II), and Pt(II) ions suggesting the higher complexation ability of NIF towards the former ion. NIF showed two reversible reduction peaks in DMF at $E_{1/2}$ -0.75, and -1.26 V corresponding to the reduction of NO₂ to NHOH. Coordination of NIF (0.072 µmol/mL) to a Pd(II) center 2 (0.029 µmol/mL) led to important increase in the antibacterial activity. Structural-activity relationship suggests that ELUMO, dipole moment and molecular electrostatic potential maps were the most significant descriptors for the correlation with the antibacterial activity.

Keywords: Nifuroxazide; Td-Dft; Sar; Nbo; Electrochemical.

105. Complexes of N-(2-Thiazolyl)-1H-Benzotriazole-1-Carbothioamide with Pd(II), Pt(II), and Zn(II): Spectral, DFT, Cytotoxicity and Anti-Angiogenic Effect on MCF-7 Cell Line

Ahmed M. Mansour and Magda F. Mohamed

Inorganica Chimica Acta, 423: 373-383 (2014) IF: 2.041

[ZnL₂].4EtOH (1), [PdL(EtOH)₂].Cl (2) and [PtL(EtOH)Cl] (3) (HL = N-(2-thiazolyl)-1H-benzotriazol -e-1-carbothioamide)complexes have been synthesized, and characterized by elemental analysis, IR, 1H NMR, UV-Vis., and TGA. In complex 1, the thiazole N and C-S- donor sites of two deprotonated ligand molecules are coordinated to Zn(II) forming a tetrahedral structure, while in case of 2 and 3, the benzotriazole N and C-S are participated in chelation. Optimized structures, natural bond orbital analysis, molecular electrostatic potential maps, and frontier molecular orbitals have been obtained by DFT/B3LYP / LANL2DZ method . Time-dependent DFT calculations have been performed to assign the electronic spectra. The complexes in comparison to HL have been screened for their antimicrobial and cytotoxicity activities. Complex 2 (3.08 µg/mL) was found to be more potent than HL and the other complexes that may be attributed to its ionic nature and presence of two easily replaceable EtOH molecules. The capacity of complexes to slow down the proliferation of the MCF7 cell line has been achieved

by down regulation of the vascular endothelial growth factors using RT-PCR technique.

Keywords: Antibacterial; Antitumor; Metal complexes; DFT; SAR; Benzotriazole.

106. A Novel Potentiometric Sensor for Selective Determination of Dodecyl (2-Hydroxyethyl)-Dimethy lammonium Bromide Surfactant in Environmental Polluted Samples

Tamer Awad Ali, Akram M. Eldidamony, Gehad G. Mohamed and Mustafa A. Abdel-Rahman

International Journal of Electrochemical Sciences, 9: 4158-4171 (2014) IF: 1.956

A potentiometric method is described for the determination of dodecyl(2-hydroxyethyl) dimethyl-ammonium (DHDA) cationic surfactant using a chemically modified carbon paste sensor based potassium tetrakis (4-chlorophenyl)borate (KTpClPB) on ionophore as an electroactive material . Under optimum experimental variables, the response of electrodes is linear within the concentration range of $2 \times 10-6$ - $1 \times 10-2$ and $1 \times 10-7$ - $1 \times 10-2$ mol L-1 with a Nernstian slopes of 51.19±1.15 and 59.79±0.83 mV decade-1 of dodecyl(2-hydroxyethyl)dimethylammonium (DHDA) cation concentration with detection limit of 2×10-6 and 1×10-7 mol L-1 for unmodified CPE (electrode (I)) and KTpClPB-CPE (electrode (IV)), respectively. The electrodes response is independent of pH in the range of 3-7.5 and 2-9, while the response time of the electrodes was ~11 and 8s for electrode (I) and electrode (IV), respectively . The electrodes have been successfully used as indicator electrodes for the potentiometric titration of DHDA in the analytical grad solutions, with a potential jump amounts to 197 and 292 mV for electrode (I) and electrode (IV), respectively. The potentiometric selectivity coefficients of the proposed DHDA-selective electrode (IV) towards various interfering ions were determined by applying both matched potential (MPM) and fixed interference (FIM) methods. The frequently used DHDAB of analytical and technical grade as well as different water samples has been successfully titrated and the results obtained agreed with those obtained with standard two phase titration method. The sensitivity of the proposed method is comparable with the official method and ability of field measurements.

Keywords: Dodecyl (2-Hydroxyethyl) ; dimethy lammonium bromide surfactant; Chemically modified carbon paste sensors; Potassium tetrakis (4-Chlorophenyl) borate ionophere; Selectivity coefficient; Water samples.

107. Construction of Chemically Modified Electrode for the Selective Determination of Copper(II) Ions in Polluted Water Samples Based on new β cyclodextrine and 1,4-bis(6-bromohexyloxy)benzene Ionophores

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Novel chemically modified carbon paste ion-selective electrodes (CMCPEs) for copper(II) ions determination based on β -cyclodextrin (β -CD) and β -cyclodextrin / 1,4-bis (6-bromohexyloxy) benzene (β -CD / BHOB) as new ionophores

have been prepared and studied . The proposed potentiometric method was based on the fabrication of modified β -cyclodextrinchemically modified carbon paste sensor (β -CD-CMCPEs ; electrode III) and modified β - cyclodextrin / 1,4-bis (6-bromohexyloxy) benzene-chemically modified carbon paste sensor (β -CD/BHOB - CMCPEs; electrode VI) sensors . CMCPEs have been successfully used for the potentiometric titration of Cu(II) in the analytical grad solutions, with a potential jump amounts to 125 and 214 mV for electrode (III) and electrode (VI), respectively.

These sensors have wide linear dynamic range from $3.1 \times 10-7 - 1 \times 10-2$ and $1 \times 10-7 - 1 \times 10-2$ mol L-1 with a Nernstian slope of 28.90 \pm 0.92 and 29.94 \pm 0.12 mV decade-1 and low detection limit of $3.1 \times 10-7$ and $1 \times 10-7$ mol L-1 for electrode (III) and electrode (VI), respectively.

They have fast response time (9 and 6 s) and good -CD and β -CD/BHOB sensors were selectivity with respect to different metal ions. sensors were suitable for aqueous solutions of pH range from 3.5 to 7 and 3.0 to 8. They can be used for about 3 and 4 months without any considerable divergence in potential for electrode (III) and electrode (VI), respectively. The frequently used Cu(II) solution of analytical and technical grade as well as Cu(II) ion in different water samples has been successfully titrated and the results obtained agreed with those obtained with inductively coupled plasma atomic absorption spectrometry (ICP-AES).

Keywords: Chemically modified carbon paste sensors; Cyclodextrins; 1,4-Bis (6-Bromohexyloxy) Benzene Ionophere; Determination of copper (II).

108. Determination of Cr(III) Ions in Different Water Samples Using Chromium(III)-Sensor Based on N-[4-(Dimethylamino) Benzylidene]-6-Nitro-1,3-Benzothiazol -2-Amine

Tamer Awad Ali, Amr L Saber, Gehad G. Mohamed and Tahani M. Bawazeer

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A novel ion-selective chemically modified carbon paste sensor (CMCPs) for Cr(III) ions based on N-[4-(dimethylamino) benzylidene]-6-nitro-1,3-benzothiazol-2-amine (DMBNA) as a new ionophore was prepared and optimized. The best performance was observed for the paste composition, including 50:37.5:12.5 (wt%) graphit e: TCP:DMBNA . The electrode showed a good Nernstian slope of 19.9 ± 0.2 mVdecade-1 in a concentration range from 1.0×10-6 to 1.0×10-1 mol L-1 Cr(III) with detection limit of 2.8×10-7 mol L-1. The fabricated sensor exhibited a fast response time (9 s) and could be used for about 16 weeks in the pH range of 2.0-7.0. The electrode showed good selectivity for Cr(III) ion towards wide variety of metal ions. The proposed sensor was applied for the determination of Cr(III) ion in different real water samples. The results obtained were compared well with those obtained using inductively coupled plasma atomic absorption spectrometry (ICP-AES).

Keywords: Chemically modified carbon paste sensor; Selectivity coefficients; Environmental samples; mercury; N-[4-

(dimethylamino) benzylidene] -6-nitro-1,3-benzothiazol-2- amine ionophore.

109. Development of Nickel Oxide and Manganese Oxide Nanostructured Binary Modified Anodes for Methanol Electro-Oxidation

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In this investigation , a nanoparticle-based binary catalyst composed of nickel oxide (nano-NiOx) and manganese oxide (nano-MnOx), both were assembled on a platinum substrate, was developed for the direct methanol electro-oxidation (MO) in an alkaline medium. The morphological investigation was performed using field-emission SEM and revealed the electrodeposition of MnOx in a nanorod structure and NiOx in round-shaped nanospheres . The electrocatalytic activity of the modified electrodes towards MO depended critically on the order of deposition of the two oxides. The optimum electrocatalytic activity was obtained at the MnOx / NiOx / Pt electrode (in which nano-NiOx was directly electrodeposited onto the Pt surface followed by nano - MnOx) with a total surface coverage of ca. 86%. Both nano - NiOx and nano-MnOx are believed to act as catalytic mediators facilitating the adsorption of methanol and the charge transfer during MO.

Keywords: Fuel cells; Methanol electro-oxidation; Nickel oxide nanoparticles; Manganese oxide nanoparticles; Electrocatalysis.

110. Electrochemical Behaviour of Trimebutine at Activated Glassy Carbon Electrode and Its Direct Determination in Urine and Pharmaceutics by Square Wave and Differential Pulse Voltammetry

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Cyclic voltammetry (CV), differential pulse voltammetry (DPV) and square wave voltammetry (SWV) were used to explore the electrochemical behaviour of trimebutine (TB) at an activated glassy carbon electrode (GCE). Cyclic voltammetric studies showed a well defined oxidation wave at Britton- Robinson buffer (pH 5.0). The oxidation was reversible and exhibited diffusion controlled process depending on the pH. The mechanism of the oxidation process was discussed. A simple, precise, inexpensive and sensitive voltammetric method has been developed for the determination of the cited drug (TB). According to the linear relation between the peak current and the concentration, DPV and SWV methods were used for the quantitative determination of the cited drug in pharmaceutical dosage forms and urine samples. These two voltammetric techniques allow quantitation of TB over the concentration range from 1.0×10-6 to 1.1×10-5 and 1.0×10-6 to 1.9×10-5 mol L-1, respectively, using DPV and SWV methods. The correlation coefficients (r) were 0.998 and 0.999 for DPV and SWV methods, respectively. The linear response was obtained in Britton-Robinson buffer in the range of 1.0 \times 10-6 - 2.0 \times 10-5mol L-1 for spiked urine samples. The limit of detection (LOD) and limit of quantification (LOQ) were 1.29×10-8 and 4.29x10-9 for DPV method and 2.34×10-9 and 7.79×10-9 for SWV method. The RSD for five measurements were 0.049 and 0.089 % using 200 mvs-1scan rate. The method was applied successfully for the determination of TB in dilute urine samples and dosage forms and it compared well with the reported HPLC method. It showed good recovery and reproducible results.

Keywords: Cyclic voltammetry; Differential pulse voltammetry; Trimebutine; Urine; Tablets.

111. Electrochemical Investigation of Green Inhibitor Adsorption on Low-Carbon Steel in Produced Water

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International Journal of Electrochemical Science, 9: 1964-1985 (2014) IF: 1.956

The electrochemical behavior of low carbon steel in produced water containing different concentrations of ascorbic acid (AA) has been studied by potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) measurements and confirmed by surface examination via scanning electron microscope (SEM) . The results of EIS and polarization data showed that the corrosion rate of the steel decreases by increasing both the concentration of AA (0.01-0.1M) and temperature under study (303-333K) . The maximum efficiency was obtained (88%) in 0.1M AA at 333K . Thermodynamic parameters indicate that the adsorption of AA on low carbon steel followed both physical as well as chemical adsorption mechanisms.

Keywords: Low carbon steel; Produced water; Green inhibitor adsorption; Eis; Potentiodynamic; Sem.

112. Electro-Oxidation of Formic Acid at Binary Platinum and Gold Nanoparticle-Modified Electrodes: Effect of Chloride Ions

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International Journal of Electrochemical Science, 9: 4523-4534 (2014) IF: 1.956

The modification of a glassy carbon (GC) electrode with platinum (PtNPs) and gold (AuNPs) nanoparticles was intended to fabricate efficient anodes for the formic acid electro-oxidation (FAO). A suitable deposition sequence of PtNPs and AuNPs was adjusted to enhance the electrocatalytic activity of the electrode in such a way suppressing the CO poisoning that usually deteriorates the electrode's catalytic activity during FAO. Morphologically, PtNPs were deposited in a spherical shape (with an average diameter of 37 nm), while AuNPs appeared in granules (with an average diameter of 43 nm) both were uniformly dispersed on the GC surface. The highest electrocatalytic activity was obtained at the Au-Pt/GC electrode (for which PtNPs was deposited first on the GC electrode then AuNPs). Interestingly, AuNPs could successfully interrupt the contiguity of Pt surface sites in a way preventing the CO poisoning. Moreover, the Au-Pt/GC electrode exhibited excellent tolerance against poisoning influenced by chloride ions, which usually contaminate the fuel cell and have a similar impact as CO. The relationship between the degree of electrode's tolerance against the catalytic deactivation and the chloride ion concentration was addressed.

Keywords: Gold nanoparticles; Platinum nanoparticles; Glassy carbon; Chloride contamination; Formic acid oxidation; Fuel cells.

113. Flow Injection Potentiometric Determination of Terazosin Hydrochloride Using Modified Carbon Paste Electrodes

Sayed I M. Zayed, Mohamed M. Khalil, Yousry M. Issa and Huda R. Khalefa

International Journal of Electrochemical Science, 9: 2327-2340 (2014) IF: 1.956

Three carbon paste electrodes for determination of terazosin hydrochloride (TerazCl) were prepared based on ion association complexes with sodium tetraphenylborate (NaTPB), ammonium reineckate and phosphotungstic acid (PTA), using dibutyl phthalate as solvent mediator. The developed sensors showed a near-Nernstian response over the concentration range 3.98x10-5-1.00x10-2 mol L-1 TerazCl with detection limits of 2.18x10-5, 3.60x10-5 and 1.26x10-5 mol L-1 TerazCl, in case of tetraphenylborate, reineckate, and phosphotungstate, respectively. The proposed sensors exhibit good selectivity for terazosin with respect to a large number of inorganic cations, sugars, amino acids and vitamins. The sensors were successfully applied for the potentiometric determination of TerazCl in pharmaceutical preparation in batch and flow injection conditions. The sensors were also applied for the determination of TerazCl in spiked human urine samples by using the standard addition method. Keywords: Terazosin hydrochloride; Modified carbon paste Electrodes; Flow injection analysis; Potentiometry.

114. Inhibition Effects and Theoretical Studies of Synthesized Novel Bisaminothiazole Derivatives as Corrosion Inhibitors for Carbon Steel in Sulphuric Acid Solutions

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International Journal of Electrochemical Science, 9: 2186-2207 (2014) IF: 1.956

The inhibition effect of four synthesized novel bis (aminothiazole) derivatives on the corrosion of carbon steel in 0.5M H 2SO4 solution was investigated using galvanostatic , potentiodynamic anodic polarization and weight loss techniques . The inhibitive effect was ascribed to the formation of insoluble complex adsorbed on the steel surface and the adsorption process follows Langmuir adsorption isotherm. A theoretical study of the corrosion inhibition efficiency of these bis(aminothiazole) derivatives, was carried out using density functional theory (DFT) at the B3LYP/6-1G(d) level of theory . Molecular properties related to the inhibition efficiency of these inhibitors were obtained and found in good correlation with the inhibition efficiency obtained from different techniques.

Keywords: Carbon steel; Bisaminothiazole derivatives; Dft studies; Weight loss; Acid inhibition.

115. Integrity of Metallic Medical Implants in Physiological Solutions

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International Journal of Electrochemical Science, 9(4): 1986-2004 (2014) IF: 1.956

Stainless steel and Ti alloys are increasingly used as biomaterials for implants and prosthesis because of their lower elasticity modulus and superior biocompatibility. In the present study different electrochemical measurements have been used to characterize the in vitro surface integrity of two surgical grade alloys: 316L stainless steel (SS) and Ti-6Al-4V alloy (TA). Both alloys are commonly used for orthopaedic and ostesynthesis implants. The aim was to compare their corrosion performance during soaking over an extended period of time in two physiological solutions; Ringer saline (RS) and phosphate buffer saline (PBS). The open circuit potential indicated that both samples exhibit spontaneous passivation. Electrochemical impedance spectroscopy (EIS) data revealed that the corrosion mechanism of both alloys can be modified according to the chemical composition of the test solution. Hence, RS was found to be more corrosive than PBS, especially for SS which possesses higher corrosion rate than TA. However, in PBS the passive traits of SS become comparable to those for TA due to PO43contamination, as confirmed by SEM and EDX examinations. Keywords: Stainless steel; Titanium; Eis; Sem; Passive film; Pitting corrosion.

116. New Chemically Modified Screen-Printed Electrode for Co(II) Determination in Different Water Samples

Tamer Awad Ali, Refat F. Aglan, Gehad G. Mohamed and Mai A. Mourad

International Journal of Electrochemical Sciences, 9: 1812-1826 (2014) IF: 1.956

Modified screen-printed electrode (SPE) with magnesium alumino-silicate ionophore was fabricated for the determination of Co(II). The modified electrode reveals linear response over wide concentration range of 3.1×10 -7 - 1×10 -1 mol L-1 of Co(II) at 25 oC with a divalent cationic slope of 30.33 ± 0.75 mV decade-1 and exhibit detection limit of 3.1×10 -7 mol L-1. Moreover, the selectivity coefficient was measured by matched potential and fixed interference methods. The modified SPE sensor shows high selectivity and sensitivity for determination of Co(II) and also shows stable and reproducible response over a period of four months. This method can be used for determination of Co(II) in water, soil and fish tissue samples and the results obtained agreed with those obtained with atomic absorption spectrometer (AAS). The proposed potentiometric method was validated according to the IUPAC recommendation.

Keywords: Screen-printed ion-Selective electrode; Magnesium Alumino-silicate; Cobalt determination; Water samples.

117. Ni Modified Mcm-41 as a Catalyst for Direct Methanol Fuel Cells

H.B. Hassan, M.A. Abdel Rahim, M.W. Khalil and R.F. Mohammed

International Journal of Electrochemical Science, 9: 760-777 (2014) IF: 1.956

Electrodes made from Mobil catalytic materials number 41 (MCM-41) modified with nickel were successfully prepared by mixing Ni-MCM-41 powders with conducting carbon black in an appropriate ratio.

The chemical composition and the phase structure of the prepared catalyst were investigated by energy dispersive X-ray spectroscopy (EDX) and X-ray diffraction (XRD).

On the other hand, the surface morphology was investigated using scanning electron microscope (SEM) and transmission electron microscope (TEM).

For fuel cell applications, the electrochemical measurements demonstrated that the fabricated electrodes displayed a considerable catalytic activity towards the electrooxidation of methanol in 1.0 M NaOH solution.

In addition, their catalytic performance as a function of the amount of Ni-MCM-41 powder and carbon black ratio was investigated. Chronoamperometric measurements revealed a good catalytic stability as well as good catalytic efficiency towards methanol electrooxidation. A comparison was made between the catalytic activity of Ni(II) modified Ni-MCM-41, NiS-1 and TS-1 catalysts as a function of channel pore size.

Keywords: Electrocatalysts; DMFC; Electrooxidation; Fuel cells; Ni-MCM-41; Mesoporous materials; Methanol.

118. Smart Electrochemical Morphine Sensor Using Poly(3,4-Ethylene-Dioxythiophene) / Gold-Nanoparticles Composite in Presence of Surfactant

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International Journal of Electrochemical Science, 9: 2113-2131 (2014) IF: 1.956

The amount of morphine (MO) in the blood and urine must be controlled and maintained within safe ranges. Some chromatographic and spectrophotometric techniques are sensitive to MO but they suffer from several drawbacks. Thus, it is required to construct a novel simple, fast, cheap and highly sensitive sensor for MO. An electrochemical MO sensor in presence of sodium dodecyl sulfate (SDS) was proposed by gold utilizing nanoparticles over poly(3,4-ethylenedioxythiophene) modified gold electrode (Au/PEDOT-Aunano...SDS). Enhanced electrocatalytic activity towards MO oxidation was achieved at Au/PEDOT-Aunano...SDS compared to Au/PEDOT and Au/PEDOT-Aunano. The MO concentration could be measured at Au / PEDOT-Aunano...SDS in the linear range of 2 µM to 18 µM with correlation coefficient of 0.9983 and very low detection limit of 0.428 nM. Furthermore, the simultaneous and selective determinations of MO, ascorbic acid (AA) and uric acid (UA), MO and dopamine (DA) and MO and atropine (AT) proved excellent with high sensitivity and reproducibility. Moreover, the validity of this sensor in tablets and real urine samples resulted in achieving very low detection limit of MO with excellent recovery results.

Keywords: PEDOT; Gold nanoparticles; Surfactant; Opiates; Morphine; Atropine.

119. Synergistic Effect of Halides on the Corrosion Inhibition of Mild Steel In H2so4 by A Triazole Derivative: Kinetics and Thermodynamic Studies.

O. A. Hazazi, A. Fawzy and M. Awad

International Journal Electrochemical Science, 9: 1378-1389 (2014) IF: 1.956

The synergistic effect between 4 - amino -5- methyl -4 H-1,2,4triazole-3-thiol (AMTT) and halides on the corrosion of mild steel in 0.5 M H2SO4 solution at 20 oC is investigated by potentiodynamic polarization and electrochemical impedance spectroscopy (EIS). Experimental results revealed the significant synergistic action of halides on the protective effect of AMTT.

Both protection efficiency (%P) and degree of surface coverage () increase with increasing AMTT concentration, and the effect of halides on the protection efficiency follow the trend: Cl - 8r - 1-indicating that the radii and electronegativity of the halide play a prominent role in the adsorption process. In contrary the synergism followed the reverse order due to the effective inhibition efficiency of iodide.

The adsorption of the AMTT accords with the Temkin adsorption isotherm. Some thermodynamic and kinetic parameters have been calculated and discussed.

Keywords: Corrosion inhibitor; Temkin isotherm; Mild steel; Halide ions; Adsorption.

120. Synthesis, Characterization and in Vitro Biological Activity of Mixed Transition Metal Complexes of Lornoxicam with 1,10-Phenanthroline

Walaa H. Mahmoud, Gehad G. Mohamed and Maher M.I. El-Dessouky

International Journal of Electrochemical Sciences, 9: 1415-1438 (2014) IF: 1.956

A new series of Cr (III), Mn(II), Fe(II), Fe(III), Co(II), Ni(II) and Zn(II) ternary complexes derived from lornoxicam and 1,10phenanthroline (Phen) have been synthesized and characterized by spectroscopic studies. The coordination possibility of the two ligands towards metal ions have been proposed in the light of elemental analysis, spectral (mass, IR , UV-vis, 1H NMR and ESR), X-ray powder diffraction, magnetic and thermal studies. IR spectra show that LOR and Phen are coordinated to the metal ions in a neutral bidentate manner. The molar conductance measurements of the complexes in DMF correspond to electrolytic nature of the ternary complexes, thus, these complexes may be formulated as [M(LOR)(Phen)Cl2]Xn.yH2O (M = Cr(III) (n = 1, y = 2) and Ni(II) (n = 0, y = 1);[M(LOR)(Phen)(H2O)2](BF4)2 (M = Fe(II), Co(II), Cu(II) and Zn(II)) and [M(LOR)2(Phen)]Xn.yH2O (M = Mn(II) (n = y = 2) and Fe(III) (n = 3, y = 0)). On the basis of magnetic moment, electronic and ESR spectral studies, an octahedral geometry has been assigned for the ternary complexes. Furthermore, the kinetic and thermodynamic parameters for the different decomposition steps were calculated using the Coats-Redfern and Horowitz-Metzger methods. Also, the two ligands, in comparison to ternary metal complexes are screened for their antimicrobial and anticancer activity against breastic cancer cell line. The results showed that the metal complexes be more active than the parent LOR ligand but less active than 1,10-phenanthroline free ligand. The Co(II) and Cu(II) metal complexes completely missed anticancer activity.

Keywords: Lornoxicam; 1,10-Phenanthroline; Ternary metal complexes; Spectroscopy; Tg-Dtg; Antimicrobial and Antitumor Activity.

121. The Effect of the Lanthanide Ion-Type in Lnfeo3 on the Catalytic Activity for the Hydrogen Evolution in Acidic Medium

Nada F. Atta, Ahmed Galal and Shimaa M. Ali

International Journal of Electrochemical Science, 9: 2132-2148 (2014) IF: 1.956 LnFeO3 (Ln = La, Nd, Sm and Gd) were prepared by microwaveassistant citrate method and characterized by XRD and SEM. The electrocatalytic activity toward hydrogen evolution reaction (HER) was investigated by Tafel polarization and impedance measurements. The order of the electrocatalytic activity was NdFeO3 > LaFeO3 > SmFeO3 > GdFeO3, according to the calculated values of the activation energy. The reaction order and the reaction mechanism for all the prepared perovskites were identified. In addition, the effect of the partial substitution at the Lanthanide-site in La1-ySmyFeO3 was also studied.

Keywords: Perovskites; Microwave synthesis; Catalyst; Hydrogen evolution; Impedance; Tafel.

122. Improved Host–Guest Electrochemical Sensing of Dopamine in the Presence of Ascorbic and Uric Acids in A β -Cyclodextrin/Nafion /Polymer Nanocomposite

Nada F. Atta, Ahmed Galal, Shimaa M. Ali and Dalia M. El-Said

Analytical Mehtods, 6: 5962-5971 (2014) IF: 1.938

A voltammetric analytical method based on a combination of β cyclodextrin (CD), Nafion® (NF) and a gold electrode modified with poly(3,4-ethylene - dioxythiophene) (PEDOT) has been successfully developed (Au / PEDOT / NF / CD) for the determination of dopamine (DA) in the presence of ascorbic acid (AA) or uric acid (UA). Optimization of the sensor was conducted, including variables such as the type of substrate, concentration of each modifier, pH of the electrolyte, method of deposition of the polymer and immobilization of CD, and also the time for accumulation of the compound at the modified surface. The synergistic effect of the high conductivity of PEDOT and NF, in addition to the pre-concentrating effect of CD, its different host-guest inclusion complexes and its formation of hydrogen bonds with each compound, was used to construct a stable electrochemical sensor for the determination of these compounds. Under optimized conditions a linear calibration curve was obtained for the determination of dopamine in urine within the range 0.6-320 mmol L⁻¹, with a correlation coefficient of 0.996 and detection limit of 5.84 nmol L⁻¹. The proposed sensor was successfully used for the determination of tertiary mixtures of DA, AA and UA, of DA, AA and acetaminophen (APAP), and of binary mixtures of DA and serotonin (ST). It has been demonstrated that Au/PEDOT/NF/CD can be used as a sensor with excellent reproducibility, sensitivity and stability. Keywords: Nafion; Cyclodextrin; Sensor; Dopamine;

Conducting polymers; Host-guest complex.

123. Experimental and Theoretical Assignment of The Vibrational Spectra of Triazoles and Benzotriazoles. Identification of IR Marker Bands and Electric Response Properties

Saadullah G. Aziz, Shabaan A. Elroby, Abdulrahman Alyoubi, Osman I. Osman and Rifaat Hilal

J Mol Model, 20: 2078-2093 (2014) IF: 1.867

The FTIR spectra of a series of 1H- and 2H- 1,2,3- and 1,2,4triazoles and benzotriazoles were measured in the solid state. Assignments of the observed bands were facilitated by computation of the spectra using the density functional B3LYP method with the $6-311++G^{**}$ basis set. The theoretical spectra
show very good agreement with experiment. Rigorous normal coordinate analyses have been performed, and detailed vibrational assignment has been made on the basis of the calculated potential energy distributions. Several ambiguities and contradictions in the previously reported vibrational assignments have been clarified. "Marker bands" characterize the triazole ring were identified. The effect of substituents, the nature of the characteristic "marker bands" and quenching of intensities of some bands are discussed. Comparison of the topology of the charge density distribution, and the electric response properties of the 1H-, and 2H- isomers of both 1,2,3- and 1,2,4 triazole have been made using the quantum theory of atoms-in-molecules (QTAIM) by calculating the Laplacian of the electron density $(\nabla^2 \rho(r))$. Analysis of the contour plots and relief maps of $\nabla^2 \rho(r)$ reveals that 1,2,3- and 1,2,4-triazoles show completely different topological features for the distribution of the electron density. Thus, while the 1,2,3isomer is a very polar molecule, the 1,2,4-isomer is much more polarizable. Bonding characteristics show also different features. This would thus underlie the different features of their vibrational spectra. The reported vibrational assignment can be used for further spectroscopic studies of new drugs and biological compounds containing the triazole ring.

Keywords: DFT- calculations; Ir spectra; Laplacian of the electron density; Polarizibility; Hyperpolarizability; Triazoles.

124. Hydrogen Bond Coupling in Sodium Dihydrogen Triacetate

Ashour A. Ahmed , Rifaat H. Hilal and Mohamed F. Shibl

J Mol Model, 20: 2363-2373 (2014) IF: 1.867

The coupling of hydrogen bonds is central to structures and functions of biological systems. Hydrogen bond coupling in sodium dihydrogen triacetate (SDHTA) is investigated as a model for the hydrogen bonded systems of the type O-H...O. The twodimensional potential energy surface is derived from the full-dimensional one by selecting the relevant vibrational modes of the hydrogen bonds. The potential energy surfaces in terms of normal modes describing the anharmonic motion in the vicinity of the equilibrium geometry of SDHTA are calculated for the different species, namely, HH, HD, DH, and DD isotopomers.

The ground state wave functions and their relation to the hydrogen bond structural parameters are discussed. It has been found that the hydrogen bonds in SDHTA are uncoupled, that is elongation of the deuterated hydrogen bond does not affect the non-deuterated one.

Keywords: Coupling ; Hydrogen bonds; Isotopomers; Potential Energy surface; Wave function.

125. Synthesis of A New Series of Angiotensin II Receptor Antagonists and Antibacterial Agents

Thoraya A. Farghaly, Sobhi M. Gomha and Mohamed M. Abdalla

Archives of Pharmacal Research, 37: 306-314 (2014) IF: 1.751

2- (Arylmethylenehydrazono) -4, 4 - diphenyl-1Himidazol-5(4H) - one 3 underwent regioselective cyclization upon treatment with bromine in acetic acid containing sodium acetate to give the respective 3-substituted-6,6- diphenyl-6,7-dihydroimidazo [2,1-c] [1,2,4] triazole - 5- one 4 in overall good yields and not the isomeric structure 5. In addition, compound 4 was synthesized by alternative method via reaction of compound 1 with different acids in acetic acid. The synthesized hydrazone derivatives were screened for their angiotensin II receptor antagonists activity and the results showed promising activity. Also, imidazo[2,1-c][1,2,4]triazole-5-ones 4 were screened for the antibacterial activity and the result revealed that two derivatives have excellent activity.

Keywords: Hydrazone; Imidazo[2,1-C] [1,2,4]Triazole-5- One; Antibacterial activity; Angiotensin activity.

126. Palladium(II) Complexes Containing Mixed Nitrogen-Sulphur Donor Ligands: Interaction of [Pd(Methionine Methyl Ester)(H2o)2]2+with Biorelevant Ligands

MohamedM. Shoukry and SameyaM. T. Ezzat

Hindawi Publishing Corporation Bioinorganic Chemistry And Applications, 2014: 1-8 (2014) IF: 1.661

Pd (MME) Cl2 complex (MME = methionine methyl ester) was synthesised and characterized by physicochemical measurements The reaction of [Pd (MME)(H2O) 2]2 + with amino acids, peptides, or dicarboxylic acids was investigated at 25°C and 0.1M ionic strength. Amino acids and dicarboxylic acids form 1:1 complexes. Peptides form both 1 : 1 complexes and the corresponding deprotonated amide species. The stability of the complexes formed was determined and the binding centres of the ligands were assigned . Effect of solvent on the stability constant Pd (MME) CBDCA complex taken of as a representative example , shows that the complex is more favoured in a medium of low dielectric constant . The concentration distribution diagrams of the complexes were evaluated

Keywords: The Concentration distribution diagrams.

127. Protonation Equilibria of Biologically Active Ligands in Mixed Aqueous Organic Solvents

Ahmed A. El-Sherif, MohamedM. Shoukry, Abeer T. Abd Elkarim and Mohammad H. Barakat

Bioinorganic Chemistry and Applications, 2014: 1-18 (2014) IF: 1.661

The review is mainly concerned with the protonation equilibria of biologically active ligands like amino acids, peptides, DNA constituents, and amino acid esters in nonaqueous media. Equilibrium concentrations of proton-ligand formation as a function of pH were investigated. Also, thermodynamics associated with protonation equilibria were also discussed **Keywords:** Amino acids; Peptides; Dna constituents; and Amino Acid esters.

128. Crystallization and Thermal Properties of Biodegradable Polyurethanes Based on Poly[(R)-3-Hydroxybutyrate] and Their Composites with Chitin Whiskers

Gamal R. Saad, Hend E. Salama, Nadia A. Mohamed and Magdy W. Sabaa

Journal of Applied Polymer Science, 131: 1-13 (2014) IF: 1.64

A series of biodegradable polyurethanes (PUs) were synthesized from hydroxylated bacterial poly[(R)-3-hydroxybutyrate], P[(R)-HB]-diol, as crystallizable hard segment and hydroxyl-terminated

synthetic poly[(R,S)-3-hydroxybutyrate), P[(R,S)-HB]-diol, as an amorphous soft segment, using 1,6-hexamethylene diisocyanate, as non-toxic connecting agent. The P[(R)-HB] content was varied from 30 to 70 wt %. The resulting copolymers were characterized by FT-IR, 1H-NMR, DSC, and TGA. The DSC data revealed that the melting of P[(R)-HB] segment increases with increasing its own content in the PUs. The cold and melt crystallization are enhanced with increasing P[(R)-HB] content. The TGA data revealed that the thermal decomposition mainly occurred via a single degradation step and the thermal stability slightly increased with increasing P[(R)-HB] content. The non-isothermal crystallization behavior of PU sample containing 40 wt % PHB with and without a-Chitin whiskers was studied using DSC, and their kinetics data were investigated via the Avrami, Ozawa, and Z.S. Mo methods, respectively. Crystallization activation energy was estimated using Kissinger's method.

Keywords: Biodegradable; Crystallization; Degradation; Differential scanning calorimetry (Dsc); Polyurethanes.

129. Thermally Stable Antimicrobial PVC / Maleimido Phenyl Urea Composites

Nadia A. Mohamed, Nahed A. Abd El-Ghany, Mona M. Fahmy and Marwa H. Ahmed

Polymer Bulletin, 71(11): 2833-2849 (2014) IF: 1.491

Four novel antimicrobial maleimido phenyl urea derivatives were synthesized from N -[4-(chlorocarbonyl) phenyl] maleimide with phenyl urea derivatives (p -methyl, o-chloro and p-carboxy). They were characterized by FTIR, 1 H-NMR, mass spectra, elemental analyses and antimicrobial activities. These derivatives were investigated as thermal stabilizers for rigid poly(vinyl chloride) at 180°C in air by measuring the rate of dehydrochlorination and the extent of dis- coloration. The results reveal the greater stabilizing efficiency of the investigated derivatives as shown by their longer thermal stability periods (Ts) and lower dehydrochlorination rates in relation to dibasic lead carbonate, cadmium-barium- zinc stearate and n -octyltin mercaptide industrial stabilizers. The stabilizing effi- ciency increases with the introduction of electron donating substituent groups in the aromatic ring of the stabilizer molecules. Moreover, the investigated stabilizers impart better color stability for the degraded samples as compared with the refer- ence stabilizers. Keywords: Maleimido phenyl urea derivatives; Antimicrobial activity; Pvc; Dehydrochlorination rate; Discoloration degree.

130. Synthesis, Spectroscopy, Electrochemistry, and Methylation Reaction of the Dithiolate-Based Cobalt (II) Complex Derived Vfgrom Tert-Butyl N-(2-Mercaptoethyl) Carbamate

Mohamed M. Ibrahim, Gaber A.M. Mersal, Nagi El-Shafai, Mohamed M. Yous sef and Hanaa Shokry

Comptes Rendus Chimie, 17(11): 1013-1022 (2014) IF: 1.483

A dithiolate-containing a carbamate mononuclear cobalt(II) complex namely, [Co(Boc-S)2] (1), was obtained by the reaction of a methanolic solution of cobalt (II) nitrate hexahydrate with two equimolar amounts of the deprotonated form of tert-butyl N-(2-mercaptoethyl)carbamate (Boc-SH). The cobalt(II) complex (1) was characterized in the solid state and in solution by using FT–IR, Raman, UV–visible, and EI–mass spectroscopies, as well as thermal and X-ray diffraction studies. Spectral data showed

I-Shafai, 13

that the carbamate (Boc-SH) acts as a mono-anionic bidentate ligand coordinating the cobalt(II) ion through two imine nitrogen and two deprotonated thiolate sulfur donor atoms in a distorted tetrahedral geometry. The thermoanalytical data evidence that the complex is stable up to 165 °C and undergoes complete decomposition, resulting in CoO. TEM imaging of the oxide residue shows its nano size clusters, suggesting that the complex (1) may be used as a precursor for nano-oxides. X-ray powder diffraction patterns evidence an isomorphism among the complex. The redox behavior of the cobalt(II) complex was also investigated by cyclic voltammetry. The reaction of the dithiolate cobalt(II) complex (1) with methyl iodide appears to occur intramolecularly with the cobalt-bound dithiolate, forming the cobalt(II)-bound dithioether complex [Co(Boc-SCH3)2]I2 (2), as a dication complex with a clean second-order reaction of 13.24 \times 10-2 M-1·s-1.

Keywords: Biomimetic; Dithiolate cobalt (Ii) complex; Nanomaterials; Electrochemistry; Thiolate alkylating enzymes; Alkylation.

131. Extraction of Gadolinium from El-Garra El-Hamra Rare-Earth Cake, South Western Desert, Egypt

Hesham M. Kamal, Khalid F. Mahmoud, Mohamed R. Shehata and Hala A. Mohamed

Journal of Radioanalytical and Nuclear Chemistry, 299: 1231-1240 (2014) IF: 1.415

The study area of El-Garra El-Hamra is one of the igneous masses located in the southern part of the Western Desert of Egypt. This work has been carried out to investigate the process of gadolinium separation from REEs cake obtained from El-Garra El-Hamra ore concentrate. It is considered as a new approach in the Nuclear Materials Authority of Egypt. Firstly; the optimum leaching conditions achieved are 200 gm/L H2SO4, 1/2 solid/liquid ratio, 4 h agitation time,-125 mesh size and at 90 °C temperature. Then by solvent extraction method using 1 mol/L D2EHPA middle REEs were extracted. The organic extractant was stripped by using 2 mol/L HCl and Gd pregnant solution was obtained. Then, the relevant optimum factors were 0.3 mol/L D2EHPA diluted by kerosene, 10 min contact time, and 4/1 organic/aqueous ratio giving 87 % Gd extraction. Then, the scrubbing of the loaded extractant was by 1 mol/L HCL followed by Gd stripping using 5 M HCl, contact time of 30 min and 1/3 organic/aqueous ratio. The strip solution was subjected to evaporation and little amount was dried to obtain GdCl3 powder having a purity of about 81 % associated with YCl3 4 %.

Keywords: El garra El hamra area; Rare-earth cake; Gadolinium; Solvent extraction technique.

132. Electrochemical and Interface Analysis of Titanium Alloy in Simulated Body Fluid

M. A. Ameer, A. A. Ghoneim and A. M. Fekry

Surface and Interface Analysis, 46: 65-71 (2014) IF: 1.393

The effect of raftiline inulin in presence of Ca^{2+} on titanium alloy as biomaterial was investigated in simulated body fluid solution at 37°C. The behavior of Ti alloy was studied at different concentrations of inulin with immersion time using electrochemical impedance spectroscopy and potentiodynamic polarization tests. Ti alloy was effectively inhibited by the addition of 0.25% by weight raftiline in presence of 10^{-5} M calcium levulinate, which reacts with Ti alloy and forms a protective film on its surface. The results were confirmed by surface examination via scanning electron microscope. **Keywords:** Titanium alloy; Electrochemical techniques; Inhibition.

133. Synthesis and Performance of Electroless Ni–P-Ticn Composite Coatings on Al Substrate

Hanaa Barakat Hassan Hussein H. B. Hassan, Z. Abdel Hamid and Mona Hassan

Surface and Interface Analysis, 46: 512-520 (2014) IF: 1.393

Electroless Ni–P andNi–P–TiCN composite coatings have been deposited successfully on Al substrates. Scanning electron microscopy (SEM) and energy dispersive X-ray (EDX) techniques were applied to study the surface morphology and the chemical composition of the deposited films. Moreover, X-ray diffraction (XRD) proved that Ni–P andNi–P–TiCN deposits have amorphous structures.

The properties of Ni–P–TiCN/Al composite films such as hardness, corrosion resistance and electrocatalytic activity were examined and compared with that of Ni–P/Al film. The results of hardness measurements reveal that the presence of TiCN particles with Ni–P matrix improves its hardness.

Additionally, the performance against corrosion was examined using Tafel lines and electrochemical impedance spectroscopy techniques in both of 0.6M NaCl and a mixture of 0.5M H2SO4 with 2 ppm HF solutions.

The results indicate that the incorporation of high dispersed TiCN particles into Ni–P matrix led to a positive shift of the corrosion potential and an increase in the corrosion resistance for all aluminum substrates after their coating with Ni – P – TiCN.

In addition , Ni–P– TiCN / Al electrodes showed a higher electrochemical catalytic activity and stability toward methanol oxidation in 0.5M NaOH solution compared with that of Ni–P/Al. **Keywords:** Corrosion; Electrochemical impedance spectroscopy (EIS); Electroless technique; Electrooxidation; Nickel– phosphorous composites.

134. Determination of Residues of Acetaminophen, Caffeine, and Drotaverine Hydrochloride on Swabs Collected from Pharmaceutical Manufacturing Equipment Using Hplc in Support of Cleaning Validation

Mohamed E.M. Hassouna , Yousry M. Issa and Ashraf G. Zayed

Journal of Aoac International, 97(5): 1439-1445 (2014) IF: 1.385

An HPLC method was developed for the simultaneous determination of residues of acetaminophen (paracetamol, PA), caffeine (CA), and drotaverine HCl (DH) on swabs collected from pharmaceutical manufacturing equipment surfaces. The challenge in cleaning validation is to develop analytical methods that are sensitive enough to detect traces of the active compounds remaining on the surface of pharmaceutical manufacturing equipment after cleaning. Chromatography was performed in the isocratic mode on a Hypersil C18 BDS column using the mobile phase 0.02 M tetrabutylammonium bisulfate–methanol (100 + 45, v/v) at 50°C with UV detection at 210 nm. The method was tested for specificity, linearity, LOD, LOQ, accuracy, and precision for

determination of traces of the abovementioned drugs. The time required for a single analysis was 12 min. The response was linear in the ranges of 6.900-52.100, 1.040-7.800, and 0.694-5.210 μ g/mL for PA, CA, and DH, respectively. **Keywords:** HPLC; Paracetamol.

135. Synthesis and Antimicrobial Evaluation of Some New 1,2-Bis-(2-(N-Arylimino)-1,3-Thiazolidin-3-Yl)Ethane Derivatives

Kamal Mohamed Dawood and Hussein Khalaf-Allah Abu-Deif

Chemical and Pharmaceutical Bulletin, 62: 439-445 (2014) IF: 1.375

N,N'-Diarylethylene-bis-thiourea derivatives 1 and 8 were synthesized and their reactions with hydrazonoyl chlorides yielded the corresponding bis-(2-(N-arylimino)-1,3-thiazolidine derivatives 5a–d and 11a–c.

The reaction of compound 1 with several a-haloketones afforded the bis-(5-methyl-2-(N-phenylimino)-1,3-thiazolidine derivatives 15a–c and 19a,b.

The newly synthesized compounds were tested for their antimicrobial activity against four fungi, two Gram-positive and two Gram-negative bacteria and showed high antibacterial and antifungal activities against all the test microorganisms except Pseudomonas aeruginosa and Candida albicans.

Compounds 5b, 15b and 19a exhibited the highest activities against the test microorganisms.

The MIC evaluation showed that compound 15b has higher activity than Amphotericin B and Ampicillin against all tested fungi and Gram-positive bacteria (Staphylococcus pneumonia) and showed similar activity like Ampicillin against Gramnegative bacteria (Escherichia coli).

Keywords: Bis-thiourea; Hydrazonoyl chloride; 1,3-Thiazolidine; Antibacterial; Antifungal activity.

136. Theoretical and Computational Studies of Conformation, Natural Bond Orbital and Nonlinear Optical Properties of Cis-N-Phenylbenzohydroxamic Acid

Saadullah G. Aziz a, Shabaan A.K. Elroby, Rifaat H. Hilal, Osman I. Osman

Computational And Theoretical Chemistry, 1028: 65-71 (2014) IF: 1.369

The gas phase conformational and nonlinear optical properties of cis-N-phenylbenzohydroxamic acid (cis-NPBHA) keto and enol forms were studied applying traditional hybrid and long-rangecorrected Density Functional Theory (DFT) and time-dependent density functional (TD-DFT) methods. The calculated geometrical parameters for the two isomers agreed satisfactorily with literature ones. The keto form was predicted to be more stable than the enol counterpart by 10.70-12.60 kcal/mol, and the Gibb's free energies for the conversion: enol ⇒ ketoenol ⇒keto were found to be 11.14 kcal/mol (B3LYP/6-311+G^{**}), 12.53 kcal/mol (CAM-B3LYP/6-311+G**) and 13.28 kcal/mol $(\omega B97XD/6-311+G^{**})$. All the selected functionals have computed larger total hyperpolarizabilities for the enol tautomer compared to those of the keto rival. The traditional hybrid functional yielded higher total hyperpolarizabilities than those of the long-range-corrected ones. The total hyperpolarizabilities were nicely correlated with HOMO-LUMO energy gaps and

absorption maxima. The support of these molecular properties by natural bond orbital (NBO) calculations was evaluated and discussed.

Keywords: N-phenylbenzohydroxamic acid; Traditional hybrid; Long-range-corrected; NLO properties; NBO calculations.

137. A Structural Study on the Azide–Tetrazole Equilibrium in the Azidobenzothiazole System. DFT-Treatment

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Computational and Theoretical Chemistry, 1033: 52-59 (2014) IF: 1.368

Many 2 - substituted benzothiazole derivatives are reported to possess a broad spectrum of biological activities , 2-azidobenzothiazole is scarely reported in the literature. This study investigates the structural properties of some azidobenzothiazoles, in addition to the azido-tetrazole isomerism.

All calculations were carried out using a Gaussian 09 package and the DFT-B3LYP/6-311+G (d,p) procedure.

The optimized geometry, the NBO-charge density, and the molecular orbitals, of all the studied species were investigated and discussed.

The azide–tetrazole isomerism proved to be initiated by a "patomic orbital" overlap process rather than by an "electrostatic" attraction process.

Solvent effect on the studied isomerism for the parent 2-azidobenzothiazole has been investigated. The Self Consistent Reaction Field (SCRF) theory and the Polarizable Continuum Model (PCM) at the B3LYP/6-311+G(d,p) level were used.

Keywords: Azidobenzothiazole system; Azide–tetrazole isomerization; Effect of the fused benzene ring; Factors affecting isomerization.

138. Synthesis, Spectroscopic and Structural Characterization, and Antimicrobial Studies of Metal Complexes of a New Hexadentate Schiff Base Ligand. Spectrophotometric Determination of Fe(III) in Water Samples Using A Recovery Test

Ehab M. Zayed, Eman Hamed Ismail, Gehad G. Mohamed, Mostafa M. H. Khalil and Ahmed B. Kamel

Monatshefte Für Chemie, Chemical Monthly, 145: 755-765 (2014) IF: 1.347

New Schiff base complexes were prepared using the bioactive antimicrobial bis-Schiff base ligand synthesized by condensation of 2 - aminobenzoic acid and 2,20-(ethylenedioxy) bis (benzaldehyde) . The pKA value of the bis-Schiff base was determined through visible spectrophotometric experiments and the stability constants of its complexes were also studied. The structural features of the complexes were determined from their elemental analyses, magnetic susceptibility, molar conductance, and spectral (IR and 1H NMR) studies. Powder XRD indicates that all the complexes are amorphous except the Cr(III) and Cu(II) chelates which are crystalline. The data revealed that the stoichiometries of all prepared complexes are of 1:1 M/L type. The UV-vis absorption spectral data for the complexes suggest an octahedral geometry around the central metal ion.

Thermogravimetric data (TG and DTG) were also studied. The kinetic and thermodynamic parameters for thermal decomposition of the complexes were calculated by graphical methods using the Coats– Redfern approach. The antimicrobial activity of the bis-Schiff base and its complexes was tested against a number of bacteria and fungi to assess their inhibiting potential. Most of the complexes exhibit antibacterial activity more than the parent bis-Schiff base. Also Cr(III), Co(II), and Ni(II) complexes have antifungal activity against Candida albicans whereas the parent bis-Schiff base is inactive. A recovery test was also applied for the spectrophotometric determination of Fe(III) in different natural water samples.

Keywords: Bis-schiff base; Metal; Complexes; Biological; Activity recovery test spectroscopic studies.

139. Thermodynamic Investigation of the Binary and Ternary Complexes Involving 1-Aminocyclopropane Carboxylic Acid with Reference to Plant Hormone

Mohamed M. Shoukry and Safaa S. Hassan

Central European Journal of Chemistry, 12: 318-324 (2014) IF: 1.329

Complex formation equilibria of 1-aminocyclopropane carboxylic acid (ACC) and 3,3-bis(1-methylimidazol-2-yl) propionic acid (BIMP) with metal ions Cu2+, Ni2+, Co2+, Zn2+, Mn2+ and Fe2+ were investigated. ACC forms 1:1 and 1:2 complexes in addition to the hydrolysed form of the 1:1 complex, except in the case of Mn2+ and Fe2+, where the hydrolysed complex is not formed. BIMP forms 1:1 and 1:2 complexes in addition to the hydrolsed form of the 1:1 complex in the case of Mn2+ and Cu2+, however the hydrolysed complex is not detected for Ni2+, Co2+, Zn2+ and Fe2+. The concentration distribution diagrams of the complexes were determined. The Fe2+complex with BIMP is exothermic and the thermodynamic parameters were calculated. The effect of organic solvent on the acid dissociation constants of 1-aminocyclopropane carboxylic acid (ACC) and 3,3-bis(1methylimidazol-2-yl) propionic acid (BIMP) and the formation constants of Fe2+ complexes were investigated. Fe2+ forms a mixed-ligand complex with ACC and BIMP with stoichiometric coefficients 1:1:1. The formation constant was determined. The ternary complex is enhanced by back donation from the negatively charged 1-aminocyclopropane carboxylate to the psystem of BIMP. From the concentration distribution diagram, the ternary complex prevails in the physiological pH range Keywords: 3,3-Bis(1-Methylimidazol-Yl)Propionic Acid, 1-Aminocyclopropane Carboxylic Acid ; Equilibrium Studies , Plant Hormone .

140. Synthesis of Unsymmetrical Aryl-Ethynylated Benzenes Via Regiocontrolled Sonogashira Reaction of 1,3,5-Tribromobenzene

Kamal M. Dawood, Hamdi M. Hassaneen, Hyam A. Abdelhadi, Mohamed S. M. Ahmed and Mohamed A.-M. Mohamed

J. Braz. Chem. Soc., 25(9): 1688-1695 (2014) IF: 1.253

Sonogashira coupling of trimethylsilylacetylene with 4-alkyloxy-1-iodobenzenes gave 2 - (4- (alkyloxy) phenyl) ethynyltrime thylsilanes which undergo deprotection via removal of TMSgroup using tetra butylammonium fluoride (TBAF) in THF at room temperature to afford the corresponding terminal 2- (4-(alkyloxy) phenyl) acetylenes. Regiocontrolled Sonogashira cross-coupling of 1,3,5-tribromobenzene with the terminal arylacetylenes in aqueous medium resulted in the formation of mono-, di- and tri-alkynylated benzene derivatives in moderate to good yields. Factors affecting the regioselective alkynylation were also examined.

Keywords: Arylacetylenes;Cross; Coupling; Catalysis; Palladium; Aqueous media.

141. Facile Synthesis and Antimicrobial Evaluation of Some New Heterocyclic Compounds Incorporating a Biologically Active Sulfamoyl Moiety

Elham S. Darwish

The Scientific world Journal, 2014: 1-10 (2014) IF: 1.219

A facile and convenient synthesis of new heterocyclic compounds containing a sulfamoyl moiety suitable for use as antimicrobial agents was reported. The precursor 3-oxo-3-phenyl-N-(4sulfamoylphenyl)propionamide was coupled smoothly with arenedia- zonium salt producing hydrazones which reacted with malononitrile or triethylorthoformate affording pyridazine and triazine derivatives, respectively. Also, the reactivity of the same precursor with DMF-DMA was followed by aminotriazole; aromatic aldehydes was followed by hydrazine hydrate, triethylorthoformate, or thiourea affording triazolo[1,5-a] pyrimidine, pyrazole, acrylamide , and dihydropyrimidine derivatives , respectively. On the other hand, treatment of the precursor propionamide with phenyl isothiocyanate and KOH in DMF afforded the intermediate salt which was treated with dilute HCl followed by 2-bromo- 1-phenylethanone affording carboxamide derivative. While the same intermediate salt reacted in situ with chloroacetone, ethyl 2-chloroacetate, 3-(2bromoacetyl)-2H-chromen-2-one, methyl iodide, or 2-oxo-Nphenylpropane hydrazonoyl chloride afforded the thiophene, ketene N,S-acetal, and thiadiazole derivatives, respectively. The structure of the new products was established based on elemental and spectral analysis. Antimicrobial evaluation of some selected examples from the synthesized products was carried out whereby four compounds were found to have moderate activities and one compound showed the highest activity.

Keywords: Sulfamoyl; Acrylamide; Pyrazole; Pyridones; Thiophene; Thiazole; Antimicrobial activity.

142. Epr Dosimetric Properties of 2-Methylalanine Pellet for Radiation Processing Application

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Radiation Physics and Chemistry, 102: 11-15 (2014) IF: 1.189

The dosimetric characteristics of γ -radiation induced free radicals in 2-methylalanine (2MA) pellet dosimeter are investigated using electron paramagnetic resonance (EPR) in the high-dose range of 1– 100 kGy. The EPR spectrum of γ -irradiated 2MA exhibits an isotropic EPR signal with seven lines. The dosimeter response is humidity independent in the range of 33–76% relative humidity. The manufactured dosimeter is typically adipose tissue equivalent in the energy level of 0.1–15 MeV. The overall uncertainty (2s) of the dosimeter is less than 6.9%.

Keywords: 2-Methylalanine; Radiation dosimeter; EOR Spectrometer.

143. Sputter-Deposited Mg-Zr Alloys - Surface Characteristics and Electrochemical Behavior in Borate Solutions

Ahmed Abd El-Moneim, Khalid Mahfouz Ismail and Waheed Abdallah Badawy

Zeitschrift Für Physikalische Chemie, 228(9): 901-916 (2014) IF: 1.178

The effect of zirconium on the electrochemical kinetics and surface characteristics of Mg-(6-81 at%) Zr alloys was investigated by different electrochemical techniques. The sputterdeposited alloy is subjected to X-ray photo-electron spectroscopic analyses. Alloys with ≥ 29 at% Zr were spontaneously passivated. The passive film resistance is much higher than that formed on Mg metal. The high resistance of the passive film was attributed to a continuous connected network of a double oxyhydroxide composed mainly of Zr⁴⁺anda small amount of Mg2+. XPS measurements revealed a dynamic nature of the passive film, where concentration gradient of Zr⁴⁺, Mg²⁺, OH- and O²⁻ species was recorded throughout a few nanometers depth. An optimum Zr content is required to promote the formation of stable oxyhydroxide film. Alloys with Zr content = 29 at% attains critical oxide film composition with Zr4+ = 0.69 cation fractions and thickness in the range of 3.2~4.5 nm.

Keywords: Borate; EIS; Mg-Zr Alloy; Passivation; Polarization; Sputter; Deposited film.

144. Convenient Method for Synthesis of Various Fused Heterocycles Via Utility of 4-Acetyl-5-Methyl-1-Phenyl-Pyrazole as Precursor

Sobhi Mohamed Gomha, Ahmad Sami Shawali and Abdou Osman Abdelhamid

Turkish Journal of Chemistry, 38: 865-879 (2014) IF: 1.176

A new, less expensive, solvent-free procedure was developed for the synthesis of some new derivatives of various fused heterocyclic ring systems, namely azolopyridazine, azolotriazine, azinotriazine, thienopyridine, and pyrazolopyridine. The structures of the products prepared were established by their spectral data and elemental analyses. Eight compounds were evaluated for their in vitro antimicrobial activity. Some of the tested compounds exhibited moderate to signi cant antibacterial and antifungal activities.

Keywords: Azolopyridazine; Azolotriazine; Azinotriazine; Thienopyridine; Pyrazolopyridine; Antimicrobial activities.

145. Effect of Boric Acid on Corrosion and Electrochemical Performance of Pb-0.08% Ca-1.1% Sn Alloys Containing cu, as, and Sb Impurities for Manufacture of Grids of Lead-Acid Batteries

Said Salih, Ahmed Gad-Allah, Ashraf Abd El-Wahab and Hamid Abd El-Rahman

Turkish Journal of Chemistry, 38: 260-274 (2014) IF: 1.176

The electrochemical performance of lead-acid batteries made of Pb{Ca{Sn alloys with and without 0.1% of each of Cu, As, and Sb individually and combined in 4.0 M H2SO4 in the absence and presence of 0.4 M H3BO3 was studied. Both impurities and H3BO3 were found to reduce the corrosion rate. Cyclic voltammetry revealed that the presence of impurities or H3BO3

significantly retarded the formation of large crystal PbSO4 . H3BO3 increased the rates of oxygen and hydrogen evolution reactions for all alloys. Impedance measurement was used to quantify the amounts of PbSO4 and PbO in the initial stage of the oxidation. H3BO3 decreased the positive grid corrosion of all alloys, while impurities increased it. Although impurities increased the self-discharge during constant current discharge, H3BO3 was found to decrease it, except for the alloy containing the 3 impurities and the Cu-containing alloy. Under

open-circuit conditions, H3BO3 increased significantly the selfdischarge rate, but impurities were found to suppress it.

Keywords: Pb-Ca-Sn alloys; Lead-acid batteries; Recycled lead; Boric acid.

146. Synthesis and Cycloaddition Reactions of 4,4-Dimethyl-2,6- Dioxocyclohexane-Thiocarboxamides with Nitrilimines

Hamdi M. Hassaneen, Ahmad S. Shawali, Tayseer A. Abdallah and Fatma M. Saleh

Arkivoc 2014 (Vi) 155-169, vi: 155-169 (2014) IF: 1.076

A new series of 4,4-dimethy 1-2,6- dioxocyclohexane thiocarboxamides were prepared by reaction of arvl isothiocyanate with dimedone. Reaction of N-aryl-4,4-dimethyl -2,6- dioxocyclohexane thiocarboxamides with hydrazonoyl halides led to the formation of the corresponding thiadiazoles. Treatment of 2- [5- acetyl-3-phenyl -1, 3, 4- thiadiazol -2 (3H) vlidene]-5,5-dimethylcyclohexane-1,3- dione with dimethyl formamide dimethylacetal (DMF-DMA) in refluxing dioxane afforded (E) -2-[5 - (3- (dimethylamino)acryloyl) -3- phenyl -1,3,4- thiadiazol- 2 (3H) - ylidene] -5,5-dimethylcyclohexane -1,3-dione. Reaction of the latter enaminone with hydrazonoyl halides yielded the corresponding 2- (1-aryl-3-substitutedpyrazol-4-carbonyl)-5-[3-phenyl -5- (5,5-dimethylcyclohexane -1,3- dione) - [1,3,4] - thiadiazole] derivatives. The structures of the new compounds were elucidated on the basis of their elemental analyses and spectral data.

Keywords: Dimedone; Thioanilide; Enaminone; Thiadiazole; Hydrazonoyl Halides.

147. Study for Corrosion and Hydrogen Evolution Behavior of Ti-6Al-4V Alloy in Simulated Acid Rain Water

R. H. Tammam and A. M. Fekry

Journal of Materials Engineering and Performance, 23(3): 715-722 (2014) IF: 0.981

The electrochemical behavior of Ti-6Al-4V alloy was investigated using electrochemical impedance spectroscopy (EIS) measurements at the open circuit potentials and potentiodynamic polarization measurements in a simulated acid rain containing inorganic additives. The ac circuit model for Ti-6Al-4V alloy at corrosion interface in simulated acid rain containing inorganic additives was proposed, which was based on two time constants equivalent circuit. Ti-6Al-4V alloy in a simulated acid rain of pH 1.5 containing inorganic additives showed a characteristic of a capacitive behavior. The effect of different concentrations of the inorganic additives (iodate, dichromate, phosphate, and nitrate) on the corrosion of the alloy in acid rain water (ARW) was also studied. It was found that the corrosion rate decreases drastically in the solution containing iodate, dichromate, and phosphate anions; however, nitrate anions increase the corrosion rate of the alloy. The investigated inorganic additives had inhibiting effect on the corrosion of the alloy in ARW, and their efficiency decreases according to the order: iodate > dichromate > phosphate > blank > nitrate. Polarization data results are in good agreement with EIS.

Keywords: Acid rain water; Corrosion; Eis; Inorganic additives; Ti-6Al-4V.

148. Three New Flavonol Glycosides from Suaeda Maritima

Rasha R. Abd El-Latifa, Ragaa M.A. Mansoura, Mohamed Sharaf and Ahmad Farag

Journal of Asian Natural Products Research, 16: 434-439 (2014) IF: 0.968

Three new flavonol glycosides isolated from the 70% methanol extract of Suaeda maritima (Chenopodiaceae) were characterized based on spectroscopic and chemical methods as quercetin 3-O- α -l-rhamnopyranosyl (1"" \rightarrow 6")- β -d- galactopyranoside -7-O- β -d-glucopyranosyl (1"" \rightarrow 2"") -glucopyranoside , kaempferol 3-O- α -l-rhamnopyranosyl (1"" \rightarrow 6")- β -d-galactopyranoside-7-O- β -d-glucopyranosyl (1"" \rightarrow 2"") -glucopyranoside, and kaempferol 3-O- α -l-rhamnopyranosyl (1"" \rightarrow 6") - β -d-galactopyranoside-7-O- $(2""-O-trans-feruloyl) - \beta$ -d-glucopyranosyl - (1"" \rightarrow 2"")- β -d-glucopyranoside. In addition , four known compounds, namely, quercetin and kaempferol, methyl cis, trans-ferulate, and methyl trans-ferulate were identified. The plant extract and these compounds showed cytotoxic activity against the human tumor cell lines MCF7, HCT116, and HEPG2.

Keywords: Suaeda maritime; Chenopodiaceae; Flavonol polyglycosides; Biological study.

149. Synthesis and Antimicrobial Evaluation of Some Isoxazole Based Heterocycles

Elham. S. Darwish, Khalid A. Atia and Ahmad M. Farag

Heterocycles, 89: 1393-1411 (2014) IF: 0.908

The versatile hitherto unreported 2-cvano-N-(4-{[(5methylisoxazol - 3 -y 1) amino[sulfonyl} phenyl) acetamide (3) was utilized for the synthesis of a variety of heterocycles incorporating sulfamoyl moiety. The 2-pyridone derivatives were obtained via reaction of cvanoacetamide with pentane-2,4dione, arylidenes malononitrile, or terephthalaldehyde and malononitrile upon heating under reflux in the presence of a catalyst. Condensation of the cvanoacetamide 3 with salicylaldehyde furnished the corresponding chromene derivatives. Coupling of 3 with arene diazonium chlorides gave the hydrazone derivatives 13a-c, which upon treatment with hydrazine hydrate and ethyl chloroformate furnished the corresponding pyrazole and triazine derivatives, respectively. Reaction of 3 with carbon disulfide and 1,2-dibromoethane, 1,3dibromopropane or dimethyl sulfate afforded 2-cyano-2-(1,3dithiolan-2-ylidene) -N- (4-{[(5-methylisoxazol-3- yl) amino] sulfonyl} phenyl) acetamide (18), 2-cyano-2-(1,3-dithian - 2 ylidene) -N- 4-{[(5-methylisoxazol-3-yl) amino] sulfonyl} phenyl) acetamide (19) , and 2 - cyano - N - (4- { [(5methylisoxazol-3-yl) amino] sulfonyl} phenyl) - 3 , 3 - bis (methylthio) acry lamide(20). The newly synthesized compounds were evaluated for their in vitro antibacterial and antifungal activities, and showed promising results.

Keywords: Isoxazole; 2-Iminochromene; 2-Pyridone; Pyrazole; Antimicrobial evaluation.

150. Synthesis of Novel Benzimidazole and Benzothiazole Derivatives

Ahmed F. Darweesh, Ahmed E. M. Mekky, Amani A. Salman and AhmadM. Farag

Heterocycles, 89: 113-125 (2014) IF: 0.908

(Benzothiazol-2-yl)-2-phenylsulfony l-1- ethanone (1) and l- (1methyl-1H-benzimidazol-2-yl)-2-(phenylsulfonyl) -1- ethanone (2) were used as potential scaffolds for biologically interesting azoloazine derivatives via their reaction with the diazonium salts of 5- aminopyrazole , 5-amino [1,2,4] triazole and 2 aminobenzimidazole. Coupling of the -ketosulfones 1 or 2 with diazotized aromatic amines afforded the corresponding arylhydrazone derivatives which have been utilized as versatile building blocks for the synthesis of biologically interesting pyridazine ring systems.

Keywords: -Ketosulfones; Benzimidazole; Benzothiazole; Pyrazolo [5,1-C][L,2,4] Triazine.

151. Synthesis of Novel Thiazole and 1,3,4-Thiadiazole Derivatives Incorporating Phenylsulfonyl Moiety

Ahmed E. M. Mekky, Ahmed F. Darweesh, Amani A. Salman and Ahmad M. Farag

Heterocycles, 89: 1827-1843 (2014) IF: 0.908

Reaction of 1-(benzothiazol-2-yl)-2-phenylsulfonyl-1-ethanone (1) and 1- (1-methyl-1H-benzimidazol-2-yl) -2- (phenylsulfonyl) -1-ethanone (2) with phenyl isothiocyanate afforded the corresponding potassium salts 3 and 4, respectively . The potassium salts 3 and 4 were converted into the corresponding (Z)-1- (benzothiazol-2-yl) -3-mercapto-3- (phenylamino) -2- (phenylsulfonyl) propenone (5) and (Z)-1- (1-methy lbenzimidazole -2- yl) -3- mercapto -3- (phenylamino) -2- (phenylsulfonyl) propenone (6), respectively upon acidification with HCl. The latter products were used as versatile building blocks for novel 1,3,4 - thiadiazole derivatives via their reactions with the appropriate hydrazonyl halides. They have been also utilized for the synthesis of thiazole ring systems incorporating phenylsulfonyl moiety.

Keywords: Thiazole; 1,3,4-Thiadiazole; Benzothiazole; Benzimidazole.

152. Efficient Routes for the Synthesis of Novel Bis (S-Triazolo[3,4-B][1,3,4]Thiadiazines)

Radwan M .Sarhan, Mohamed A. Badawy and Ahmed H. M. Elwahy

Journal of Heterocyclic Chemistry, 51, (2014) IF: 0.873

Bis (triazolo [3,4-b] thiadiazine) 4in which the fused system is linked directly to the benzene core can be synthesized in 75% yield by, firstly, preparation of bis (s-triazole) 2followed by reaction with phenacyl bromide3in refluxing EtOH / DMF mixture containing piperidine. Bis(s-triazolo [3,4-b] [1,3,4] thiadiazines) 8and11in which the triazolothiadiazines are linked to benzene core via alkyl or ether linkage were synthesized in 70 and 72% yields, respectively, starting from dicarboxylic acids5and9upon treatment with two moles of thiocarbohydrazide 6to give the corresponding bis (4-amino -5- mercapto -s- triazolo-3-y1) derivatives7and10 and subsequent reaction with two equivalents of phenacyl bromide. Bis(6-phenyl-7H-[1,2,4] triazolo [3,4-b] [1,3,4] thiadiazines)15, which are linked to arene cores via sulfanylmethylene spacers, were prepared by the reaction of 4- amino -4H- 1,2,4- triazole- 3,5- dithiol12with the appropriate bis(bromomethyl) benzenes13to give bis(4-amino-5mercapto-4H-3-sulfanylmethyl) arenes 14 and subsequent reaction with phenacyl bromide. Compounds15were alternatively obtained in 60-70% yields by twofold substitution of13with two equivalents of 6-phenyl -7 H - [1,2,4] triazolo [3,4-b] [1,3,4] thiadiazine-3-thiol16in refluxing EtOH / DMF mixture containing KOH. Bis(triazolothiadiazine)22attached to the benzene core through the thiadiazine ring via an amine linkage was prepared in 70% yield starting fromp-phenylenediamine19by,firstly, acylation with chloroacetyl chloride 18followed by bis-alkylation with 1,2,4-triazole20and subsequent intramolecular ring closure upon treatment with phosphorus oxychloride.

Keywords: Thiocarbazide; Dicarboxylic Acid; Bis (S-Triazolo [3,4-B] [1,3,4] Thiadiazines.

153. Further Studies with Ethyl 5-Amino-3-Phenyl-Lh-Pyrazole-4-Carboxylate

Said Ahmed Soliman Ghozlan , Fathy M. Abdelrazek, Mona H. Mohammed and Khaled E. Azmy

Journal of Heterocyclic Chemistry, 51: 1179-1184 (2014) IF: 0.873

The newly synthesized ethyl 3-amino-5-phenylpyrazole-4carboxylate 1 was diazotized and coupled with b-naphthol, active methylene reagents 6, 9, 12, 15, and the active methine 19 to afford the pyrazolo[5,1-c]triazines 5, 8, 11, 14, 17, 18, and the pyrazolo[5,1-c]-1,2,4-triazoles 21, 22, and 23, respectively. Structures are elucidated and mechanisms are discussed.

Keywords: Ethyl 5-Amino-3-Phenyl-Lh-Pyrazole-4-Carboxylate, Pyrazolo[5,1-C]L,2,4-Triazine.

154. Phenacyl Bromides Revisited: Facile Synthesis of Some New Pyrazoles, Pyridazines and Their Fused Derivatives

Fathy M. Abdelrazek, Hamdi M. Hassaneen, Ekhlass M. Nassar and Anna Jager

J. Heterocyclic Chem., 51: 475-481 (2014) IF: 0.873

Phenacylmalononitriles 8a,b react with hydrazines under dry conditions to afford the pyrazole derivatives 9a–d and in refluxing dioxane to afford the pyrazolo[3,4-c]pyridazine derivatives 11a–d and the pyridazine- 6-imine derivatives 12a–d. Compounds 12a,b were transformed into their oxo analogs 13a,b upon reflux in ethanolic HCl, whereas 12c,d were transformed into the furan derivatives 14a,b under the same reaction conditions (reflux in ethanolic HCl). Compounds 8a,b could be transformed directly into the benzoyl-pyrazole derivatives 16a–d upon coupling with diazotized aromatic amines in pyridine. The structures of the new compounds were substantiated by elemental analyses and spectral data as well as x-ray crystallographic analysis. Plausible mechanisms for the unexpected transformations are suggested.

Keywords: Phenacyl bromides; Pyrazoles; Pyridazines; Fused derivatives.

155. Studies on the Reaction of Cycloalkanones with Malonodinitrile

Fathy M. Abdelrazek, Nadia H. Metwally, Nazmi A. Kassab, Mohammed T. Jaafar, Peter Metz and Anne Jäger

J. Heterocyclic Chem., 51: 1785-1790 (2014) IF: 0.873

Cyclopentanone reacts with malononitrile catalyzed by piperidine or sodium acetate to afford under any case cyclopentyli denemalononitrile dimer : 5-aminospiro - [2,6,7,7 a – tetrahydroindene -7,10 - cyclopentane] - 4,6,6- tricarbonitrile (7) as the sole product.

Contrary to this behavior, cyclohexanone reacts with malononitrile catalyzed by piperidine to afford the analogous cyclohexylidenemalononitrile dimer: 2- aminospiro- [3,4,5,6,7, 4a- hexahydronaphthalene - 4,10- cyclohexane] -1,3,3-tricarbonitrile (11); whereas when the reaction is catalyzed by sodium acetate, it afforded 9,10-diaza - 8,11 -dioxo - tricycle - [4.3.3.01,6] - dodecane -7,12- dicarbonitrile (12). The structures of these products were established on the basis of their elemental analysis and spectral data, and plausible mechanism has been postulated to account for their formation. X-ray crystallography was carried out as a further evidence for structures 7 and 12. **Keywords:** Cyclopentanone; Cyclohexanone; Malonodinitrile; Dimers; Spirocompounds.

156. Synthesis of Some New Pyrazole, Pyrimidine, Pyridazine, and Their Fused Derivatives From 3-Oxo-3,N-Diphenylpropionamide

Fathy M. Abdelrazek, Yehia M. Elkholy, Ali M. Salah, Nagwa M. Abdelazeem and Peter Metz

J. Heterocyclic Chem., 51: 824-829 (2014) IF: 0.873

The title compounds were obtained from the reactions of 3- oxo - 3, N – diphenyl propionamide 3 with dimethyl formamide dimethylacetal followed by hydrazine to afford the pyrazole 7, condensation with benzaldehyde followed by cyclocondensation with guanidine to afford the pyrimidine derivative 13, condensation with active methylenes followed by azo coupling of the products followed by cyclization to afford the pyridazines 17a, b. The pyridazinone 17b was explored for the synthesis of some novel pyridazine-fused heterocyclic compounds 19, 21, 24a–c, and 26. All structures were proved via their elemental analyses and spectral data.

Keywords: Pyrazoles; Pyrimidines; Pyridazines; 3- Oxo-3; N-Diphenylpropionamide.

157. Synthesis, Reactions, Characterization and Biological Evaluation of 2,3"- Bipyridine Derivatives (III)

Fawzy A. Attaby, Azza M. Abdel-Fattah, Labeeb M. Shaif and Mohamed M. Elsayed

Journal of Heterocyclic Chemistry, 51: 927-936 (2014) IF: 0.873

1-Pyridin-3-yl-3-(2-thienyl of 2-furyl)prop-2-en-1-ones 1a,b reacted with 2 - cyanoethanethioamide (2) to afford the corresponding 4- (thiophen-2-yl or furan-2-yl) - 6-sulfanyl -2, 3'-bipyridine -5- carbonitriles 3a, b. The synthetic potentiality of compounds 3a, b were investigated in the present study via their reactions with several active halogen containing compounds 4a–h.

Our aim here is the synthesis of 4-(2-thienyl or 2-furyl)-6-pyridin-3-ylthieno [2,3-b] pyridin-3- amines 6a–e,g–n via 6-(alkyl-thio)-4-(2-thienyl or 2-furyl)-2,3'-bipyridine-5-carbonitriles 5a–e,i–m. The structures of all newly synthesized heterocyclic compounds were elucidated by considering the data of IR, 1H-NMR, mass spectra, as well as that of elemental analyses. Anti-cancer, anti-Alzheimer, and anti-COX-2 activities were investigated for all the newly synthesized heterocyclic compounds.

Keywords: 1-Pyridin-3-Yl-3- (2-Thienyl of 2-Furyl) Prop-2-En-1-Ones; 2,3- Bipyridine -5- Carbonitriles ; 4-(2-Thienyl Or 2-Furyl) - 6- Pyridin-3-Ylthieno [2,3-B] Pyridin -3- Amines; Anticancer; Anti-alzheimer and Anti-Cox-2.

158. 3,4-Dimethyl-2,5-Functionalized Thieno[2,3-B]Thiophenes: Versatile Precursors for Novel Bis-Thiazoles

Osama M. Sayed, Ahmed E.M. Mekky, Ahmad M. Farag and Ahmad H.M. Elwahy

Journal of Sulfur Chemistry, 35: 1-12 (2014) IF: 0.822

Synthesis of novel bis(thiazoles)19–22, 24, 25, 30and31is reported. Thus, reaction of the bis (a-bromoketones)14 and15 with the corresponding thioamide derivatives16–18 in refluxing EtOH in the presence of triethylamine afforded19 – 22 in good yields. On the other hand, the novel bis(thiazoles) 24 and 25 can be synthesized by the reaction of14 and15 with the correspondingp-chlorobenzaldehyde thiosemicarbazones23 in refluxing Et OH. The novel isomeric bis (thiazoles)30 and 31 can also be synthesized by a reaction of the corresponding bis (benzaldehyde thiosemicarbazones) 27 and 28 withp - chlorophenacyl bromide29. Compounds 27 and 28 were obtained by condensation of the corresponding bis(aldehydes) 12 and13 with thiosemicarbazide26 **Keywords:** Bis(A-Bromoketones); Alkylation; Cyclization; Condensation; Bis (Thiazole); Thieno[2,3-B]Thiophene.

159. A Simple Green Synthesis of (Z)-5-Arylmethylene-4- Thioxothiazolidines and Thiopyrano[2,3-D]Thiazolidine-2- Thiones in Peg-400 Under Catalyst-Free Conditions

Nadia hanafy metwally

Journal of Sulfur Chemistry, 35: 528-537 (2014) IF: 0.822

An improved Knoevenagel condensation of various aromatic aldehydes with thiazolidine -2,4- dithione and with 4thioxothiazolidin -4- one can be achieved at room temperature in polyethylene glycol -400 without catalyst to afford (Z)-5arylmethylene -4- thioxothiazolidine derivatives 3a - 3o. Also, the [4+2] cyloaddition reaction of 3a - 3g with Nphenylmaleimide 4 gave the cycloadducts 5a-5g under the same reactions conditions.

The structure of all the newly synthesized compounds was established on the basis of the elemental analysis and spectral data. This process is a simple, efficient, economical, and environmentally benign compared to classical reactions.

Keywords: 5 (Z) – Arylmethylene - 4- Thioxothiazolidines ; 4-Thioxothiazolidines ; Aromatic aldehydes ; Thiopyrano [2,3-D]Thiazolidine -2- Thiones ; Peg-400 ;Solvent-Free .

160. A New Screen-Printed Ion Selective Electrode for Determination of Citalopram Hydrobromide in Pharmaceutical Formulation

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Chinese Journal of Analytical Chemistry, 42(4): 565-572 (2014) IF: 0.7

Novel citalopram screen-printed ion selective electrodes were fabricated , characterized and used for the determination of citalopram in pharmaceutical formulations .

The proposed sensors incorporated potassium tetrakis (pchlorophenyl) borate (KTpClPB) ionophore (electrode V) and citalopram-phosphotungstate (CP-PT) ion pair complex (electrode X) as electroactive materials in screen-printed electrodes and tricresylphosphate (TCP) as solvent mediator.

The fabricated electrodes demonstrated near Nernstain response over wide linear range of $4.9 \times 10-7-1.0 \times 10-2$ M and $1.0 \times 10-6-1.0 \times 10-2$ M citalopram with lower limit of detection of $4.9 \times 10-7$ M and $1.0 \times 10-6$ M and slope of (60.47 ± 0.80) mV decade–1 and (59.93 ± 1.45) mV decade–1 for electrode (V) and (X), respectively. The results showed that the proposed sensors had the characteristics such as fast and stable response, good reproducibility, long term stability (5 and 4 months) and applicability over a wide pH range of 2–9 and 2–8 for electrodes (V) and (X). The sensors displayed good selectivity for citalopram with respect to number of common foreign inorganic, organic species, excipients and the fillers added to the pharmaceutical preparation. The sensors were successfully applied for the determination of citalopram in tablet, urine and serum.

Keywords: Citalopram ion-selective electrode; Screen-Printed electrode; Pharmaceutical preparation; Potentiometric determination.

161. Synthesis of Novel Indolizine, Pyrrolo[1,2-A] Quinoline, and 4,5-Dihydrothiophene Derivatives Via Nitrogen Ylides and their Antimicrobial Evaluation

Sobhi M. Gomha and Kamal M. Dawood

Journal of Chemical Research, 38: 515-519 (2014) IF: 0.697

Treatment of 2- (2-bromoacetyl) -3 H-benzo [f]chromen-3-one with pyridine, quinoline, and 2-methylquinoline afforded the corresponding pyridinium, quinolinium and 2- methylquinolinium bromides . The latter salts underwent [3 + 2] 1,3- dipolar cycloaddition with some electron deficient acetylene and ethylene derivatives to give the corresponding indolizine and pyrrolo [1,2 -a] quinoline derivatives. Moreover, 2 - (2- bromoacetyl) - 3H - benzo[f] chromen - 3 - one reacted with arylidene cyanothioacetamides to afford the corresponding 2 - amino - 4,5 - dihydrothiophene -3-carbonitriles. The synthesised compounds were characterised based on their elemental analysis and spectral data. Antimicrobial activity of some of the synthesized compounds was evaluated.

Keywords: Indolizine; Pyrrolo [1,2-A] Quinoline ; Dihydrothiophene ; N-Ylides; Cycloaddition.

162. Proper Use of Rice Straw Black Liquor: Lignin / Silica Derivatives as Efficient Green Antioxidants for SBR Rubber

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Pigment and Resin Technology, 43: 159-174 (2014) IF: 0.662

The purpose of this paper is to study the efficiency of lignin/silica and calcium lignite / calcium silicate as natural antioxidants in styrene -butadiene rubber (SBR) vulcanizates . Design / methodology / approach – It has been found that thermal aging data of the aged sample revealed that SBR vulcanizate undergoes crosslink reactions that lead to embrittlement and ultimately failure. Incorporation of lignin/silica or calcium lignate/calcium silicate, however, resulted in significant improvement of the degradation profile of the vulcanizates at 90 ^ 18C. Loss of tensile strength and flexibility during aging of the SBR compounds with 8 phr lignin/silica or calcium lignate/calcium silicate was mild relative to unfilled polymer, indicating a restricted degradation due to the presence of the investigated compounds. The results obtained revealed that the investigated compounds are good antioxidant, and the evaluation was confirmed by physico-mechanical properties of the vulcanizates, FT-IR spectroscopy, transmission (TEM) and scanning (SEM) electron microscope. Findings - It was noticed that SBR vulcanizates having 8 phr of lignin/silica or calcium lignate/calcium silicate exhibited the best mechanical properties in comparison with other concentrations (1, 2, 4, 6 and 10 phr). Also, results revealed that the lignin/silica derivatives are efficient antioxidants in SBR vulcanizates compared to vulcanizates containing conventional antioxidants used in rubber industry, namely polymerized 2,2,4-trimethyl-1, 2-dihydroquinoline (TMQ), and N-isopropyl-N'-phenyl-P-phenylenediamine (IPPD). Research limitations/implications - All these results indicated that lignin/silica and calcium lignate/calcium silicate in SBR had good heat resistance and aging resistance, calcium lignate/calcium silicate has an application limitation as not all vulcanizates need to use CaCO3/calcium salts. Practical implications - Lignin is usually seen as a waste product of pulp and paper industry and is often used as fuel for the energy balance of the pulping process. It is simple isolation along with silica from rice straw and using it as an antioxidant added further practical utility for this waste. Originality/value - The importance of lignin/silica derivatives is arisen from their biodegradability and their ease availability from rice straw black liquor.

Keywords: Thermal stability; Mechanical properties; Styrene butadiene rubber; Antioxidant.

163. Ultrafast Radiationless Decay Mechanisms Through Conical Intersections in Cytpsine. A new Semi-Planar Conical Intersection

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Indian J of Chemistry, 53A: 143-151 (2014) IF: 0.628

Geometry, energetics and dipole moment of all possible conformers of cytosine in the ground state are calculated using density functional theory B3LYP method and the 6-311++G(3df,3pd) basis set. The most stable conformer is keto-amino conformer. The amino group hydrogen atoms are slightly out of plane by about 6.3° and 9.9° each. Ultrafast radiationless

decay mechanism has been theoretically investigated using Complete Active Space Multiconfiguration SCF calculations. Effective pathways of ultrafast radiationless transitions from the optically allowed $\pi \pi^*$ state to the ground state S0 of cytosine are explored. The $n\pi^*$, $n\sigma^*$, and the $\pi\pi^*$ states have been taken into account as states involved in the radiationless process. Optimized geometry and conical intersections have been searched in the full dimensional space for the vibrational degrees of freedom. Three competing direct decay mechanisms through three possible conical intersections have been found to exist. The first pathway is through the bending of molecule in a sofa-like structure leading to conical intersection with ground state at 4.23 eV. The second pathway occurs through a twisted structure that has hydrogen twisted and the cytosine ring slightly deformed leading to conical intersection at 4.08 eV. The third mechanism takes place via semi-planar conical intersection with main deformations inside the cytosine ring and C=O bond that have 3.97 eV at the intersection with ground state. The three mechanisms contribute to the stability of cytosine. The g-vector and h-vector for semiplanar conical intersection are calculated and discussed along with their geometrical parameters.

Keywords: Theoretical Chemistry; Density Functional Theory; Ultrafast Radiationless Decy; Cytosine Conical Intersection; Ultrastability.

164. Diorganotin(IV) Complexes with Methionine Methyl Ester Equilibria and Displacement by DNA Constituents

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S. Afr. J. Chem., 67: 94-98 (2014) IF: 0.53

The coordination of methionine methyl ester with dimethyltin(IV) (DMT), dibutyltin(IV) (DBT) and diphenyltin(IV) (DPT) was investigated at 25 °C and 0.1 mol dm–3 ionic strength in water for dimethyltin(IV) and in 50 % dioxane–water mixture for dibutyltin(IV) and diphenyltin(IV). Methionine methyl ester forms1:1 and 1:2 complexes with diorganotin(IV). The corresponding formation constants were calculated by using the non-linear least - squares program Miniquad -75. The concentration distribution of the various complex species was evaluated as a function of pH. The displacement of coordinated methionine methyl ester with some DNA constituents was calculated based on equilibrium aspects.

Keywords: Dimethyltin(Iv); Dibutyltin(Iv); Diphenyltin(Iv); Methionine methyl ester; Stability constant.

165. Synthesis and Characterization of Coordination Behavior of Diclofenac Sodium Drug Toward Hg(II), Pb(II), and Sn(II) Metal Ions: Chelation Effect on their Thermal Stability and Biological Activity

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Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry, 44: 161-170 (2014) IF: 0.518

Diclofenac sodium compound has great biological, medical, industrial, and coordination applications. Most of its metal complexes have antibacterial and antifungal effects. A general survey of previous literature concerning the interaction of transition metals with diclofenac compound was given. From this survey, it is appeared that deep chemical studies were needed to through lighter on the complexing ability and chemical properties, due to presence of active groups such as amino, hydroxyl, carbonyl, and carboxyl groups. Therefore the present work was aimed mainly to study the spectroscopic, stability, and related thermodynamic parameters , structural , thermal , molar conductivity, and biological properties of the diclofenac sodium with selected metal ions such as Hg(II), Pb(II), and Sn(II). The used of theoretical concepts and experimental techniques were discussed. Solid complexes have been prepared and characterized by IR, UV-Vis , elemental analysis CHN , and 1HNMR. Diclofenac reacts with Hg (II), Pb(II), and Sn (II) by molar ratio (2:1) (diclofenac:metal ion). IR , UV-Vis , spectra indicate that diclofenac behaves as a monobasic bidentate ligand coordinated to the metal ions via the deprotonated carboxylate O and carbonyl groups. The Hg(II), Pb(II), and Sn(II) complexes of diclofenac are found to have high activity against bacteria, especially Bacillus subtilis, and fungi , especially Aspergillus niger , whereas the Pb(II) complex is more active than the Sn(II) and Hg (II) complexes.

Keywords: Antimicrobial activity; Diclofenac sodium; Metal complexes; Thermal analysis.

166. Certification of Three Reference Materials for α - and γ -Tocopherol in Edible Oils

A. B. Shehata, M. S. Rizk, A. M. Farag and I. F. Tahoun

MApan-Journal of Metrology Society of India, 29: 183-194 (2014) IF: 0.477

Tocopherols are important vegetable oil constituents, and their reliable quantitative analysis depends largely on the existence and quality of certified reference materials (CRMs) which provides traceability of the measurement results to the SI units. Since there is a lack of suitable CRMs in case of tocopherols analysis, three matrix reference materials from corn, peanut and soybean oils were certified for the content of a and c-tocopherols. Homogeneity and stability of the prepared reference materials were studied and certification was done by two independent chromatographic analytical methods. The measurement results were statistically treated and the certified values of a and ctocopherol in corn, peanut and soybean oils were assigned and their associated expanded uncertainties were estimated as: 322.04 \pm 8.62, 771.48 \pm 15.31, 106.23 \pm 5.19, 108.94 \pm 9.72, 140.66 \pm 5.93, 418.00 \pm 14.36 mg/kg, respectively. These values were found useful for many food testing laboratories in validation of analytical methods and analytical quality control

Keywords: Edible oils; Tocopherols; Reference materials; Certification; Homogeneity study; Statistical analysis.

167. 4-Methylresorcinol Based Bent-Core Liquid Crystals with Azobenzene Wings – A New Class of Compounds with Dark Conglomerate Phases

Mohamed Alaasar, Marko Prehm, Marcel Brautzscha and Carsten Tschierske

Journal of Materials Chemistry C, 2: 5487-5501 (2014)

Stochastic achiral symmetry breaking in soft matter systems, leading to conglomerates of macroscopically chiral domains (socalled dark conglomerate = DC phases) is of contemporary interest from a fundamental scientific point of view as well as for numerous potential applications in chirality sensing and noncentrosymmetric materials. Herein we report the synthesis and investigation of first azobenzene containing bent-core mesogens derived from 4-methylresorcinol forming DC phases with a new structure, distinct from the known fluid sponge-like distorted smectic phases as well as from the helical nano-filament phases (HNF phases, B4 phases). The effects of chain length and other structural modifications on achiral symmetry breaking were investigated. Homologues with relatively short alkyl chains form achiral intercalated lamellar LC phases (B6 phases), but on increasing the chains, these are replaced by the chiral and optically isotropic DC phases. Compounds with the longest alkyl chains form low birefringent crystalline conglomerates which represent less distorted versions of the optically isotropic DCphases. Introducing additional peripheral substituents at both outer rings removes the DC phases. The DC phases were also removed and replaced by modulated smectic phases if the azo groups were replaced by ester units, showing that azo groups favour DC phase formation with new nanostructures, distinct from the previously known types.

Keywords: Bent-core liquid crystals (Bclcs); Azobenzene; 4-Methylresorcinol; Dark congolomerate phases.

168. A Computational Study of Hexachlorobenzene-Soil Organic Matter-Interactions

Ashour A. Ahmed, Peter Leinweber and Oliver K€uhn

Journal o Theoretical and Computational Chemistry, 13(2): (2014)

The fate of hexachlorobenzene (HCB) in soil represents a critical environmental problem. Once HCB has reached the soil it will interact with soil constituents, especially soil organic matter (SOM). The understanding of this interaction is important for choosing e®ective remediation procedures. Here we report a study of binding of HCB to a test set of molecules, which was developed to mimic representative functional groups of SOM. The binding energy of complexes formed by HCB and the test set molecules were investigated at di®erent levels of theory. E®ects of di®erent types of dispersion correction to DFT, basis sets and DFT-functionals have been studied. Moreover, the general ability of dispersion-corrected DFT to represent this interaction has been benchmarked against methods such as MP2 and CCSD. As a result the B3LYP-D3 dispersion correction combined with the 6-311G(2d,2p) basis set was found to be a com- promise between accuracy and e±ciency and it is recommended for studying this type of non-covalent interaction. Moreover, the performance of the GROMOS force -eld in the description of this interaction has been tested.

Keywords: Soil organic matter; Persistent organic pollutants; Hexachlorobenzene; Density functional theory; Dispersion interaction.

169. Effect of Organo-Modified Montmorillonite on Thermal Properties of Bacterial Poly (3 -Hydroxybutyrate)

Hala F. Naguib, Mohamed S. Abdel Aziz and Gamal R. Saad

Polymer-Plastics Technology and Engineering, 53: 90-96 (2014)

Nanocomposites based on biodegradable poly(3-hydroxybutyrate) (PHB) and two types of organically modified layered silicates, cloisite 30B (C30B) and montmorillonite grafted-poly (e caprolactone) (MPCL), were prepared through solution

intercalation technique . The thermal properties of PHB / nanocomposites at different organoclay contents (5 and 10%) were investigated using differential scanning calorimetry (DSC) and thermogravimetric analysis (TGA). The DSC results showed that the dispersed MPCL enhanced the rate of crystallization of PHB from glassy and molten states, whereas C30B retarded the crystallization of PHB from glassy state and enhanced its crystallization from molten state. Kinetics of thermal degradation was studied using Ozawa and Kissinger methods.

Keywords: Kinetics; Nanocomposites; Poly(3-Hydroxybutyrate); Thermal properties

170. Hybrid Probes of Aromatic Amine and Barbituric Acid: Highly Promising Leads for Anti-Bacterial, Anti-Fungal and Anti-Cancer Activities

Bhaveshkumar D. Dhorajiya, Bharatkumar Z. Dholakiya and Rafat M. Mohareb

Medicinal Chemistry Research, 23: 3941-3952 (2014)

Today, cancer and resistant microbes remain one of the most deadly diseases in the world. In search of novel anti-cancer and anti-microbial probes, a series of newly hybrid molecules is synthesized by combining the structural features of aromatic amines and barbituric acid, using the concept of green chemistry. This approach was accomplished efficiently using water as the greener solvent and in the absence of catalyst to give the corresponding adducts. All newly synthesized compounds were characterized by spectral analysis FT-IR, 1H NMR, 13C NMR, HMBC and Elemental Analysis. Evaluations of these probes over four human cancer cell lines (Breast adenocarcinoma cancer cell line MCF-7, Non-small cell lung cancer cell line NCI-H460, CNS cancer cell line SF-268 and fibroblast cancer cell line WI-38), anti-microbial activity against five bacterial strains (S. pyogenes MTCC 442 and S. aureus MTCC 96 as the gram positive, E. coli MTCC 443, P. aeruginosa MTCC 424 and K. pneumonia MTCC 109 as the gram negative) and four fungal strains(C. albicans MTCC 227, A. clavatus MTCC 1323, T. rubrum MTCC 296 and Penicillium wild strain). Out of set of nineteen probes, three probes show significant anti-cancer activities against MCF-7, NCI-H460 and SF-268, whereas sixteen probes exhibit potent anti-tumour activity against WI-38 cell lines. Within antimicrobial bioassay, three molecules exhibited significant activity against both the gram-positive as well as gram-negative bacteria, whereas two compounds showed highly potent activity against T. rubrum fungi, while three molecules were found to be equipotent against T. rubrum as a fungal strain.

Keywords: Green chemistry N-formylation; Knoevenagel condensation; Anti-bacterial; Anti-fungal; Cytotoxicity.

171. New Approaches for the Synthesis of Pyrazole, Thiophene, Thieno [2,3-b] Pyridine, and Thiazole Derivatives Together with Their Anti-Tumor Evaluations

Rafat M. Mohareb, Amira E. M. Abdallah and Mahmoud A. Abdelaziz

Medicinal Chemistry Research, 23: 564-579 (2014)

The reaction of cyanoacetylhydrazine (1) with acetylchloride (2) gave the N-acyl derivative 3. The latter underwent ready cyclization in sodium ethoxide to give the pyrazole derivative 4

which was the key compound for the synthesis of thiophene, thieno[2,3-b]pyridine, and thiazole derivatives.

The anti-tumor evaluations of the newly synthesized products against the three human tumor cell lines, namely, breast adenocarcinoma (MCF-7), non-small cell lung cancer (NCI-H460), and CNS cancer (SF-268), were studied. Some of these compounds were found to exhibit much higher inhibitory effects toward the three tumor cell

lines than the reference doxorubicin. Molecular modeling of the four compounds 12c, 12f, 16a, and 16d, which showed the maximum inhibitory effect, were done.

Keywords: Pyrazole; Thiophene; Thieno[2,3-B]

Pyridine; Thiazole; Anti-tumor.

172. Preparation and Characterization of Biodegradable Polyurethane Nanocomposites Based on Poly(3- Hydroxybutyrate) and Poly (Butylene Adipate) Using Reactive Organoclay

Mohamed S. Abdel Aziz, Hala F. Naguib, Sherif M. Sherif and Gamal R. Saad

Polymer-Plastics Technology and Engineering, 53: 1671-1681 (2014)

Polyurethane nanocomposites were synthesized using one-step solution polymerization of poly(3-hydroxybutyrate)-diol, poly (butylene adipate) - diol using 1,6- hexamethylene diisocyanate. Nanocomposites were prepared using an in-situ polymerization method.

The structure was verified using FTIR and 1HNMR. Morphology was examined by XRD and TEM methods. Thermal properties were examined using DSC and TG. DSC showed that all samples were semicrystalline. The Cloisite 30B enhanced the melt crystallization of PHB segments while hindering those of the PBA segments. Thermal stability was improved compared to the neat PUs samples. The Coats-Redfern model was used to calculate the activation energy. Mechanical properties were improved with incorporation of organoclays.

Keywords: Activation energy; Cloisite 30B; Mechanical properties; Nanocomposites; Polyurethanes; Thermal properties.

173. Pyran-Squaraine as Photosensitizers for Dye-Sensitized Solar Cells: DFT/TDDFT Study of the Electronic Structures and Absorption Properties

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International Journal of Photoenergy, 2014: 1-11 (2014)

In an effort to provide, assess, and evaluate a theoretical approach which enables designing efficient donor-acceptor dye systems, the electronic structure and optical properties of pyran-squaraine as donor-acceptor dyes used in dye-sensitized solar cells were investigated. Ground state properties have been computed at the B3LYP/6-31+G** level of theory.

The long-range corrected density functionals CAM-B3LYP, PBEPBE, PBE1PBE (PBE0), and TPSSH with $6-311++G^{**}$ were employed to examine absorption properties of the studied dyes. In an extensive comparison between experimental results and ab initio benchmark calculations, the TPSSH functional with $6-311++G^{**}$ basis set was found to be the most appropriate in describing the electronic properties for the studied pyran and squaraine dyes.

Natural transition orbitals (NTO), frontier molecular orbitals (FMO), LUMO, HOMO, and energy gaps, of these dyes, have been analyzed to show their effect on the process of electron injection and dye regeneration. Interaction between HOMO and LUMO of pyran and squaraine dyes was investigated to understand the recombination process and charge-transfer process involving these dyes. Additionally, we performed natural bond orbital (NBO) analysis to investigate the role of charge delocalization and hyperconjugative interactions in the stability of the molecule.

Keywords: DFT / Tddft; Photosensitizers; Dye-Senithized; Electronic structure; Electronic spectra.

174. Synthesis and Cytotoxicity of Fused Thiophene and Pyrazolederivatives Derived from 2-*N*-Acetyl-3-Cyano-4,5,6,7 Tetrahydrobenzo[*b*]Thiophene

Rafat M. Mohareb, Wagnat W. Wardakhan and Faten I. Hamed

Med Chem Res, 1: 1-11 (2014)

The reaction of 2 - amino - 3 - cyano - 4, 5, 6, 7 - tetrahydrobenzo [b] thiophene with chloroacetyl chloride gave the 2 - chloroacetamido derivative 3. The latter reacted with hydrazine hydrate to give the hydrazine derivative 5 which was used to form the hydrazone derivatives 7a, b and 9a, b via its reaction with some carbonyl compounds.

Moreover, it produced the pyrazole derivatives 11a, b through its reaction with either acetylacetone or ethyl acetoacetate. On the other hand, compounds 5 and 3 were used to form some thiazole, pyridine, and fused derivatives.

The cytotoxicity of the newly obtained products was evaluated against some of the human cancer and normal cell lines where the results showed that compounds 3, 11b, 13, 18c, 18d, 21, 23, and 24 exhibited optimal cytotoxic effect against cancer cell lines, with IC50's in the nM range.

Keywords: Benzo[B]Thiophene;Pyridine;Pyrazole ;Thiazole Cytotoxicity.

175. Synthesis of Progesterone Derivatives and Evaluation of Their Efficiency is Pneumococcal Vaccines

Rafat M. Mohareb, Fatma O. Al Farouk, Sherif M. Sherif and Konstantin Karaghiosoff

Medicinal Chemistry Research, 23: 3165-3177 (2014)

Progesterone (1) was used as a template to develop new anticancer compounds . Ring D modification of 1, through its reaction with active methylene derivatives , gave the condensate derivatives 3a, b.

The latter compounds underwent heterocyclization reactions through the reaction with either hydrazine hydrate or phenyl hydrazine to give the pyrazole derivatives 6a - d, respectively. The reaction of 1 with bromine gave the a-bromo derivative 7, which in turn reacted with potassium cyanide to yield the cyanoacetyl derivative 8. Compound 8 has been subjected to a series of reactions that produced benzylidene, aryl hydrazine, pyrazole, and pyran derivatives. The newly synthesized products were tested for their efficiency as pneumococcal vaccines and the results were promising.

Keywords: Pneumococcal vaccines; Progesterone; Pyrazole; Thiophene; Pyran; Arylhydrazone benzylidene.

Dept. of Entomology

176. Structural Changes of the Follicular Cells During Developmental Stages of the Malaria Vector Mosquitoes Anopheles Pharoensis (Diptera: Culicidae) in Egypt

Abeer S. Yamany, Fatma K. Adham and Heinz Mehlhorn

Parasitology Research, 113(11): 4233-4241 (2014) IF: 2.327

The structure modulation of follicular cells and the ovarian changes during fourth larval instar and pupal stage of the malaria vector mosquitoes Anopheles pharoensis Theobald were investigated using the light and electron microscopy. The generative organs consist of a pair of polytrophic ovaries (OV), which are oblong, spindle-shaped bodies, lying dorsolaterally and occupying the region from the mid-fifth to the mid-sixth abdominal segment in the fourth larval instar, while in the pupal stage, each ovary (OV) is situated in the haemocoel of the sixth abdominal segment. It is an oblong body slightly larger in diameter; the lumen of the calvx becomes wider and central, and the pedicel (P) consists of one row of compact discoidal cells; meanwhile, in the fourth larval instar, the pedicel is without a lumen and consists of two rows of discoidal cells which are arranged as a short column between the follicle and calyx. The mean volume of the follicle in the fourth larval instar is 9.078 ± 3.0178 µm3,meanwhile in the pupal stage being 12.051±2.427 µm3. The germarium (G) decreases in size in the pupal stage and contains a group of cells from which the oogonia differentiate, follicular cells which are similar to trophocytes, undifferentiated into one oocyte (O), which will develop into an egg and it is statistically the smallest one measured (0.058±0.0041 µm3, 0.303±0.0086 µm3) in fourth larval instar and pupal stage, respectively as compared to the others within the follicle which will be accompanied as nurse cells (NC). The follicle is enclosed by a mononuclear flattened cells (follicular membrane), which have distinct boundaries. The vitellarium is differentiated into primary (F1) and secondary follicles(F2) in the pupal stage. The Golgi apparatus (GA)appears as discrete bits which are restricted to the perinuclear zone. The mitochondria (M) in the fourth larval instar are in the form of granules and short rods. They are perinuclearly distributed, forming a ring that surrounds the comparatively large nucleus. In the pupal stage, a similar condition to that described for the larvais observed, but with an increase in size and numbers, due to breaking up of rods into granules.

Keywords: Structural changes; Follicular cells; Developmental stage; Anopheles pharoensis.

177. Molecular Cloning, Characterization, and Expression Pattern of the Ultraspiracle Gene Homolog (RXR/USP) from the Hemimetabolous Insect Periplaneta Americana (Dictyoptera, Blattidae) During Vitellogenesis

Elgendy AM, Elmogy M and Takeda M.

Molecular Biotechnology Part B of Applied Biochemistry and Biotechnology, Feb;56(2): 126-135 (2014) IF: 2.275

Ecdysteroid and sequiterpenoids juvenile hormones play a gonadotrophic role in the insect adult female vitellogenesis. The molecular basis of hormone action has been analyzed in great detail in flies and moths, but rarely in primitive insect orders. The primitive hemimetabolous insect Periplaneta americana was used, as a model, to isolate and characterize, for the first time, two cDNAs of RXR/USP, a component of the heterodimeric ecdysone receptor. These two cDNAs correspond to two isoforms, named PamRXR-S (short form) and PamRXR-L (longform). Both are identical except for 25 amino acids deletion/insertion located in the loop between helices H1 and H3 of the ligand-binding domain. The two isoforms are differentially expressed in different tissues as revealed by RT-PCR and northern blot analysis. In fat body, brain, ovary, and muscle tissues, the predominant form was PamRXR-S, whereas PamRXR-L was abundant in ovaries. The PamRXR transcript was detected during all stages of vitellogenesis in the fat body with different levels. It was little low during the early vitellogenic period (days 2, 3), then a peak of increase was detected during days 4-6 (day 5) which was followed by another peak of increase at the end of vitellogenesis, day 9. We assumed that PamRXR might play a dual role of induction of vitellogenin through JH at early vitellogenesis and suppression through 20E during late vitellogenesis. The present work will pave the way for several other investigations to understand both the ecdysteroid-dependent genetic hierarchy and JH mechanism controlling vitellogenesis in the American cockroach, P. americana.

Keywords: RXR;Vitellogenesis; Periplaneta americana; Female fat body; Expression pattern .

178. Quantitative and Ultrastructural Changes in the Haemocytes of Spodoptera Littoralis (Boisd.) Treated Individually or in Combination with Spodoptera Littoralis Multicapsid Nucleopolyhedrovirus (SpliMNPV) and Azadirachtin

El-Sayed H. Shaurub, Afaf Abd El-Meguid and Nahla M. Abd El-Aziz

Micron, 65: 62-68 (2014) IF: 2.062

The total haemocyte count (THC) and the possible ultrastructural alterations induced in the haemocytes of the fourth larval instars of the Egyptian cotton leafworm, Spodoptera littoralis (Boisd.) (Lepidoptera: Noctuidae), 96 h post-feeding on a semi-synthetic diet, treated with the LC_{50} of Spodoptera littoralis multicapsid nucleopolyhedrovirus (SpliMNPV) and the LC_{50} of azadirachtin alone, and the LC_{25} of SpliMNPV combined with the LC_{25} of azadirachtin were studied and compared to the control. Single treatment with the virus and azadirachtin or combined treatment significantly decreased the THC compared to the control.

There are five types of haemocytes in S. littoralis: prohaemocytes, plasmatocytes, granulocytes, spherulocytes and oenocytoids. The most common symptoms in granulocytes and plasmatocytes, the main affected cell types, due to viral infection were the presence of virogenic stroma, peripheral dispersion of the chromatin and disappearance of the nucleoli. However, the most common symptoms in these two types of haemocytes due to treatment with azadirachtin were the presence of rough endoplasmic reticulum filled with fibrous materials, due to probably apoptosis, in their cisternae and disorganization of mitochondria (looped, vacuolated and swollen). In addition, the cytoplasm of granulocytes was vacuolated with the appearance of autophagic lysosomes, while plasmatocytes showed ruptured cell membrane and folded nuclear envelope. Combined treatment with the NPV and azadirachtin induced the same pathological changes which were recorded from individual treatment with the virus or azadirachtin to the same haemocytes. It can be concluded that the change in the THC and

ultrastructure of granulocytes and plasmatocytes may affect the cellular-mediated immune response in S. littoralis. Moreover, it seems likely that mitochondria were the target site of azadirachtin, as they were affected in both granulocytes and plasmatocytes treated with azadirachtin alone or in combination with SpliMNPV.

Keywords: Spodoptera littoralis; Nucleopolyhedrovirus;

Azadirachtin; Total haemocyte count; Haemocyte ultrastructurea.

179. Apterogyninae Hymenoptera: Bradynobaenidae from Saudi Arabia, with Description of A New Species

Neveen S. Gadallah, Hathal M. Al Dhafer, Yousif N. Aldryhim, Hassan Fadl, Ali A. Elgharbawy and Guido Pagliano

Zootaxa, 3754: 491-497 (2014) IF: 1.06

Eleven species in three genera from Saudi Arabia are listed. Macroocula riyadha Gadallah & Pagliano, spec. nov. is described and figured. Apterogyna mateui Giner Mar, 1945, Macroocula nitida nitida Bischoff, 1920 are newly recorded from Arabian Peninsula and Saudi Arabia, Macroocula magna Invrea, 1965 is newly recorded from Saudi Arabia.

Keywords: Apterogyninae; New species; New records; Ibex reserve national park; Riyadh; Saudi arabia.

180. Phthiria Sharafi Sp. Nov., A New Record of the Subfamily Phthiriinae (Bombyliidae, Diptera) From Saudi Arabia

Magdi S. El-Hawagry and Hathal M. Al Dhafer

Zootaxa, 3872: 387-392 (2014) IF: 1.06

This new species Phthiria sharafi sp. nov. represents the first record of the subfamily Phthiriinae Bombyliidae, Diptera from Saudi Arabia. The species was collected from Garf Raydah Protected Area, Abha, Asir Province, south-western part of Saudi Arabia, using a Malaise trap erected in a site rich in olive, cactus and Juniper trees. The type locality has an Af-rotropical influence, with the Afrotropical elements predominant, and a closer affiliation to the Afrotropical region than to the Palearctic region or the Eremic zone.

Keywords: Phthirini; New species; Arabian peninsula; Asir; Abha; Garf raydah protected area; Afrotropical.

181. The Genus Micatagla Argaman, 1994 in Egypt, With Three New Species and A New Record (Hymenoptera, Bradynobaenidae, Apterogyninae)

Neveen S. Gadallah and Ahmed M. Soliman

Zookeys, 397: 71-81 (2014) IF: 0.917

The genus Micatagla Argaman (Bradynobaenidae: Apterogyninae) is reviewed from Egypt, based on specimens collected from Wadi Allaqi (Aswan, Southern Egypt) and Kom Osheim (Fayoum) and those deposited in Egyptian insect collections as well as recorded data from the literature. A single species, Micatagla klugi (André), was previously recorded from Egypt. Micatagla allaqiensis sp. n., Micatagla ezzati sp. n. and Micatagla pseudorainerii sp. n. are described here. Micatagla antropovi Pagliano is also newly recorded from the Egyptian fauna. An illustrated key and a faunistic list comprising all Micatagla species recorded from Egypt are given. **Keywords:** Apterogyninae; Micatagla; New species; New record; Faunistic list.

182. Sub-Lethal Effects of Spinetoram on the Activities of Some Detoxifying Enzymes in the Black Cutworm Agrotis Ipsilon (Hufnagel) (Lepidoptera: Noctuidae)

N.M. Abd El-Aziz and E.H. Shaurub

African Entomology, 22: 136-143 (2014) IF: 0.772

The present study was designed to investigate the activities of the detoxifying enzymes acetylcholinesterase (AChE), non-specific esterases (a- and b-esterases), glutathione S-transferase (GST) and mixed-function oxidases (MFO) in spinetoram-treated Agrotis ipsilon (Hufnagel). For this purpose, fourth larval instars were exposed to three sub-lethal concentrations (LC10, LC20 and LC50) of spinetoram for 24 h using the leaf dipping technique. The activities of detoxifying enzymes in the survivors after 2, 4 and 6 days of treatment were compared to non-treated larvae (control). AChE activity was significantly increased after 4 and 6 days of treatment with the LC10.

In contrast, this activity was significantly decreased after 2 days of treatment with the three sub-lethal concentrations applied, and after 4 and 6 days of treatment with the LC20 and LC50. While both a- and b-esterase activities were significantly enhanced after 2 days of treatment with all the previous sub-lethal concentrations, with no constant pattern after 4 and 6 days of treatment. GST activity was significantly increased on the second day of treatment with the LC10, and on the fourth day of treatment with the LC10 and LC50.

Whereas the only significant decrease in GST activity was observed on the sixth day of treatment with the LC10. No significant change was recorded on the second and sixth days of treatment with the LC20 and LC50, and on the fourth day of treatment with the LC20. The activity of MFO was significantly enhanced up to the fourth day of treatment with all the concentrations investigated , whereas this activity was significantly decreased on the sixth day of treatment. Therefore, it appears that higher activities of detoxifying enzymes in A. ipsilon generally occurred in response to the intoxication by the lowest concentration of spinetoram, particularly after a relatively early time of treatment , and MFO may be considered the principal detoxifying enzymes.

Keywords: Insects; Spinosyns; Acetylcholinesterase; Non-Specific esterases; Glutathione S-transferases; Oxidases.

183. Eucharitidae Hymenoptera, Chalcidoidea, A Family New To the Fauna of Saudi Arabia, With the Description of the Previously Unknown Male of Eucharis Psilogastrellus Affinis Boucek

Neveen S. Gadallah, Yusuf A. Edmardash, Hathal M. Al Dhafer and Magdi S. El-Hawagry

Zookeys, 462: 115-123 (2014) IF: 0.917

The family Eucharitidae Hymenoptera: Chalcidoidea is recorded for the first time for the fauna of Saudi Arabia based on Hydrorhoa caffra Westwood and Eucharis Psilogastrellus affinis Boucek. The record of H. caffra suggests that Al-Baha and Asir provinces should be considered as part of the Afrotropical rather than the Palaearctic region. The previously unknown male of E. affinis Boucek is described and figured. Macrophotographs of the species are provided.

Keywords: Eucharitidae; Eucharis; Hydrorhoa; New records; Baha city; Asir province; Saudi Arabia.

184. Zoogeographical Affinities and Faunal Relationships of Bee Flies (Diptera: Bombyliidae) in Egypt

Magdi S. El-Hawagry and Francis Gilbert

Zoology in the Middle East, 60: 50-56 (2014) IF: 0.524

The distributions of 229 beefly Diptera: Bombyliidae species across the eight Egyptian ecological zones, together with their faunal affinities to the main zoogeographical regions, were used to test the suggestion of Holt et al. 2013 that the Saharo- Arabian is a distinct region rather than a subregion of the Palaearctic.

All Egyptian ecological zones but one have greater affiliation to the Palaearctic and Saharo- Arabian than to the Afrotropical region; the Gebel Elba ecological zone, the southeastern triangle of Egypt, has greater affinities with the Afrotropics.

Affinities to the Saharo-Arabian region were not different from those to the Palaearctic.

From its bombyliid fauna, therefore, the Saharo-Arabian region is so closely allied to the Palaearctic as to constitute merely a subregion of it. Sinai shows a high level of endemism reflecting its isolation from other parts of Egypt.

Keywords: Palaearctic; Afrotropical; Saharo-Arabian; Egyptian ecological zones.

Dept. of Geology

185. Effect of Microwave Pre-Treatment on the Magnetic Properties of Iron Ore and its Implications on Magnetic Separation

Mamdouh Omran, Timo Fabritius, Ahmed M. Elmahdy, Nagui A. Abdel-Khalek, Mortada El-Aref and Abd El-Hamid Elmanawi

Separation and Purification Technology, 136: 223-232 (2014) IF: 3.065

The use of microwave heating is a potential means of energy savings and is a more effective alternative to the conventional thermal processing of minerals. The effect of microwave treatment on Egyptian iron ore samples was investigated. Changing the microwave exposure time and power as well as their reflection on the magnetic properties of iron ore before and after microwave pretreatment was analyzed using different techniques. Microwave treatment was found to be more efficient at larger particle sizes and longer exposure times for a fixed value of the applied power intensity. Magnetic separation of microwave treated and untreated iron ore indicated that iron recovery increased from 39.54% in the untreated sample to 97.95% in the microwave-treated sample. The results indicated that microwave radiation has a significant effect on the magnetic properties of hematite through the formation of new and more magnetic phases that facilitate their separation from non-magnetic minerals, thereby obtaining high recovery, reaching ca. 98%.

Keywords: Microwave radiation;Iron ore;Magnetic properties magnetic separation.

186. Microbially Induced Sedimentary Structures in Evaporite–Siliciclastic Sediments of Ras Gemsa Sabkha, Red Sea Coast, Egypt

Amany G. Taher

Journal of Advanced Research, 5: 577-586 (2014) IF: 3

The coastal sabkha in Ras Gemsa, Red Sea coast with its colonizing microbial mats and biofilms was investigated. The sabkha sediments consist mainly of terrigenous siliciclastic material accompanied by the development of evaporites. Halite serves as a good conduit for light and reduces the effect of intensive harmful solar radiation, which allows microbial mats to survive and flourish. The microbial mats in the evaporitesiliciclastic environments of such sabkha display distinctive sedimentary structures (microbially induced sedimentary structures), including frozen multidirected ripple marks, saltencrusted crinkle mats, jelly roll structure, and petee structures. Scanning electron microscopy of the sediment surface colonized by cyanobacteria revealed that sand grains of the studied samples are incorporated into the biofilm by trapping and binding processes. Filamentous cyanobacteria and their EPS found in the voids in and between the particles construct a network that effectively interweaves and stabilizes the surface sediments. In advanced stages, the whole surface is covered by a spider weblike structure of biofilm, leading to a planar surface morphology. Sabkha with its chemical precipitates is a good model for potential preservation of life signatures. It is worthy to note that the available, published works on the subject of the present work are not numerous.

Keywords: Biofilms; Coastal sabkha; Evaporites; Microbial mats; Siliciclastics.

187. Facies Analysis and Palaeoclimatic Significance of Ironstones Formed During the Eocene Greenhouse

Walid Salama, Mortada El Aref and Reinhard Gaupp

Sedimentology, 61: 1594-1624 (2014) IF: 2.741

Lower and middle Eocene ironstone sequences of the Naqb and Qazzun formations from the north-east Bahariya Depression, Western Desert, Egypt, represent a proxy for early Palaeogene climate and sea-level changes. These sequences represent the only Palaeogene economic ooidal ironstone record of the Southern Tethys. These ironstone sequences rest unconformably on three structurally controlled Cenomanian palaeohighs (for example, the Gedida, Harra and Ghorabi mines) and formed on the inner ramp of a carbonate platform. These palaeohighs were exposed and subjected to subaerial lateritic weathering from the Cenomanian to early Eocene.

The lower and middle Eocene ironstone sequences consist of quiet water ironstone facies overlain by higher energy ironstone facies. The distribution of low-energy ironstone facies is controlled by depositional relief.

These deposits consist of lagoonal, burrow-mottled mudironstone and laterally equivalent tidal flat, stromatolitic ironstones.

The agitated water ironstone facies consist of shallow subtidalintertidal nummulitic-ooidal-oncoidal and back-barrier stormgenerated fossiliferous ironstones. The formation of these marginal marine sequences was associated with major marine transgressive-regressive megacycles that separated by subaerial exposure and lateritic weathering. The formation of lateritic palaeosols with their characteristic dissolution and reprecipitation features, such as colloform texture and alveolar voids, implies periods of humid and warm climate followed major marine regressions.

The formation of the lower to middle Eocene ironstone succession and the associated lateritic palaeosols can be linked to the early Palaeogene global warming and eustatic sea-level changes.

The reworking of the middle Eocene palaeosol and the deposition of the upper Eocene phosphate-rich glauconitic sandstones of the overlying Hamra Formation may record the initial stages of the palaeoclimatic transition from greenhouse to icehouse conditions. **Keywords:** Bahariya depression; Climatic changes; Egypt; Ooidal ironstones; Palaeosols.

188. Palaeoecological and Post-Depositional Changes Recorded in Campanian-Maastrichtian Black Shales, Abu Tartur Plateau, Egypt

Moataz El-Shafeiy, Daniel Birgel, Ahmed El-Kammar, Ahmed El-Barkooky, Michael Wagreich, Omar Mohamed and Jörn Peckmann

Cretaceous Research, 50: 38-51 (2014) IF: 2.39

The Upper Cretaceous black shales of Egypt are part of the worldwide belt of Late Cretaceous organic-rich shales. Black shales are particularly prominent in North Africa and the Middle East. In Egypt , these shales occur in an east-west trending belt extending from the Quseir-Safaga district along the Red Sea to the Kharga-Dakhla land-stretch passing through the Nile Valley. The black shales are hosted mainly in the Campanian to Maastrichtian Duwi and Dakhla formations.

In order to reconstruct palaeoenvironmental conditions, the present work focuses on the distribution of organic matter including lipid biomarkers within the Abu Tartur borehole section, which was drilled in 2007 in the Maghrabi-Liffya area. The kerogen in the Abu Tartur section is of type III with the exception of sedimentary deposits at the Duwi/Dakhla transition. Low Tmax, odd-over-even predominance of n-alkanes with a commonly high Carbon Preference Index, good preservation of carboxylic acids and abundant 17,21-hopanes and -hopanoic acids indicate immaturity of the organic constituents in the bitumen. Although thermal maturation was only low, the preponderance of rearranged steranes (diasterenes) over regular enhanced steranes indicates clay catalysis. Signicant allochthonous input typies the Abu Tartur section deposits, which are characterized by high contents of long-chain n-alkanes and low carbonate contents.

The high content of desmethyl steranes and diasterenes suggests that marine algae were the main marine primary producers. The presence of different isomers of hopanes (C27,C29-C31) and hopanoic acids (C31-C33) reveals input from various bacteria. The observed variation in the abundance of biomarkers corresponds to changes in planktic algal assemblages associated with sea level change and episodic photic zone anoxia, which are indicated by the occurrence of aryl isoprenoids, biomarkers of green sulphur bacteria.

Keywords: Biomarkers;Rock-Eval;Mineral composition; Campanian;Maastrichtian; Black shales;Abu tartur; Egypt.

189. Raman Investigations of Upper Cretaceous Phosphorite and Black Shale from Safaga District, Red Sea, Egypt

Valerian Ciobotá, Walid Salama, Paul Vargas Jentzsch, Nicolae Tarcea, Petra Rösch, Ahmed El Kammar, Rania S. Morsy and Jürgen Popp

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 118: 42-47 (2014) IF: 2.129

The mineral composition of the Upper Cretaceous Duwi phosphorite deposits and underlying Quseir Variegated Shale from Safaga district, Red Sea Range, Egypt, was investigated by dispersive and Fourier transformed Raman spectroscopy. The only phosphorous containing mineral detected in the phosphorite deposits was carbonate fluorapatite. Often carbonate fluorapatite appears associated with calcium sulfate and seldom with calcium carbonate in the investigated samples. Iron is present in the form of goethite and pyrite in the phosphorite layer, while pyrite, marcasite and hematite were identified in the Ouseir Shale samples. Also, a high amount of disordered carbon was detected in the black shale layers. The Raman results confirm the hypothesis that the formation of the phosphorites took place in a marine environment. During the formation of black shale, the redox conditions changed, with the pH reaching values of 4 or even lower. Diagenetic and weathering transformations had taken place in the phosphorite deposits, calcium sulfate and goethite being products of these types of processes.

Keywords: Raman spectroscopy-Phosphorite minerals; Apatite.

190. Paleoenvironmental Significance of Aluminum Phosphate-Sulfate Minerals in the Upper Cretaceous Ooidal Ironstones, E-NE Aswan Area, Southern Egypt

Walid Salama

International Journal of Earth Sciences, 103: 1621-1639 (2014) IF: 2.084

Aluminum phosphate-sulfate (APS) minerals are present as small, disseminated crystals in the upper Cretaceous shallow marine ooidal ironstones, E-NE Aswan area, southern Egypt. Their association with the ironstones is considered as a proxy of subaerial weathering and postdiagenetic meteoric water alteration. The mineralogical composition of the ooidal ironstones was investigated by optical and scanning electron microscopes, X-ray diffraction, Fourier transform infrared and Raman spectroscopy. The ooidal ironstones are composed mainly of ooids and groundmass, both of which consist of a mixture of detrital (quartz) and diagenetic (fluorapatite, chamosite and pyrite) mineral assemblages. These mineral assemblages are destabilized under acidic and oxidizing, continental conditions. These conditions resulted from the oxidation of pyrite and probably organic matter under warm and humid, tropical climate followed the Santonian Sea regression and subaerial exposure. These pedogenic conditions promoted corrosion of quartz, dissolution of chamosite and apatite and hydrolysis of feldspars of the nearby exposed granitoids. The released Si, Al and Sr from quartz, chamosite and feldspars; Fe and S from pyrite and P, Ca and light rare earth elements (LREE) from apatite are reprecipitated as hematite, kaolinite, apatite and APS minerals from the pore fluids or along fractures. The paragenetic sequence and textural relationships of this post-diagenetic mineral assemblage indicate

that hematite was formed by replacement of chamosite followed by formation of a secondary generation of pore filling chlorapatite and APS minerals and finally the precipitation of kaolinite in the remaining pore spaces. The formation of APS minerals and chlorapatite is simultaneous, but APS minerals are stable at shallow depths under acidic to neutral pH conditions, whereas chlorapatite is stable under alkaline pH conditions. Alkaline conditions were maintained at greater depths when the infiltrated acidic fluids reacted with chamosite. The APS minerals display a homogeneous chemical composition in all ironstone locations in Aswan area, corresponding to a solid solution between crandallite (CaAl3(PO4)2(OH)5·H2O), goyazite (SrAl3(PO4)2(OH)5·H2O), svanbergite (SrAl3(PO4)(SO4) (OH)6) and woodhouseite (CaAl3(PO4)(SO4)(OH)6) endmembers. The variations in the APS mineral chemistry (AB3(XO4)2(OH)6) are essentially due to variable substitutions of Sr and LREE for Ca at the A site and limited S for P at the X site. The spatial distribution of APS minerals and their composition in the ooidal ironstones of Aswan area permitted to consider them as good tracers of physicochemical and paleoenvironmental changes, in particular those associated with subaerial exposure and pedogenesis. The post-diagenetic phosphatization and kaolinization of the Aswan decrease their economic potentiality; ironstones thus. understanding paragenetic sequence and textural relationships is essential for the iron ore beneficiation.

Keywords: Aluminum phosphate-sulfate minerals;

Paleoenvironment; Ooidal ironstones, Aswan; Egypt.

Dept. of Geology

191. Geometallurgy and Processing of North Ras Mohamed Poly-Mineralized Ore Materials, South Sinai, Egypt

T.E. Amer, I.E. El Assay, A.A. Rezk, A.M. El Kammar, A.W. ElManawi and H.A. Abu Khoziem

International Journal of Mineral Processing, 129: 12-21 (2014) IF: 1.461

The presentwork aims to study the link between mineralogy and process characteristics of North Ras Mohamed ore materials. The chemical nature of the latter was also studied to determine the type of treatment employed from one hand and the preferred lixiviate option from the other hand. For this purpose, three technological samples representing three different deposit types were examined for their potential processing options. These include basal sandstone, aplite dyke and pegmatitic bodieswhich were found to assay 0.05, 0.04 and 0.06% U, 0.13, 0.10 and 0.07% Th and 0.14, 0.13 and 0.09% REEs respectively, while Nb assays 1.3% and Ta 0.5%, in the pegmatitic ore sample. The corresponding minerals of these elements of interest include thorite and uranothorite in the basal sandstone ore material. On the other hand, themultiple-oxideminerals samarskite, fergusonite and allanite are found in both the aplite and the pegmatite bodies. However, the zircon, fluorite, apatite, titanite and brookite are considered as the main accessory minerals in the three study ore materials Based on the available chemical and mineralogical data on the three different ore material types of Ras Mohamed area, a physical upgrading process would be required as a major recommendation for future prolific metallurgical work.

Keywords: Mineralogy; Leaching; Pegmatite; Aplite; Sandstone; and sinai.

Vol. 9(1), May 2015

192. Formation and Calcification of Modern Gypsum-Dominated Stromatolites, Emisal, Fayium, Egypt

Amany Gamal Taher

Facies, 60: 721-735 (2014) IF: 1.338

Recent gypsum stromatolites are forming along the margin as well as on the pond floor of the EMISAL saltworks. Favium, Egypt. Gypsum precipitates are classified according to their morphology, fabrics, and crystal size into (1) subaqueous bottom gypsum crusts, (2) selenitic gypsum facies, (3) stromatolitic gypsum dome facies, and (4) gypsolite facies. Two types of microbial mats, lithifying and non-lithifying, can be identified. The lithifying mat is shallow and composed of an alternation of gypsum and microbial layers that are seasonally controlled. The non-lithifying mat, formed in the deeper part of the pond, is a greenish-brown slime-rich layer that exhibits a frothy macro texture and produces a firm gelatinous film covering the sediment surface. Calcium carbonate (mostly aragonite) particles, identified by light and scanning electron microscopy, and X-ray diffraction occur within the deeper part of the lithified mat and are associated with living and degrading biofilm. Precipitation of aragonite is associated with the dissolution of gypsum, which may have resulted from bacterial sulphate reduction. The latter process increases alkalinity and ultimately results in the replacement of gypsum by aragonite.

Keywords: Biofilm; EMISAL; Gypsum; Microbial; Mats; Solar Saltworks; Stromatolites.

193. Microbial Stabilization of Sediments in A Recent Salina, Lake Aghormi, Siwa Oasis, Egypt

Amany Gamal Taher and A. Abdel-Motelib

Facies, 60: 45-52 (2014) IF: 1.338

Stabilization of sediments by microbial mats and biofilms were studied in detail in Lake Aghormi, Siwa Oasis, Egypt. The study has shown that microbial mat assemblages, particularly filamentous cyanobacteria, with their extracellular polymeric substances (EPS) are capable of effectively stabilizing sediments. The microbial mats in the siliciclastic environments of Lake Aghormi display distinctive sedimentary structures (microbially induced sedimentary structures), including multidirected ripple marks, microbial patches, petee structures, erosional remnants and pockets, and gas domes. Scanning electron microscopy study of the sediment surface colonized by cyanobacteria revealed that filamentous types are the most effective stabilizing organisms. Filamentous cyanobacteria and their EPS construct a network, interweave depositional grains of the sediment surface, envelope the particles, and glue them together. The studied biofilm is so thick forming a spider-web structure that totally coat the particles in such a way the morphology of the particles is masked. Keywords: Biostabilization; Gas domes; Halite-Microbial mats; Siwa oasis.

194. Ancient Egyptian Pottery from the Subsurface Floodplain of the Saqqara–Memphis Area: its Mineralogical and Geochemical Implications

M. A. Hamdan, S. M. Martinez, M. T. Garcia Vallès, J. M. Nogués, F. A. Hassan, R. J. Flower, M. H. Aly, A. Senussi and E. S. Ebrahim

Archaeometry, 56: 987-1008 (2014) IF: 1.328

Potsherds recovered from the Saggara-Memphis floodplain in Egypt, dated according to their typology and radiocarbon dating of the included sediments, are analysed geochemically and mineralogically to identify source materials and fabrication characteristics. Pottery layers were identified and potsherds were recovered from several settlement levels. Sherd typology was used to identify sherds from four periods (the Old and New Kingdoms, and from the Late Period to the Ptolemaic). The Pharaonic pieces were found at depths of between 8 and 12 m and the later material was between 6 and 3 m. Chemical analyses of the potsherds revealed three main source materials: local Nile silt, marl clay and mixed Nile silt-marl. Two marl clay types were recognized: marl clay from Upper Cretaceous marine sediment and another one from Late Pliocene deltaic sediments. The mineralogical composition of the pottery samples shows that the estimated firing temperature was about 850-900°C. No consistent differences in sherd mineralogy and geochemistry were found according to pottery types, so that the ancient Egyptian potters used essentially the same materials throughout the Pharaonic period. However, this initial study has revealed the existence of extensive pottery-rich occupation sites buried within the Nile floodplain deposits between Memphis and Saggara.

Keywords: Pottery;Ancient egyptian; Mineralogy; Geochemistry; Saqqara; Memphis.

195. Anthracotheres from Wadi Moghra, Early Miocene, Egypt

Ellen R. Miller, Gregg F. Gunnell, Mohamed Abdel Gawad, Mohamed Hamdan, Ahmed N. El-Barkooky, Mark T. Clementz and Safiya M. Hassan

Journal of Paleontology, 88 (5): 967-981 (2014) IF: 1.199

The early Miocene site of Wadi Moghra, Oattara Depression, Egypt, is important for interpreting anthracothere (Mammalia, Artiodactyla) evolution, because the Moghra sediments preserve a higher diversity of anthracotheres than any other penecontemporaneous site. New specimens from Moghra are described and form the basis for the systematic revision of Moghra anthracotheres provided here. Among the important discoveries recently made at Moghra is the first complete skull of Sivameryx moneyi. Other new specimens described here include two new species of Afromeryx, and a new genus and species, all of which are unique to Moghra. A review of biogeographic information supports the conclusion that three of the Moghra anthracotheres (Brachyodus depereti, B. mogharensis, and Jaggermervx naida, n. gen, n. sp.) are members of late surviving lineages with a long history in Africa, while three other species (Afromeryx grex, n. sp., A. palustris, n. sp., and Sivameryx moneyi) represent more recent immigrants from Eurasia.

Keywords: Wadi moghra; Anthracotheres; Early miocene; Egypt.

196. Mineralogical and Geochemical Characterization of Natural Zeolites from Southwest Syria

Ahmed El-Kammar, Ahmed Melegy and Ghadir Miro

Arabian Journal of Geosciences, II (2014) IF: 1.152

The zeolitic minerals were recorded in association with the Upper Pliocene volcanic sequences in the southwestern region of Syria. As far as the authors are aware, the present work is first to characterize these potential deposits from the mineralogical and geochemical points of view. Three natural zeolite samples were collected from sedimentary-pyroclastic deposits of Om Ozon (OZ), Mukeihlat (MK), and Jabal Al-Sis (JS) areas. These samples were studied by x-ray diffraction (XRD), Fourier transform infrared (FTIR) spectroscopy, x-ray fluorescence spectrometer (XRF), scanning electron microscopy (SEM), in combination with thermo analytical methods (differential thermal analysis (DTA) and thermo gravimetric analysis (TGA)). A variety of zeolite species, including phillipsite, analcime, and chabazite were identified in addition to variable quotients of calcite and quartz. Several characteristics of these minerals were determined such as chemical functional groups, chemical components, morphology of crystals, and thermal behaviors. **Keywords:** Zeolite;Analcime; Chabazite; Phillipsite;Syria . Mineralogical and Geochemical studies.

Dept. of Geophysics

197. New Fast Least - Squares Algorithm for Estimatingthe Best - Fitting Parameters Due to Simplegeometric-Structures from Gravity Anomalies

Khalid Sayed Essa

Journal of Advanced Research, 5: 57-65 (2014) IF: 3

A new fast least-squares method is developed to estimate the shape factor (q-parameter) of aburied structure using normalized residual anomalies obtained from gravity data. The problemof shape factor estimation is transformed into a problem of finding a solution of a non-linear equation of the form f(q)=0 by defining the anomaly value at the origin and at different pointson the profile (N-value). Procedures are also formulated to estimate the depth (z-parameter) and the amplitude coefficient (A-parameter) of the buried structure. The method is simple and rapidfor estimating parameters that produced gravity anomalies. This technique is used for a class ofgeometrically simple anomalous bodies, including the semi-infinite vertical cylinder, the infinitelylong horizontal cylinder, and the sphere. The technique is tested and verified on theoretical models with and without random errors. It is also successfully applied to real data sets fromSenegal and India, and the inverted-parameters are in good agreement with the known actualvalues.

Keywords: A Fast least-Squares inversion; Normalized residual Gravity anomalies; Q-Parameter; Z-parameter; A-parameter.

198. Subsurface Structures Using A New Integrated Geophysical Analysis, South Aswan, Egypt

Maha Abdel Azeem, Mahmoud Mekkawi and Mohamed Gobashy

Arabian Journal of Geosciences, 7: 5141-5157 (2014) IF: 1.152

The Aswan High Dam located at the north of Nasser Lake in Aswan, Egypt, has a vital role because it is a multipurpose project for sustainable irrigation development, hydropower, and navigation improvement. In this work, we aim to detect the hazardous subsurface structures that control the South Aswan area and their causative source depths, through the application of both normalized standard deviation filters and deconvolution procedures.

These computational approaches utilize a three-dimensional Euler homogeneity equation with unprescribed structural indices that is based on the properties of the differential similarity transformation on the available Bouguer gravity data. Hence, without any bias to a definite structural element (structural index), an automatic identification of the effective structural indices in the area is given.

Moreover, possible vertical magnetic contacts are estimated from the reduced to pole magnetic anomaly map through an application of the tilt-depth technique.

The mean focal depth of the earthquakes changes over time and migrates to shallower depths.

The number of shallow events is increasing dramatically, whereas the corresponding magnitudes are decreasing. The integration of potential field data analysis with the new seismological and water level catalog (for the duration of 30 years) shows that the area began a hazardous cycle of activity (MI>4) that could continue over the next few years.

Keywords: Seismicity ; Geo-hazard ; Artificial lake hazard ; Nasser lake ;Magnetic field ; Gravity field ; 3-D Euler ; Aswan

Dept. of Mathematics

199. Numerical Simulation of Fractional Cable Equation of Spiny Neuronal Dendrites

N.H. Sweilam, M.M. Khader and M. Adel

Journal of Advanced Research, 5 (2): 253-259 (2014) IF: 3

In this article, numerical study for the fractional Cable equation which is fundamental equations for modeling neuronal dynamics is introduced by using weighted average of finite difference methods. The stability analysis of the proposed methods is given by a recently proposed procedure similar to the standard John von Neumann stability analysis. A simple and an accurate stability criterion valid for different discretization schemes of the fractional derivative and arbitrary weight factor is introduced and checked numerically. Numerical results, figures, and comparisons have been presented to confirm the theoretical results and efficiency of the proposed method.

Keywords: Weighted average finite difference approximations; Fractional cable equation; John von neumann stability analysis.

200. Jacobi–Gauss–Lobatto Collocation Method for the Numerical Solution of 1+1 Nonlinear Schrödinger Equations

E. H. Doha, A. H. Bhrawy, M. A. Abdelkawy Robert A. and Van Gorder

Journal of Computational Physics, 61 (15): 244-255 (2014) IF: 2.485

A Jacobi-Gauss-Lobatto collocation (J-GL-C) method, used in combination with the implicit Runge-Kutta method of fourth order, is proposed as a numerical algorithm for the approximation of solutions to nonlinear Schrödinger equations (NLSE) with initial-boundary data in 1+11+1 dimensions. Our procedure is implemented in two successive steps. In the first one, the J-GL-C is employed for approximating the functional dependence on the spatial variable, using (N-1)(N-1) nodes of the Jacobi-Gauss-Lobatto interpolation which depends upon two general Jacobi parameters. The resulting equations together with the two-point boundary conditions induce a system of 2(N-1)2(N-1) firstorder ordinary differential equations (ODEs) in time. In the second step, the implicit Runge-Kutta method of fourth order is applied to solve this temporal system. The proposed J-GL-C method, used in combination with the implicit Runge-Kutta method of fourth order, is employed to obtain highly accurate

numerical approximations to four types of NLSE, including the attractive and repulsive NLSE and a Gross–Pitaevskii equation with space-periodic potential. The numerical results obtained by this algorithm have been compared with various exact solutions in order to demonstrate the accuracy and efficiency of the proposed method. Indeed, for relatively few nodes used, the absolute error in our numerical solutions is sufficiently small.

Keywords: Nonlinear;complex;Schrödinger;equations; Gross;Pitaevskii equation; Collocation method;

Jacobi;Gauss;Lobatto quadrature; Implicit runge;Kutta method.

201. Computing Nullity and Kernel Vectors Using NF-Package: Counterexamples

Nabil L. Youssef and S. G. Elgendi

Computer Physics Communications, 185: 2859-2864 (2014) IF: 2.407

A computational technique for calculating nullity vectors and kernel vectors, using the new Finsler package, is introduced. As an application, three interesting counterexamples are given. The first counterexample shows that the two distributions KerR and NR do not coincide. The second shows that the nullity distribution NPis not completely integrable. The third shows that the nullity distribution NR is not a sub-distribution of the nullity distribution NR .

Keywords: Maple program; New finsler package; Nullity distribution; Kernel distribution.

202. New Finsler Package

Nabil L. Youssef and S.G. Elgendi

Computer Physics Communications, 185: 986-997 (2014) IF: 2.407

The book "Handbook of Finsler geometry" has been included with a CD containing an elegant Maple package, FINSLER, for calculations in Finsler geometry. Using this package, an example concerning a Finsler generalization of Einstein's vacuum field equations was treated. In this example, the calculation of the components of the hv-curvature of Cartan connection leads to wrong expressions. On the other hand, the FINSLER package works only in dimension four.

We introduce a new Finsler package in which we fix the two problems and solve them. Moreover, we extend this package to compute not only the geometric objects associated with Cartan connection but also those associated with Berwald, Chern and Hashiguchi connections in any dimension.

These improvements have been illustrated by a concrete example Furthermore, the problem of simplifying tensor expressions is treated. This paper is intended to make calculations in Finsler geometry more easier and simpler.

Keywords: Maple program; Finsler package; Computer algebra; Finsler space; Fundamental finsler connections; Tensor simplification.

203. Some Abstract Wegner Estimates with Applications

Mostafa Mahmoud Sabri

Letters in Mathematical Physics, 104: 311-339 (2014) IF: 2.074

We prove some abstract Wegner bounds for random self-adjoint operators. Applications include elementary proofs of Wegner estimates for discrete and continuous Anderson Hamiltonians with possibly sparse potentials, as well as Wegner bounds for quantum graphs with random edge length or random vertex coupling. We allow the coupling constants describing the randomness to be correlated and to have quite general distributions.

Keywords: Wegner estimates; Random operators; Sparse potentials; Quantum graphs.

204. An Efficient Method for Solving Fractional Hodgkin–Huxley Model

A. M. Nagy and N. H. Sweilam

Physics Letters A, 378: 1980-1984 (2014) IF: 1.626

In this paper, we present an accurate numerical method for solving fractional Hodgkin–Huxley model. A non-standard finite difference method (NSFDM) is implemented to study the dynamic behaviors of the proposed model. The Grünwald– Letinkov definition is used to approximate the fractional derivatives. Numerical results are presented graphically reveal that NSFDM is easy to implement, effective and convenient for solving the proposed model.

Keywords: Fractional; Differential; Equations; Hodgkin – huxley model; NonStandard finite difference method; Grünwald–Letinkov definition.

205. An Approximate Analytical Solution for System of Non-Linear Fractional DiUsion Equations

M. M. Khader, N. H. Sweilam and A. M. S. Mahdy

Jokull, 64: 77-93 (2014) IF: 1.607

In this article, an implementation of an e fficient numerical method for solving system of coupled non-linear fractional diff usion equations (NFDEs) is introduced. The proposed system has many applications such as porous media and plasma transport and others. The fractional derivative is described in the Caputo sense. The proposed method is based upon a combination between the properties of Chebyshev approximations and finite di fference method (FDM).

The proposed method reduces NFDEs to a system of ODEs, which solved using FDM. Special attention is given to study the convergence analysis.

Numerical example is given to show the validity and the accuracy of the proposed algorithm.

Keywords: Coupled Non-Linear fractional Di usion equations;

Caputo fractional derivatives; Chebyshev approximations; Finite Di Fference method; Convergence analysis.

206. Stability Analysis of Solitary Wave Solutions for the Fourth-Order Nonlinear Boussinesq Water Wave Equation

M.A. Helal, A.R. Seadawy and M.H. Zekry

Applied Mathematics and Computation, 232: 1094-1103 (2014) IF: 1.6

In the present study, the nonlinear Boussinesq type equation describe the bi-directional propagation of small amplitude long capillary–gravity waves on the surface of shallow water. By using the extended auxiliary equation method, we obtained some new soliton like solutions for the two-dimensional fourth-order nonlinear Boussinesq equation with constant coefficient.

These solutions include symmetrical, non-symmetrical kink solutions, solitary pattern solutions, Jacobi and Weierstrass elliptic function solutions and triangular function solutions. The stability analysis for these solutions are discussed.

Keywords: Nonlinear boussinesq water wave equation; Extended auxiliary equation method; Soliton like solutions; Stability analysis solutions.

207. A New Jacobi Spectral Collocation Method for Solving 1+1 Fractional Schr"Odinger Equations and Fractional Coupled Schrödinger Systems

A.H. Bhrawy, E.H. Doha, S.S. Ezz-Eldien and Robert A. Van Gorder

European Physical Journal Plus, 129: 260-280 (2014) IF: 1.475

The Jacobi spectral collocation method (JSCM) is constructed and used in combination with the operational matrix of fractional derivatives (described in the Caputo sense) for the numerical solution of the time-fractional Schrödinger equation (T-FSE) and the space-fractional Schrödinger equation (SFSE).

The main characteristic behind this approach is that it reduces such problems to those of solving a system of algebraic equations, which greatly simplifies the solution process.

In addition, the presented approach is also applied to solve the time-fractional coupled Schr odinger system (T-FCSS). In order to demonstrate the validity and accuracy of the numerical scheme proposed, several numerical examples with their approximate solutions are presented with comparisons between our numerical results and those obtained by other methods.

Keywords: Jacobi spectral collocation method.

208. Anderson Localization for A Multi-Particle Quantum Graph

Mostafa Mahmoud Sabri

Reviews in Mathematical Physics, 26: 1350020-1350020 (2014) *IF*: 1.448

We study a multi-particle quantum graph with random potential. Taking the approach of multiscale analysis, we prove exponential and strong dynamical localization of any order in the Hilbert– Schmidt norm near the spectral edge.

Apart from the results on multi-particle systems, we also prove Lifshitz-type asymptotics for single-particle systems. This shows in particular that localization for single-particle quantum graphs holds under a weaker assumption on the random potential than previously known.

Keywords: Anderson localization; Random operators; Multiparticle; Quantum graphs.

209. Deformation of A Long, Current-Carrying Elastic Cylinder of Square Cross-Section: Numerical Solution by Boundary Integrals

A. R. El-Dhab, A. F. Ghaleb and M. S. Abou-Dina

Archive of Applied Mechanics, 84: 1393-1407 (2014) IF: 1.438

The static, plane uncoupled problem of thermo-magnetoelasticity for a long elastic cylinder of square cross-section carrying a steady, axial electric current is investigated numerically by a boundary integral method. The lateral surface of the cylinder may be subjected, additionally, to an external distribution of pressures. The deformation is induced by the combined action of Joule heat, the magnetic forces due to the current and the external pressure. Following a smoothing process of the boundary, the applied numerical method yields the values of all quantities of practical interest at the boundary. The corresponding values in the bulk and the magnetic field in the space surrounding the conductor may be easily determined by quadrature. The results are represented graphically and discussed.

Keywords: Boundary integrals; Electric conductor; Long cylinder; Plane problem; Thermo-magnetoelasticity.

210. Numerical Solution to A Nonlinear, One-Dimensional Problem of Thermoelasticity with Volume Force and Heat Supply in A Half-Space

W. Mahmoud, A. F. Ghaleb, E. K. Rawy, H. A. Z. Hassan and A. A. Mosharafa

Archive of Applied Mechanics, 84: 1501-1515 (2014) IF: 1.438

A numerical solution is presented for a nonlinear, onedimensional boundary-value problem of thermoelasticity with variable volume force and heat supply in a half-space. The surface of the body is subjected to a given periodic displacement. The volume force and bulk heating simulate the effect of a beam

of particles infiltrating the medium. No phase transition is considered and the domain of the solution excludes any shock wave formation. The basic equations are formulated in material coordinates, making them adequate for dealing with moving boundaries. The used numerical scheme reproduces correctly the process of coupled thermomechanical wave propagation. The presented figures display the process of propagation of the coupled nonlinear thermoelastic waves. They also show the effects of volume force and heat supply on the distributions of the mechanical displacements and temperature inside the medium. Moreover, the interplay between these two factors and the applied boundary disturbance is outlined. The presented solutions, however, is not meant to capture the expected process of shock formation at the breaking distance.

Keywords: Nonlinear thermoelasticity ; Nonlinear wave Propagation ; Volume force ; Heat supply ; Finite difference method.

211. A Pseudospectral Algorithm for Solving Multipantograph Delay Systems on A Semi-Infinite Interval Using Legendre Rational Functions

E. H. Doha, D. Baleanu, A. H. Bhrawy and R.M. Hafez

Abstract and Applied Analysis, 2014: 1-9 (2014) IF: 1.274

A new Legendre rational pseudospectral scheme is proposed and developed for solving numerically systems of linear and nonlinear multipantograph equations on a semi-infinite interval. A Legendre rational collocation method based on Legendre rational-Gauss quadrature points is utilized to reduce the solution of such systems to systems of linear and nonlinear algebraic equations. In addition, accurate approximations are achieved by selecting few Legendre rational-Gauss collocation points. The numerical results obtained by this method have been compared with various exact solutions in order to demonstrate the accuracy and efficiency of the proposed method. Indeed, for relatively limited nodes used, the absolute error in our numerical solutions is sufficiently small. **Keywords:** A Pseudospectral Algorithm for Solving Multipantograph.

212. New Ultraspherical Wavelets Spectral Solutions for Fractional Riccati Differential Equations

W. M. Abd-Elhameed and Y. H. Youssri

Abstract and Applied Analysis, 2014: 1-8 (2014) IF: 1.274

We introduce two new spectral wavelets algorithms for solving linear and nonlinear fractional-order Riccati differential equation. The suggested algorithms are basically based on employing the ultraspherical wavelets together with the tau and collocation spectral methods. The main idea for obtaining spectral numerical solutions depends on converting the differential equation with its initial condition into a system of linear or nonlinear algebraic equations in the unknown expansion coefficients. For the sake of illustrating the efficiency and the applicability of our algorithms, some numerical examples including comparisons with some algorithms in the literature are presented.

Keywords: Ultraspherical wavelets; Fractional differentiation; Riccati differential equations.

213. A Chebyshev-Gauss-Radau Scheme for Nonlinear Hyperbolic System of First Order

E. H. Doha, A. H. Bhrawy, R. M. Hafez and M. A. Abdelkawy

Applied Mathematics and Information Sciences, 8 (2): 1-10 (2014) IF: 1.232

A numerical approximation of the initial-boundary system of nonlinear hyperbolic equations based on spectral collocation method is presented in this article. A Chebyshev-Gauss-Radau collocation (C-GR-C) method in combination with the implicit Runge- Kutta scheme are employed to obtain highly accurate approximations to the mentioned problem. The collocation points are the Chebyshev interpolation nodes. This approach reduces this problem to solve system of nonlinear ordinary differential equations which are far easier to be solved. Indeed, by selecting a limited number of collocation nodes, we obtain an accurate results. The numerical examples demonstrate the accuracy, efficiency, and versatility of the method.

Keywords: System of Nonlinear hyperbolic equations; Collocation method; Chebyshev-gauss-radau quadrature; Implicit runge- Kutta method .

214. Analytical Study for the Nonlinear Vibrations of Multiwalled Carbon Nanotubes Using Homotopy Analysis Method

M. M. Khader, N. H. Sweilam, Z. I. EL-Sehrawy and S. A.Ghwail

Applied Mathematics and Information Sciences, an International Journal, 4: 1675-1684 (2014) IF: 1.232

In this article , the homotopy analysis method (HAM) is implemented for obtaining semi-analytical solutions to the problemof the nonlinear vibrations of multiwalled carbon nanotubes embedded in an elastic medium. A multiple-beam model is utilized in which the governing equations of each layer are coupled with those of its adjacent ones via the Van der Waals **Basic Science Sector**

inter layer forces. The amplitude-frequency curves for largeamplitude vibrations of single-walled, double-walled and triplewalled carbon nanotubes are obtained. The influence of changes in material constants of the surrounding elastic medium and the effect of changes in nanotube geometrical parameters on the vibration characteristics are studied by comparing the results with those from the previous work. Series solutions of the problem under consideration are developed by means of HAM and the recurrence relations are given explicitly. The obtained numerical results show the rapid convergence of the series constructed by the proposed method to the exact solution. Test problems have been considered to ensure that HAM is accurate and efficient compared with the Adomian decomposition method.

Keywords: Nonlinear vibration; Carbon nanotube; Homotopy analysis method.

215. Numerical Simulation for the Fractional SIRC Model and Influenza A

M. M. Khader, N. H. Sweilam, A. M. S. Mahdy and N. K. Abdel Moniem

Applied Mathematics and Information Sciences, an International Journal, 8: 1-8 (2014) IF: 1.232

In this paper, A Chebyshev spectral method is presented to study the deals with the fractional SIRC model associated with the evolution of influenza A disease in human population. The properties of the Chebyshev polynomials are used to derive an approximate formula of the Caputo fractional derivative. This formula reduces the SIRC model to the solution of a system of algebraic equations which is solved using Newton iteration method. The convergence analysis and an upper bound of the error of the derived formula are given. We compared our numerical solutions with those numerical solutions using fourthorder Runge-Kutta method. The obtained results of the SIRC model show the simplicity and the efficiency of the proposed method. Also, illustration for propagation of influenza A virus and the relation between the four cases of it along the time at the fractional derivative are given.

Keywords: SIRC model; Caputo fractional derivative; Chebyshev spectral method; Convergence analysis; Fourth-order runge-Kutta method.

216. New Formulae for the High-Order Derivatives of Some Jacobi Polynomials: an Application to Some High-Order Boundary Value Problems

W. M. Abd-Elhameed

The Scientific World Journal, (2014), Article ID 456501, 11 1-11 (2014) IF: 1.219

This paper is concerned with deriving some new formulae expressing explicitly the high-order derivatives of Jacobi polynomials whose parameters difference is one or two of any degree and of any order in terms of their corresponding Jacobi polynomials.

The derivatives formulae for Chebyshev polynomials of third and fourth kinds of any degree and of any order in terms of their corresponding Chebyshev polynomials are deduced as special cases.

Some new reduction formulae for summing some terminating hypergeometric functions of unit argument are also deduced. As an application, and with the aid of the new introduced derivatives formulae, an algorithm for solving special sixth-order boundary value problems are implemented with the aid of applying Galerkin method.

A numerical example is presented hoping to ascertain the validity and the applicability of the proposed algorithms.

Keywords: Jacobi polynomials; Boundary value problems; Spectral methods.

217. Two Legendre-Dual-Petrov-Galerkin Algorithms for Solving the Integrated Forms of High Odd-Order Boundary Value Problems

Waleed M. Abd-Elhameed, Eid H. Doha and Mahmoud A. Bassuony

The Scientific World Journal, 2014: 1-11 (2014) IF: 1.219

Two numerical algorithms based on dual-Petrov-Galerkinmethod are developed for solving the integrated forms of high odd-order boundary value problems (BVPs) governed by homogeneous and nonhomogeneous boundary conditions.

Two different choices of trial functions and test functions which satisfy the underlying boundary conditions of the differential equations and the dual boundary conditions are used for this purpose.

These choices lead to linear systems with specially structured matrices that can be efficiently inverted, hence greatly reducing the cost. The various matrix systems resulting from these discretizations are carefully investigated, especially their complexities and their condition numbers.

Numerical results are given to illustrate the efficiency of the proposed algorithms, and some comparisons with some other methods are made.

Keywords: Legendre; Dual; Petrov; Galerkin; Integrated Forms.

218. On Solving Linear and Nonlinear Sixthorder Two Point Boundary Value Problems Via an Elegant Harmonic Numbers Operational Matrix of Derivatives

Waleed Mohammed Abd-Elhameed Saleh

Cmes : Computer Modeling in Engineering and Sciences, 101 (3): 159-185 (2014) IF: 1.183

This paper is concerned with developing two new algorithms for direct solutions of linear and nonlinear sixth-order two point boundary value problems. These algorithms are based on the application of the two spectral methods namely, collocation and Petrov-Galerkin methods . The suggested algorithms are completely new and they depend on introducing a novel operational matrix of derivatives which is expressed in terms of the well-known harmonic numbers. The basic idea for the suggested algorithms rely on reducing the linear or nonlinear sixth-order boundary value problem governed by its boundary conditions to a system of linear or nonlinear algebraic equations which can be efficiently solved by a suitable solver. The algorithms are supported by investigating the convergence and the error analysis of the used expansion. Some illustrative examples are considered aiming to ascertain the wide applicability, and the high efficiency of the suggested algorithms. The obtained numerical results are convincing and the proposed approximate solutions are very close to the analytical ones.

Keywords: Harmonic numbers; Legendre polynomials; Petrov-Galerkin method; Collocation method; Sixth-Order boundary value problems.

219. A Jacobi Collocation Method for Troesch'S Problem in Plasma Physics

E.H. Doha, D. Baleanu, A.H. Bhrawi and R.M. Hafez

Proceedings of the Romanian Academy, Series A, 15 (2): 130-138 (2014) IF: 1.115

In this paper, we propose a numerical approach for solving Troesch's problem which arises in the confinement of a plasma column by radiation pressure. It is also an inherently unstable two-point boundary value problem. The spatial approximation is based on shifted Jacobi-Gauss collocation method in which the shifted Jacobi-Gauss points are used as collocation nodes. The results presented here demonstrate reliability and efficiency of the method.

Keywords: Troesch'S problem; Second-order Initial value problems; Collocation method; Jacobi-gauss quadrature; Shifted Jacobi polynomials.

220. A Jacobi Collocation Approximation for Nonlinear Coupled Viscous Burgers' Equation

Eid H. Doha, Ali H. Bhrawy, Mohamed A. Abdelkawy and Ramy M. Hafez

Central European Journal of Physics, 12 (2): 111-122 (2014) IF: 1.077

This article presents a numerical approximation of the initialboundary nonlinear coupled viscous Burgers'equation based on spectral methods. A Jacobi-Gauss-Lobatto collocation (J-GL-C) scheme in combination with the implicit Runge-Kutta-Nystrm (IRKN) scheme are employed to obtain highly accurate approximations to the mentioned problem. This J-GL-C method, based on Jacobi polynomials and Gauss-Lobatto quadrature integration, reduces solving the nonlinear coupled viscous Burgers' equation to a system of nonlinear ordinary differential equation which is far easier to solve. The given examples show, by selecting relatively few J-GL-C points, the accuracy of the approximations and the utility of the approach over other analytical or numerical methods. The illustrative examples demonstrate the accuracy, efficiency, and versatility of the proposed algorithm.

Keywords: Nonlinear coupled viscous burgers' Equation; Jacobi quadrature rule; Pseudospectral scheme; Implicit runge-Kutta-Nystr M scheme.

221. A Jacobi Rational Pseudospectral Method for Lane–Emden Initial Value Problems Arising in Astrophysics on A Semi-Infinite Interval

E. H. Doha, A. H. Bhrawy, R. M. Hafez and Robert A.Van Gorder

Journal of Computational and Applied Mathematics, 33: 607-619 (2014) IF: 1.077

We derive an operational matrix representation for the differentiation of Jacobi rational functions, which is used to create a new Jacobi rational pseudospectralmethod based on the operational matrix of Jacobi rational functions. This Jacobi rational pseudospectral method is implemented to approximate solutions to Lane–Emden type equations on semiinfinite intervals. The advantages of using the Jacobi rational pseudospectral method over other techniques are discussed. Indeed, through several numerical examples, including the Lane–Emden problems of first and second kind, we evaluate the accuracy and performance of the proposed method.We also compare our method to other approaches in the literature. The results suggest that the Jacobi rational pseudospectral method is a useful tool for studying Lane–Emden initial value problems, as well as related problems which have regular singular points and are nonlinear. **Keywords:** Lane; Emden equations; Jacobi rational functions; Operational matrix of differentiation; Pseudospectral method.

222. A Shifted Jacobi Collocation Algorithm for Wave Type Equations with Non-Local Conservation Conditions

Eid H. Doha, Ali H. Bhrawy and Mohammed A. Abdelkawy

Central European Journal of Physics, 12 (9): 637-653 (2014) IF: 1.077

In this paper, we propose an efficient spectral collocation algorithm to solve numerically wave type equations subject to initial, boundary and non-local conservation conditions. The shifted Jacobi pseudospectral approximation is investigated for the discretization of the spatial variable of such equations. It possesses spectral accuracy in the spatial variable. The shifted Jacobi-Gauss-Lobatto (SJ-GL) quadrature rule is established for treating the non-local conservation conditions, and then the problem with its initial and non-local boundary conditions are reduced to a system of second-order ordinary differential equations in temporal variable. This system is solved by twostage forth-order A-stable implicit RK scheme. Five numerical examples with comparisons are given. The computational results demonstrate that the proposed algorithm is more accurate than finite difference method, method of lines and spline collocation approach

Keywords: Non-Local boundary conditions; Integral conservation condition; Collocation method; Shifted Jacobi-Gauss- Lobatto quadrature; System of differential equations.

223. A New Jacobi Rational-Gauss Collocation Method for Numerical Solution of Generalized Pantograph Equations

E.H. Doha, A.H. Bhrawy, D. Baleanu and R.M. Hafez

Applied Numerical Mathematics, 77: 43-54 (2014) IF: 1.036

This manuscript is concerned with a generalization of a functional differential equation known as the pantograph equation which contains a linear functional argument. In this article, a new spectral collocation method is applied to solve the generalized pantograph equation with variable coefficients on a semi-infinite domain. This method is based on Jacobi rational functions and Gauss quadrature integration. The Jacobi rational-Gauss method reduces solving the generalized pantograph equation to a system of algebraic equations. Reasonable numerical results are obtained by selecting few Jacobi rational-Gauss method is favorably compared with other methods. Numerical results demonstrate its accuracy, efficiency, and versatility on the half-line.

Keywords: Functional differential equations; Pantograph equation; Collocation method; Jacobi rational-Gauss quadrature; Jacobi rational function.

224. Jacobi Rational–Gauss Collocation Method for Lane–Emden Equations of Astrophysical Significance

Eid H. Doha, Ali H. Bhrawy, Ramy M. Hafez and Robert A. Van Gorder

Nonlinear Analysis: Modelling and Control, 19 (14): 537-550 (2014) IF: 0.914

In this paper, a new spectral collocation method is applied to solve Lane–Emden equations on a semi-infinite domain.

The method allows us to overcome difficulty in both the nonlinearity and the singularity inherent in such problems. This Jacobi rational–Gauss method, based on Jacobi rational functions and Gauss quadrature integration, is implemented for the nonlinear Lane–Emden equation.

Once we have developed the method, numerical results are provided to demonstrate the method.

Physically interesting examples include Lane–Emden equations of both first and second kind. In the examples given, by selecting relatively few Jacobi rational – Gauss collocation points, we are able to get very accurate approximations, and we are thus able to demonstrate the utility of our approach over other analytical or numerical methods. In this way, the numerical examples provided demonstrate the accuracy, efficiency, and versatility of the method.

Keywords: Lane – Emden equation; Isothermal gas spheres; Collocation method; Jacobi rationa; Gauss quadrature; Jacobi rational polynomials.

225. On the Coefficients of Integrated Expansions and Integrals of Chebyshev Polynomials of Third and Fourth Kinds

E. H. Doha and W. M. Abd-Elhameed

Bulletin of the Malaysian Mathematical Sciences Society, 37 (2): 383-398 (2014) IF: 0.854

Two new analytical closed formulae expressing explicitly third and fourth kinds Chebyshev coefficients of an expansion for an infinitely differentiable function that has been integrated an arbitrary number of times in terms of the original expansion coefficients of the function are stated and proved. Hence, two new formulae expressing explicitly the integrals of third and fourth kinds Chebyshev polynomials of any degree that has been integrated an arbitrary number of times in terms of third and fourth kinds Chebyshev polynomials themselves are also given. New reduction formulae for summing some terminating hypergeometric functions of unit argument are deduced.

As an application of how to use Chebyshev polynomials of third and fourth kinds and their shifted polynomials for solving highorder boundary value problems, two numerical solutions of sixthorder boundary value problem are presented and implemented based on applying spectral Galerkin method.

Also, two numerical examples are presented, aiming to demonstrate the accuracy and the efficiency of the formulae we have obtained.

Keywords: Chebyshev polynomials of third and fourth kinds; Expansion coefficients; Generalized hypergeometric functions; Boundary value problems.

226. An Accurate Legendre Collocation Scheme for Coupled Hyperbolic Equations with Variable Coefficients

E.H. Doha, A.H. Bhrawy, D. Baleanu and M.A. Abdelkawy

Romanian Journal of Physics, 59 (5-6): 408-420 (2014) IF: 0.745

The study of numerical solutions of nonlinear coupled hyperbolic partial differential equations (PDEs) with variable coefficients subject to initial-boundary conditions continues to be a major research area with widespread applications in modern physics and technology.

One of the most important advantages of collocation method is the possibility of dealing with nonlinear partial differential equations (NPDEs) as well as PDEs with variable coefficients. A numerical solution based on a Legendre collocation method is extended to solve nonlinear coupled hyperbolic PDEs with variable coefficients.

This approach, which is based on Legendre polynomials and Gauss-Lobatto quadrature integration, reduces the solving of nonlinear coupled hyperbolic PDEs with variable coefficients to a system of nonlinear ordinary differential equations that is far easier to solve.

The obtained results show that the proposed numerical algorithm is efficient and very accurate.

Keywords: Nonlinear coupled Hyperbolic Partial Differential Equations; Nonlinear Phenomena; Collocation Method; Gauss-Lobatto Quadrature.

227. Numerical Treatment of Coupled Nonlinear Hyperbolic Klein-Gordon Equations

E.H. Doha, A.H. Bhrawy, D. Baleanu and M.A. Abdelkawy

Romanian Journal of Physics, 59 (3-4): 247-264 (2014) IF: 0.745

A semi-analytical solution based on a Jacobi-Gauss-Lobatto collocation (J-GLC) method is proposed and developed for the numerical solution of the spatial variable for two nonlinear coupled Klein-Gordon (KG) partial differential equations.

The general Jacobi-Gauss-Lobatto points are used as collocation nodes in this approach.

The main characteristic behind the J-GL-C approach is that it reduces such problems to solve a system of ordinary differential equations (SODEs) in time.

This system is solved by diagonally-implicit Runge-Kutta-Nystr"om scheme. Numerical results show that the proposed algorithm is efficient, accurate, and compare favorably with the analytical solutions.

Keywords: Nonlinear coupled hyperbolic Klein-Gordon equations; Nonlinear phenomena; Jacobi collocation method; Jacobi;Gauss;Lobatto quadrature.

230. The Influence of Weakly H-Subgroups on the

Studia Scientiarum Mathematicarum Hungarica, 51: 27-40

Let G be a nite group. A subgroup H of G is called an H-

subgroup in G if $NG(H) \setminus Hg 5 H$ for all g 2 G. A subgroup H of G is called a weakly H-subgroup in G if there exists a normal

subgroup K of G such that G = HK and $H \setminus K$ is an H-subgroup in

G. In this article, we investigate the structure of a group G in

which every subgroup with order pm of a Sylow p-subgroup P of

G is a weakly H-subgroup in G, where m is a xed positive

integer. Our results improve and extend the main results of Skiba

[13], Jaraden and Skiba [11], Guo and Wei [8], Tong-Veit [15]

Keywords: C-Normal subgroup; H-subgroup; Weakly H-

supersolvable group; Saturated formation.

231. Simple-Direct-Injective Modules

Journal of Algebra, 420: 39-53 (2014) IF: 0.604

subgroup; Strongly closed subgroup; Sylow subgroup; Fitting

Victor Camillo, Yasser Ibrahim, Mohamed Yousif and Yiqiang

A module Mover a ring is called simple-direct-injective if,

whenever Aand Bare simple submodules of Mwith A ~=Band

BM, we have A M. Various basic properties of these modules are

proved, and some well-studied rings are characterized using

simple-direct-injective modules. For instance, it is proved that a

ring Ris artinian serial with Jacobson radical square zero if and

only if every simple-direct-injective right R-module is a C3module, and that a regular ring Ris a right V-ring (i.e., every

simple right R-module is injective) if and only if every cyclic

right R-module is simple-direct-injective. The latter is a new answer to Fisher's question of when regular rings are V-rings [8].

subgroup; Generalized fitting subgroup; P- Nilpotent group;

Structure of Finite Groups

(2014) IF: 0.627

and Li et al. [12].

Zhoud

M. Asaad, M. M. Al-Shomrani and A. A. Heliel

228. Uncoupled Thermomagnetoelastostatics for Long Cylinders Carrying A Steady Axial Electric Current By A Boundary Integral Method. A **Numerical Approach**

A.R. El Dhaba, A.F. Ghaleb, J. El-Seadawy and M.S. Abou-Dina

International Journal of Applied Electromagnetics and Mechanics, 46: 629-648 (2014) IF: 0.737

The static, uncoupled problem of thermomagnetoelasticity for long cylinders carrying a steady, axial current is investigated in stresses within a numerical approach by a boundary integral method in terms of real harmonic functions.

This is the numerical realization of the field equations, boundary conditions and other relations presented in [1].

The method is complemented by the use of boundary collocation method to evaluate some path-independent line integrals needed in the representation of the mechanical displacement field.

The material of the cylinder is assumed homogeneous and isotropic, and linear dependence of the magnetic permeability on strain is taken in consideration through two material constants. Formulae are obtained for the boundary values of functions of practical interest like stress and mechanical displacement. Evaluation in the bulk may then be carried out by quadrature on the basis of well-known formulae of the theory of potential.

The special case of an elliptic boundary is treated and the results are compared to the analytical solution established in [11]. It is concluded that the proposed numerical scheme performs efficiently in this case, and may thus be used for other forms of the boundary, subject only to smoothness condition.

Keywords: Plane problem; Thermo-magnetoelasticity; Electric current; Magnetic field; Thermomagnetic stresses; Maxwell stress; Boundary method; Boundary integrals; Numerical methods.

229. A Parallel Crank–Nicolson Finite Difference **Method for Time-Fractional Parabolic Equation**

N. H. Sweilam, H.Moharram, N.K.Abdel Moniem and S.Ahmed

Journal of Numerical Mathematics, 22, (4): 363-382 (2014) IF: 0.633

In this paper, a parallel Crank-Nicolson finite difference method (C-N-FDM) for time-fractional parabolic equation on a distributed system using MPI is investigated. The fractional derivative is described in the Caputos sense.

The resultant large system of equations is studied using preconditioned conjugate gradient method (PCG), with the implementation of cluster computing on it.

The proposed approach fulfills the suitability for the implementation on Linux PC cluster through the minimization of inter-process communication.

To examine the efficiency and accuracy of the proposed method, numerical test experiment

using different number of nodes of the Linux PC cluster is studied.

The performance metrics clearly show the benefit of using the proposed approach on the Linux PC cluster in terms of execution time reduction and speedup with respect to the sequential running in a single PC.

Keywords: Crank-Nicholson finite difference method, Time-Fractional diffusion equation; Preconditioned conjugate; Gradient method; Parallel computations; Linux Pc cluster Workstation .

Injective module;Regular ring; Simple-Direct-Injective module and V-Ring.

232. On Generalized Jacobi-Bernstein Basis **Transformation: Application of Multidegree Reduction of Bézier Curves and Surfaces**

Keywords: Artinian serial ring; C2-Module; C3-Module;

E. H. Doha, A. H. Bhrawy and M. A. Saker

Journal of Computing and Information Science in Engineering, 14 (4): 41010-41015 (2014) IF: 0.537

This paper formulates a new explicit expression for the generalized Jacobi polynomials (GJPs) in terms of Bernstein basis. We also establish and prove the basis transformation between the GJPs basis and Bernstein basis and vice versa. This transformation embeds the perfect leastsquare performance of the GJPs with the geometrical insight of the Bernstein form. Moreover, the GJPs with indexes corresponding to the number of endpoint constraints are the natural basis functions for leastsquare approximation of Bézier curves and surfaces. Application to multidegree reduction (MDR) of Bézier curves and surfaces in computer aided geometric design (CAGD) is given. Keywords: Generalized Jacobi; Bernstein Basis.

233. Approximate Solutions for the Fractional Advection–Dispersion Equation Using Legendre Pseudo-Spectral Method

M. M. Khader and N. H. Sweilam

Computational and Applied Mathematics, 33: 739-750 (2014) IF: 0.485

Fractional differential equations have recently been applied in various areas of engineering, science, finance, applied mathematics, bio-engineering and others. Fractional advection-dispersion equation (FADE) is used in groundwater hydrology to model the transport of passive tracers carried by fluid flow in a porous medium and for modeling transport at the Earth surface. In this paper, an efficient numerical method for solving FADE considered. The fractional derivative is described in the Caputo sense. The method is based on Legendre approximations. The properties of Legendre polynomials are utilized to reduce FADE to a system of ODEs, which is solved using the finite difference method. Moreover, the convergence analysis and an upper bound of the error for the derived formula are given. Numerical solutions of FADE are presented and the results are compared with the exact solution.

Keywords: Fractional advection–dispersion equation; Caputo fractional derivative; Finite difference method; Legendre pseudo-spectral method; Convergence analysis.

234. Finite Groups with Given Nearly S-Embedded Subgroups

M. Asaad

Acta Mathematica Hungarica, 144: 499-514 (2014) IF: 0.401

Let G be a finite group and H a subgroup of G. We say that H is s-permutable in G if HP = PH for all Sylow subgroups P of G; H is s-semipermutable in G if HP = PH for all Sylow subgroups P of G with (|P|, |H|) = 1. Let HsG be the subgroup of H generated by all those subgroups of G which are s-permutable in G and HsG the intersection of all such s-permutable subgroups of G contain H. We say that H is nearly s-embedded in G if G has an spermutable subgroup T such that HsG = HT and H n T HssG, where HssG is an s-semipermutable subgroup of G contained in H. In this paper, we study the structure of a finite group G under the assumption that some subgroups of prime power order are nearly s-embedded in G. A series of known results are improved and extended.

Keywords: S-Permutable subgroup; S-Semipermutable subgroup; Weakly S-Semipermutable subgroup; N-Embedded subgroup; Nearly S-Embedded subgroup; Supersolvable group.

235. D3-Modules

Mohamed Yousif1, Ismail Amin and Yasser Ibrahim

Communications In Algebra, 42: 578-592 (2014) IF: 0.388

A right R-module M is called a D3-module, if M1 and M2 are direct summands of M with $M = M1 + M2_{-}$ then M1 nM2 is a direct summand of M. Following the work of Bass on projective covers, we introduce the notion of D3-covers and provide new characterizations of several well-known classes of rings in terms of D3-modules and D3-covers

Keywords: D2-Modules and D3-modules; Discrete and Quasidiscrete modules; Perfect and Semiperfect rings; Projective.

236. The Influence of Weakly S-Supplemented Subgroups on the Structure of Finite Groups

Mohamed Asaad

Communications in Algebra, 42: 2319-2330 (2014) IF: 0.388

Let G be a finite group. A subgroup H of G is said to be weakly ssupplemented in G if there exists a subgroup K of G such that G =HK and H n K = HsG, where HsG is the subgroup of H generated by all those subgroups of H which are s-quasinormal in G. In this article, we investigate the structure of G under the assumption that some families of subgroups of G are weakly s-supplemented in G. Some recent results are generalized.

Keywords: Complemented subgroup; C-supplemented subgroup; S-Quasinormal subgroup; Saturated formations; Weakly S-Supplemented subgroup.

237. On Weakly Pronormal Subgroups of Finite Groups

Mohamed Asaad

Journal of Group Theory, 17: 407-418 (2014) IF: 0.346

Let G be a finite group. A subgroup H of G is called pronormal in G if for each g 2 G, the subgroups H and Hg are conjugate in hH;Hgi. A subgroup H of G is called weakly pronormal in G if there exists a subgroup K of G such that G D H K and H \ K is pronormal in G. The main purpose of this paper is to investigate the structure of G under the assumption that some subgroups of G are weakly pronormal in G.

Keywords: Weakly Pronormal Subgroups

238. Exact Solutions of the Korteweg-De Vries Equation with Space and Time Dependent Coefficients by the Extended Unified Method

H. I. Abdel-Gawad and Mohamed Osman

Indian Journal of Pure and Applied Mathematics, 45: 1-11 (2014) IF: 0.206

Recently the unified method for finding traveling wave solutions of nonlinear evolution equations was proposed by one of the authors. It was shown that, this method unifies all the methods being used to find these solutions. In this paper, we extend this method to find a class of formal exact solutions to Korteweg-de Vries equation with space-time dependent coefficients.

Keywords: Exact solution; Extended unified method; Korteweg-De vries equation; Variable coefficients.

239. Integrals of Chebyshev Polynomials of Third and Fourth Kinds: an Application to Solution of Boundary Value Problems with Polynomial Coefficients

E.H. Doha and W.M. Abd-Elhameed

Journal of Contemporary Mathematical Analysis, 49: 269-308 (2014) IF: 0.048

Two new formulae expressing explicitly the repeated integrals of Chebyshev polynomials of third and fourth kinds of arbitrary degree in terms of the same polynomials are derived. The method of proof is novel and essentially based on making use of the power series representation of these polynomials and their inversion formulae. Using the Galerkin spectral method, we show that these formulae can be used to solve some high-order boundary value problems with varying coefficients, and propose two Galerkin-type algorithms for solving the integrated forms of some high-order boundary value problems with polynomial coefficients. A numerical example is discussed, which shows that the proposed algorithms are more accurate and efficient compared with the analytical ones.

Keywords: Chebyshev Polynomials of Third and Fourth Kinds; Power form; Inversion Formula; High-Order Boundary Value Problem.

Dept. of Physics

240. Evidence of B-Jet Quenching in Pbpb Collisions at Sqrt (S) = 2.76 Tev

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 132301-0 (2014) IF: 7.728

The production of jets associated to bottom quarks is measured for the first time in PbPb collisions at a center-of-mass energy of 2.76 TeV per nucleon pair. Jet spectra are reported in the transverse momentum (pT) range of 80–250 GeV=c, and within pseudorapidity jj < 2. The nuclear modification factor (RAA) calculated from these spectra shows a strong suppression in the bjet yield in PbPb collisions relative to the yield observed in pp collisions at the same energy. The suppression persists to the largest values of pT studied, and is centrality dependent. The RAA is about 0.4 in the most central events, similar to previous observations for inclusive jets. This implies that jet quenching does not have a strong dependence on parton mass and flavor in the jet pT range studied.

Keywords: B-Jet Quenching.

241. Measurement of Double-Polarization Asymmetries in the Quasielastic

 $3 \rightarrow He} (\dot{e}, e' d)$ Process

Mihovilovič M, Jin G, Long E, Zhang YW, Allada K, Anderson B, Annand JR, Averett T, Boeglin W, Bradshaw P, Camsonne A, Canan M, Cates GD, Chen C, Chen JP, Chudakov E, De Leo R, Deng X and Ibrahim H

Physical Review Letters, 113: 232505-232505 (2014) IF: 7.728

We present a precise measurement of double-polarization asymmetries in the ${}^{3}_{He}$ (e^{\rightarrow}, e^{\prime}) reaction. This particular process is a uniquely sensitive probe of hadron dynamics in ³He and the structure of the underlying electromagnetic currents. The measurements have been performed in and around quasielastic kinematics at Q = 0.25(GeV/c) = 0.25(GeV/c)for missing momenta up to 270 MeV/c. The asymmetries are in fair agreement with the state-of-the-art calculations in terms of their functional dependencies on p_m and ω , but are systematically offset. Beyond the region of the quasielastic peak, the discrepancies become even more pronounced. Thus, our measurements have been able to reveal deficiencies in the most sophisticated calculations of the three-body nuclear system, and indicate that further refinement in the treatment of their twoand/or three-body dynamics is required.

Keywords: Asymmetry;Hadron dynamics; Quasielastic peak; Three-body dynamics.

242. Measurement of Inclusive W and Z Boson Production Cross Sections in PP Collisions at Sqrt(S) = 8 TeV

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 191802-0 (2014) IF: 7.728

Measurement of total and fiducial inclusive W and Z boson production cross sections in pp collisions at SQRT(s) = 8 8 TeV is presented. Electron and muon final states are analyzed in a data sample collected with the CMS detector corresponding to an integrated luminosity of 18.2 0.5 pb-1. The measured total inclusive cross sections times branching fractions are obtained for the dilepton mass in the range of 60—120 GeV. The measured values agree with next-to-next-to-leadingorder QCD cross section calculations. Ratios of cross sections are reported with a precision of 2%. This is the first measurement of inclusive W and Z boson production in proton-proton collisions at SQRT(s) = 8 TeV. **Keywords:** W and Z Boson Production Cross Sections, PP Collisions.

243. Measurement of prompt $\psi(2S)$ to J/ ψ yield ratios in Pb-Pb and p-p collisions at sqrt [sNN]= 2.76 TeV

Ali Yehia Ellithi Kamel

Physical Review Letters, 113: 22502-22502 (2014) IF: 7.728

The ratio between the prompt $\psi(2S)$ and J/ψ yields, reconstructed via their decays into μ + μ -, is measured in Pb-Pb and p-p collisions at sqrt[sNN]=2.76 TeV. The analysis is based on Pb-Pb and p-p data samples collected by CMS at the Large Hadron Collider, corresponding to integrated luminosities of 150 µb(-1) and 5.4 pb(-1), respectively. The double ratio of measured yields $(N\psi(2S)/N(J/\psi))(Pb-Pb)/(N\psi(2S)/N(J/\psi))(p-p)$ is computed in three Pb-Pb collision centrality bins and two kinematic ranges: one at midrapidity, |y|<1.6, covering the transverse momentum range 6.5<pT<30 GeV/c, and the other at forward rapidity, 1.6<|y|<2.4, extending to lower pT values, 3<pT<30 GeV/c. The centrality-integrated double ratio changes from 0.45 ± 0.13 (stat) ±0.07 (syst) in the first range to 1.67 ± 0.34 (stat) ± 0.27 (syst) in the second. This difference is most pronounced in the most central collisions.

244. Measurement of the Target-Normal Single-Spin Asymmetry in Deep-Inelastic Scattering from the Reaction He(↑)(e,e')X

J. Katich, X. Qian, Y. X. Zhao, K. Allada, K. Aniol, J. R. M. Annand, T. Averett, F. Benmokhtar, W. Bertozzi, P. C. Bradshaw, P. Bosted, A. Camsonne, M. Canan, G. D. Cates, C. Chen, J.-P. Chen, W. Chen, 3 K. Chirapatpimol, E. Chudakov, E. Cisbani, J. C. Cornejo, 8 F. Cusanno, M. M. Dalton and Hassan F. Ibrahim

Physical Review Letters, 113: 22502-22502 (2014) IF: 7.728

We report the first measurement of the target-normal single-spin asymmetry in deep-inelastic scattering from the inclusive reaction 3)He(\uparrow)(e,e')X on a polarized (3)He gas target. Assuming time-reversal invariance, this asymmetry is strictly zero in the Born approximation but can be nonzero if two-photon-exchange contributions are included. The experiment, conducted at Jefferson Lab using a 5.89 GeV electron beam, covers a range of 1.7<W<2.9 GeV, 1.0<Q(2)<4.0 GeV(2) and 0.16<x<0.65. Neutron asymmetries were extracted using the effective nucleon

polarization and measured proton-to-(3)He cross-section ratios. The measured neutron asymmetries are negative with an average value of $(-1.09\pm0.38)\times10(-2)$ for invariant mass W>2 GeV, which is nonzero at the 2.89 σ level. Our measured asymmetry agrees both in sign and magnitude with a two-photon-exchange model prediction that uses input from the Sivers transverse momentum distribution obtained from semi-inclusive deep-inelastic scattering.

Keywords: Asymmetry; Deep-inelastic; Inclusive reaction; Polarized target;Two-Photon-Exchange; Momentum distribution.

245. Measurements of t⁻t Spin Correlations and Top-Quark Polarization Using Dilepton Final States in *PP* Collisions at $\sqrt{(S)} = 7$ Tev

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 182001-0 (2014) IF: 7.728

Spin correlations and polarization in the top quark–antiquark system are measured using dilepton final states produced in pp collisions at the LHC at SQRT(s)=7 TeV. The data correspond to an integrated luminosity of 5.0 fb-1 collected with the CMS detector. The measurements are performed using events with two oppositely charged leptons (electrons or muons), a significant imbalance in transverse momentum, and two or more jets, where at least one of the jets is identified as originating from a b quark. The spin correlations and polarization are measured through asymmetries in angular distributions of the two selected leptons, unfolded to the parton level. All measurements are found to be in agreement with predictions of the standard model.

Keywords: T-T Spin correlations; Top-quark polarization; dilepton final states.

246. Observation of the Associated Production of A Single Top Quark and A W Boson in PP Collisions at Sqert (S) = 8 Tev

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 231802-0 (2014) IF: 7.728

The first observation of the associated production of a single top quark and a W boson is presented. The analysis is based on a data set corresponding to an integrated luminosity of 12.2 inverse femtobarns of proton-proton collisions at sqrt(s) = 8 TeV recorded by the CMS experiment at the LHC. Events with two leptons and a jet originating from a b quark are selected. A multivariate analysis based on kinematic and topological properties is used to separate the signal from the dominant t t-bar background. An excess consistent with the signal hypothesis is observed, with a significance which corresponds to 6.1 standard deviations above a background-only hypothesis. The measured production cross section is 23.4 +- 5.4 pb, in agreement with the standard model prediction

Keywords: Single top quark; W Boson; Pp collisions.

247. Precision Measurement of the Neutron Twist-3 Matrix Element d_2^n : Probing Color Forces

M. Posik, D. Flay, D. S. Parno, K. Allada, W. Armstrong, T. Averett, F. Benmokhtar, W. Bertozzi, A. Camsonne, M. Canan, G.D. Cates, C. Chen and H. F. Ibrahim

Physical Review Letters, 113: 22002-22002 (2014) IF: 7.728

Double-spin asymmetries and absolute cross sections were measured at large Bjorken x (0.25 \leq x \leq 0.90), in both the deep-inelastic and resonance regions, by scattering longitudinally polarized electrons at beam energies of 4.7 and 5.9 GeV from a transversely and longitudinally polarized ³He target. In this dedicated experiment, the spin structure function g₂ ^{3He} was determined with precision at large x, and the neutron twist-3 matrix element dⁿ₂ was measured at $\langle Q \rangle$ of 3.21 and 4.32 GeV ²/c², with an absolute precision of about 10⁻⁵. Our results are found to be in agreement with lattice QCD calculations and resolve the disagreement found with previous data at $\langle Q \rangle$ =5 GeV ²/c² Combining dⁿ₂ and a newly extracted twist-4 matrix element fⁿ₂, the average neutron color electric and magnetic forces were extracted and found to be of opposite sign and about 30 MeV/fm in magnitude.

Keywords: QCD; Asymmetries; Cross sections; Deep-inelastic; Resonance region; Polarized electrons; Polarized target; Spin structure; Twist matrix element; Color forces.

248. Search for Flavor-Changing Neutral Currents in Top-Quark Decays $t \rightarrow Zq$ in PP Collisions at Sqrt (S) = 8 Tev

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 171802-0 (2014) IF: 7.728

A search for flavor-changing neutral currents in top-quark decays $t \rightarrow Zq$ is performed in events produced from the decay chain $tt^- \rightarrow Zq + Wb$, where both vector bosons decay leptonically, producing a final state with three leptons (electrons or muons). A data set collected with the CMS detector at the LHC is used, corresponding to an integrated luminosity of 19.7 fb -1 of proton-proton collisions at a center-of-mass energy of 8 TeV. No excess is seen in the observed number of events relative to the standard model prediction; thus, no evidence for flavor-changing neutral currents in top-quark decays is found. A combination with a previous search at 7 TeV excludes a $t \rightarrow Zq$ branching fraction greater than 0.05% at the 95% confidence level.

Keywords: Neutral currents; Top - quark decays; PP collisions.

249. Search for Top Squark and Higgsino Production Using Diphoton Higgs Boson Decays

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 161802-0 (2014) IF: 7.728

Results are presented of a search for a "natural" supersymmetry scenario with gauge mediated symmetry breaking. It is assumed that only the supersymmetric partners of the top quark (the top squark) and the Higgs boson (Higgsino) are accessible. Events are examined in which there are two photonsforming a Higgs boson candidate, and at least two b-quark jets. In 19.7 fb-1 of proton-proton collision data at SQRT(sNN)= 8 TeV, recorded in the CMS experiment, no evidence of a signal is found and lower limits at the 95% confidence level are set, excluding the top squark mass below 360 to 410 GeV, depending on the Higgsino mass.

Keywords: Top squark;Higgsino production; Diphoton higgs boson decays.

250. Search for Top-Quark Partners with Charge 5/3 in the Same-Sign Dilepton Final State

Ali Yehia Ellithi Kamel

Physical Review Letters, 112: 171801-0 (2014) IF: 7.728

A search for the production of heavy partners of the top quark with charge 5/3 is performed in events with a pair of same-sign leptons. The data sample corresponds to an integrated luminosity of 19.5 inverse femtobarns and was collected at sqrt(s) = 8 TeV by the CMS experiment. No significant excess is observed in the data above the expected background and the existence of top-quark partners with masses below 800 GeV is excluded at a 95% confidence level, assuming they decay exclusively to tW. This is the first limit on these particles from the LHC, and it is significantly more restrictive than previous limits.

Keywords: Top-Quark partners; Dilepton final state.

251. Measurement of four-Jet Production in Proton-Proton Collisions at sqrt(s) = 7 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 89: 92010-0 (2014) IF: 4.864

Measurements of the differential cross sections for the production of exactly four jets in proton-proton collisions are presented as a function of the transverse momentum pT and pseudorapidity , together with the correlations in azimuthal angle and the pT balance among the jets. The data sample was collected in 2010 at a center-of-mass energy of 7 TeV with the CMS detector at the LHC, with an integrated luminosity of 36pb-1. The cross section for exactly four jets, with two hard jets of pT>50GeV each, together with two jets of pT>20GeV each, within $\parallel < 4.7$ is measured to be s=330±5(stat.)±45(syst.)nb. It is found that fixed-order matrix element calculations including parton showers describe the measured differential cross sections in some regions of phase space only, and that adding contributions from double parton scattering brings the Monte Carlo predictions closer to the data.

Keywords: Jet Production

252. Measurement of the Muon Charge Asymmetry in Inclusive Pp \longrightarrow W+X Production at Sqrt S = 7 Tev and an Improved Determination of Light Parton Distribution Functions

Ali Yehia Ellithi Kamel

Physical Review D, 90: 32004-0 (2014) IF: 4.864

Measurements of the muon charge asymmetry in inclusive pp to WX production at sqrt(s) = 7 TeV are presented. The data sample corresponds to an integrated luminosity of 4.7 inverse femtobarns recorded with the CMS detector at the LHC. With a sample of more than twenty million W to mu nu events, the statistical precision is greatly improved in comparison to previous measurements. These new results provide additional constraints on the parton distribution functions of the proton in the range of the Bjorken scaling variable x from 10E-3 to 10E-1. These measurements and the recent CMS measurement of associated W + charm production are used together with the cross sections for inclusive deep inelastic ep scattering at HERA in a next-to-leading-order QCD analysis. The determination of the valence quark distributions is improved, and the strange-quark distribution

253. Measurement of the Properties of A Higgs Boson in the four-Lepton Final State

Ali Yehia Ellithi Kamel

Physical Review D, 89: 92007-0 (2014) IF: 4.864

The properties of a Higgs boson candidate are measured in the HZZ4l decay channel, with $l=e, \mu$, using data from pp collisions corresponding to an integrated luminosity of 5.1fb-1 at the centerof-mass energy of sv=7TeV and 19.7fb-1 at sv=8TeV, recorded with the CMS detector at the LHC. The new boson is observed as a narrow resonance with a local significance of 6.8 standard deviations, a measured mass of 125.6±0.4(stat)±0.2(syst) GeV, and a total width =3.4GeV at the 95% confidence level. The production cross section of the new boson times its branching fraction to four leptons is measured to be 0.93+0.26-0.23(stat)+0.13-0.09(syst) times that predicted by the standard model. Its spin-parity properties are found to be consistent with the expectations for the standard-model Higgs boson. The hypotheses of a pseudoscalar and all tested spin-1 boson hypotheses are excluded at the 99% confidence level or higher. All tested spin-2 boson hypotheses are excluded at the 95% confidence level or higher.

Keywords: Properties of A higgs boson; Four-Lepton final . state.

254. Measurement of the Ratio of Inclusive Jet Cross Sections using the Anti-kt Algorithm With Radius Parameters R = 0.5 and 0.7 in pp Collisions at sqrt (s) = 7 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 90: 72006-0 (2014) IF: 4.864

Measurements of the inclusive jet cross section with the anti-kT clustering algorithm are presented for two radius parameters, R=0.5 and 0.7. They are based on data from LHC proton-proton collisions at sv=7TeV corresponding to an integrated luminosity of 5.0fb-1 collected with the CMS detector in 2011. The ratio of these two measurements is obtained as a function of the rapidity and transverse momentum of the jets. Significant discrepancies are found comparing the data to leading-order simulations and to fixed-order calculations at next-to-leading order, corrected for nonperturbative effects, whereas simulations with next-to-leading-order matrix elements matched to parton showers describe the data best.

Keywords: Jet cross sections; PP collisions.

255. Measurement of the W γ and Z γ Inclusive Cross Sections in pp Collisions at $\sqrt{s} = 7$ TeV and Limits on Anomalous Triple Gauge Boson Couplings

Ali Yehia Ellithi Kamel

Physical Review D, 89: 92005-0 (2014) IF: 4.864

Measurements of W γ and Z γ production in proton-proton collisions at $\sqrt{s} = 7$ TeV are used to extract limits on anomalous triple gauge couplings. The results are based on data recorded by the CMS experiment at the LHC that correspond to an integrated

luminosity of 5.0 fb⁽⁻¹⁾. The cross sections are measured for photon transverse momenta $p^{\gamma}T > 15$ GeV, and for separations between photons and final-state charged leptons in the pseudorapidity-azimuthal plane of $\Delta R(\ell,\gamma)>0.7$ in $\ell\nu\gamma$ and $\ell\ell\gamma$ final states, where ℓ refers either to an electron or a muon. A dilepton invariant mass requirement of m_($\ell\ell$) > 50 GeV is imposed for the Z γ process. No deviations are observed relative to predictions from the standard model, and limits are set on anomalous WW γ , ZZ γ , and Z $\gamma\gamma$ triple gauge couplings.

Keywords: W and Z Inclusive cross sections; Triple gauge boson couplings.

256. NLO supersymmetric-QCD corrections to stop pair associated by Z^0 production at the LHC

Hisham A. El-Kolaly

Physical Review D, 90: 54027-54027 (2014) IF: 4.864

We present the calculations of the production of $t_1 \, \tilde{t_1} \, \tilde{z_0}$ in the minimal supersymmetric standard model at the Large Hadron Collider at center-of-mass energies of 7 and 14 TeV. We discuss the impact of the next-to-leading-order supersymmetric-QCD corrections on the cross sections of $t_1 t_1 - Z^0$ production and on the transverse-momentum distributions of the final stop quark. The uncertainties of the leading-order and supersymmetric-QCD corrected cross sections due to the renormalization/factorization scale are studied. Calculations demonstrate that the next-to-leading-order supersymmetric-QCD corrections improve the scale dependence of the leading-order cross sections and enhance significantly the transverse-momentum distributions.

Keywords: Supersymmetric-Qcd;Next-To-Leading-Orde; Cross Sections; Renormalization;Factorization;Scale.

257. Search for supersymmetry with razor variables in pp collisions at sqrt(s) = 7 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 90: 112001-0 (2014) IF: 4.864

The razor approach to search for R-parity conserving supersymmetric particles is described in detail. Two analyses are considered: an inclusive search for new heavy particle pairs decaying to final states with at least two jets and missing transverse energy, and a dedicated search for final states with at least one jet originating from a bottom quark. For both the inclusive study and the study requiring a bottom-quark jet, the data are examined in exclusive final states corresponding to allhadronic, single-lepton, and dilepton events. The study is based on the data set of proton-proton collisions at sv=7TeV collected with the CMS detector at the LHC in 2011, corresponding to an integrated luminosity of 4.7fb-1. The study consists of a shape analysis performed in the plane of two kinematic variables, denoted MR and R2, that correspond to the mass and transverse energy flow, respectively, of pair-produced, heavy, new-physics particles. The data are found to be compatible with the background model, defined by studying event simulations and data control samples. Exclusion limits for squark and gluino production are derived in the context of the constrained minimal supersymmetric standard model (CMSSM) and also for simplified-model spectra (SMS). Within the CMSSM parameter space considered, squark and gluino masses up to 1350 GeV are excluded at 95% confidence level, depending on the model

parameters. For SMS scenarios, the direct production of pairs of top or bottom squarks is excluded for masses as high as 400 GeV. **Keywords:** Supersymmetry with Razor Variables; Pp Collisions.

258. Search for the Standard Model Higgs Boson Produced in Association with A W or A Z Boson and Decaying to Bottom Quarks

Ali Yehia Ellithi Kamel

Physical Review D, 89: 12003-0 (2014) IF: 4.864

A search for the standard model Higgs boson (H) decaying to bb⁻ when produced in association with a weak vector boson (V) is reported for the following channels: W(μ)H, W(e)H, W(t)H, Z($\mu\mu$)H, Z(ee)H, and Z()H. The search is performed in data samples corresponding to integrated luminosities of up to 5.1 inverse femtobarns at sv=7TeV and up to 18.9fb-1 at sv=8TeV, recorded by the CMS experiment at the LHC. An excess of events is observed above the expected background with a local significance of 2.1 standard deviations for a Higgs boson mass of 125 GeV, consistent with the expectation from the production of the standard model Higgs boson. The signal strength corresponding to this excess, relative to that of the standard model Higgs boson, is 1.0±0.5.

Keywords: Higgs Boson; W Boson; Z Boson; Bottom Quark.

259. A search for WW gamma and WZ gamma production and constraints on anomalous quartic gauge couplings in pp collisions at sqrt(s) = 8 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 90: 32008-0 (2014) IF: 4.864

A search for WV gamma triple vector boson production is presented based on events containing a W boson decaying to a muon or an electron and a neutrino, a second V (W or Z) boson, and a photon. The data correspond to an integrated luminosity of 19.3 inverse femtobarns collected in 2012 with the CMS detector at the LHC in pp collisions at sqrt(s) = 8 TeV. An upper limit of 311 fb on the fiducial cross section for the WV gamma production process is obtained at 95% confidence level for photons with a transverse energy above 30 GeV and with an absolute value of pseudorapidity of less than 1.44. This limit is approximately a factor of 3.4 larger than the standard model predictions that are based on next-to-leading order QCD calculations. Since no evidence of anomalous WW gamma gamma or WWZ gamma quartic gauge boson couplings is found, this paper presents the first experimental limits on the dimension-8 parameter f[T,0] and the CP-conserving WWZ gamma parameters kappa[0,W] and kappa[C,W]. Limits are also obtained for the WW gamma gamma parameters a[0,W] and a[C,W]. Keywords: Wwand Wz production; Gauge coupling.

260. Search for Anomalous Production of Events with Three or More Leptons in pp Collisions at Sqrt(s) = 8 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 90: 32006-0 (2014) IF: 4.864

A search for physics beyond the standard model in events with at least three leptons is presented.

The data sample, corresponding to an integrated luminosity of 19.5 inverse femtobarns of proton-proton collisions with centerof-mass energy sqrt(s) = 8 TeV, was collected by the CMS experiment at the LHC during 2012.

The data are divided into exclusive categories based on the number of leptons and their flavor, the presence or absence of an opposite-sign, same-flavor lepton pair (OSSF), the invariant mass of the OSSF pair, the presence or absence of a tagged bottomquark jet, the number of identified hadronically decaying tau leptons, and the magnitude of the missing transverse energy and of the scalar sum of jet transverse momenta.

The numbers of observed events are found to be consistent with the expected numbers from standard model processes, and limits are placed on new-physics scenarios that yield multilepton final states. In particular, scenarios that predict Higgs boson production in the context of supersymmetric decay chains are examined. We also place a 95% confidence level upper limit of 1.3% on the branching fraction for the decay of a top quark to a charm quark and a Higgs boson (t to c H), which translates to a bound on the left- and right-handed top-charm flavor-violating Higgs Yukawa couplings, lambda[H, tc] and lambda[H, ct], respectively, of sqrt(abs(lambda[H, tc])^2 + abs(lambda[H, ct])^2) < 0.21. **Keywords:** Anomalous Lepton production.

261. Searches for heavy Higgs bosons in two-Higgs-

doublet models and for $t \rightarrow ch$ decay using multilepton and diphoton final states in *pp* collisions at 8 TeV

Ali Yehia Ellithi Kamel

Physical Review D, 90: 112013-0 (2014) IF: 4.864

Searches are presented for heavy scalar (H) and pseudoscalar (A)Higgs bosons posited in the two doublet model (2HDM) extensions of the standard model (SM). These searches are based on a data sample of pp collisions collected with the CMS experiment at the LHC at a center-of-mass energy of $\sqrt{8} = 8$ TeV and corresponding to an integrated luminosity of 19.5 fb⁻¹. The decays $H \rightarrow hh$ and $A \rightarrow Zh$, where h denotes an SM-like Higgs boson, lead to events with three or more isolated charged leptons or with a photon pair accompanied by one or more isolated leptons. The search results are presented in terms of the H and A production cross sections times branching fractions and are further interpreted in terms of 2HDM parameters. We place 95% C.L. cross section upper limits of approximately 7 pb on σB for $H \rightarrow hh$ and 2 pb for $A \rightarrow Zh$. Also presented are the results of a search for the rare decay of the top quark that results in a charm quark and an SM Higgs boson, $t \rightarrow ch$, the existence of which would indicate a nonzero flavor-changing Yukawa coupling of the top quark to the Higgs boson. We place a 95% C.L. upper limit of 0.56% on $B(t \rightarrow ch)$.

Keywords: Heavy higgs bosons; Higgs; Doublet models.

262. Cesium Binding and Leaching from Single and Binary Contaminantcement–bentonite Matrices

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Chemical Engineering Journal, 245(1): 276-287 (2014) IF: 4.058

Binding mechanisms and leaching characteristics of cesium from different cement – bentonite immobilization matrices were investigated . The effect of Sr presence as a competitive

contaminant in the matrices was studied by investigating the binding and leaching mechanisms in binary contaminant matrices that contains both Cs and Sr solutions. Binding investigations aimed to trace Cs binding mechanisms by calculating the distribution of contaminant and major structural elements aqueous complexes in the mixing solution and interstitial pore fluid before the hydration reaction take place. The hydration phases development within 28 day curing period was studied and their effects on the speciation of contaminant and major structural elements were investigated. The leaching characteristics were studied by analyzing the experimental results of the long term leaching test. The results indicated that the percentage distribution of aqueous Cs and Sr complexes in their solution are independent on the presence of each other. Cs was found as free ions in the interstitial pore fluid for all the studied cases. The interstitial pore fluid pH was found to be dependent on the presence of bentonite and sodium was found as dissolved Na+1 ions, this might form evidence that Cs+1 might substitute Na+1 in bentonite structure. The intermolecular channels in Ettringite and CSH structures were found to contribute to the physical entrapment of Cs and Sr ions within the solidified matrices. The leaching characteristics were resulted from a combination of firstorder, diffusion, dissolution and instantaneous release of contaminants mechanisms. Dissolution and instantaneous release mechanisms were found to have very low contribution to the leaching process. Keywords: Radioactive waste; Immobilization; Cement; Cs Binding mechanism: Leaching.

263. Analysis of Proton-9,10,11,12Be Scattering Using an Energy-, Density-, and Isospin-Dependent

M. Y. H. Farag, E. H. Esmael and H. M. Maridi

Physical Review C 90, 034615 (2014), 90: 34615-34615 (2014) IF: 3.881

The proton elastic scattering of 9,10,11,12Be isotopes at a wide energy range from 3 to 200 MeV/nucleon is analyzed using the optical model with the partial-wave expansionmethod. Themicroscopic optical potential (OP) is taken within the singlefolded model. The density- and isospin-dependent M3Y-Paris nucleon-nucleon (NN) interaction is used for the real part and the NN-scattering amplitude of the high-energy approximation is used for the imaginary one.

The surface contribution to the imaginary part is included. The analysis reveals that the partial-wave expansionwith this microscopicOP reproduces well the basic scattering observables at energies up to 100 MeV/nucleon. For higher energies, the eikonal approximation with the same OP gives results better than the partial-wave expansion calculations.

The volume integrals of the OP parts have systematic energy dependencies, and they are parameterized in empirical formulas. In addition, the volume integral's parametrizations determine the true energy dependence for the depths of the OP parts.

The study of increasing the number of neutrons for a given isotope shows that the imaginary volume integrals and reaction cross sections depend on the matter radii of the scattered nuclei. Further, they are found to have larger values for the halo nucleus scattering (11Be + p) than those for the scattering of their isotopes.

Keywords: Microscopic optical model; Eikonal approximation

264. Effect of Deformation Parameters, Q Value, and Finite-Range Nn Force on A-Particle Preformation Probability

M. Ismail and A. Adel

Physical Review C, 89: 34617-0 (2014) IF: 3.881

The influence of nuclear deformation on a-decay half-lives is taken into account in the deformed density-dependent cluster model. The microscopic potential between the spherical a particle and the deformed daughter nucleus is evaluated numerically from the double-folding model by the multipole expansion method. A realistic density-dependent nucleon-nucleon (NN) interaction with finite-range exchange part, which produces the nuclear matter saturation curve and the energy dependence of the nucleon-nucleus optical potential model is used. The ordinary zero-range exchange NN force, which is commonly used in a decay, is also considered in the present work. We systematically investigate the influence of nuclear deformations on the a-particle preformation probability of the deformed medium and heavy nuclei from the ground state to ground-state a transitions within the framework of the Wentzel-Kramers-Brillouin method by considering the Bohr-Sommerfeld quantization condition. Taking the deformation of daughter nuclei into account changes the behavior of the preformation probability, Sa, by an amount depending on the Q value, the order, values, and signs of deformation parameters. Calculations have been conducted for the spherical nuclei in order to present clearly the effect of the deformation on the preformation probability. The combined effect of both finite-range force and deformation can reduce the value of Sa by about an order of magnitude.

Keywords: Alpha decay half-lives; Preformation probability; Deformed nuclei.

265. Higher-Order Symmetry Energy of Nuclear Matter and the Inner Edge of Neutron Star Crusts

W. M. Seif and D. N. Basu

Physical Review C, 89: 28801-28801 (2014) IF: 3.881

The parabolic approximation to the equation of state of the isospin asymmetric nuclear matter (ANM) is widely used in the literature to make predictions for the nuclear structure and the neutron star properties. Based on the realistic M3Y-Paris and M3Y-Reid nucleon-nucleon interactions, we investigate the effects of the higher-order symmetry energy on the proton fraction in neutron stars and the location of the inner edge of their crusts and their core-crust transition density and pressure, thermodynamically. Analytical expressions for different-order symmetry energy coefficients of ANM are derived using the realistic interactions mentioned above. It is found that the higherorder terms of the symmetry energy coefficients up to its eighthorder (E_sym8) contributes substantially to the proton fraction in stable neutron star matter at different nuclear matter densities, the core-crust transition density and pressure. Even by considering the symmetry energy coefficients up to E_sym8, we obtain a significant change of about 40% in the transition pressure value from the one based on the exact equation of state. The slope parameters of the symmetry energies for the M3Y-Paris (Reid) interaction, at the saturation density, are L=47.51 MeV (50.98 MeV), L_4=-0.47 MeV(-1.43 MeV), L_6= 0.58 MeV (0.67 MeV) and L_8 =0.126 MeV (0.133 MeV). Using equations of state based on both Paris and Reid effective interactions which

provide saturation incompressibility of symmetric nuclear matter in the range of 220 MeV=K_0=270 MeV, we estimate the ranges $0.090 \text{ fm}^{-3} = \pm 0.095 \text{ fm}^{-3}$ and $0.49 \text{ MeV} \text{ fm}^{-3}$ $3=P_{\pm}=0.59 \text{ MeV} \text{ fm}^{-3}$ for the liquid core-solid crust transition density and pressure, respectively. The corresponding range of the proton fraction obtained at this _t range is $0.029=x_{p}(p(t))=0.032$.

Keywords: Nuclear matter; Equation of state; Neutron stars;Symmetry energy; Incompressibility.

266. Investigation of Possible Correlation Between A -Particle Preformation Probability and Energy Levels for A Emitters with 74≤Z≤83

M. Ismail and A. Adel

Physical Review C, 90: 64624-0 (2014) IF: 3.881

The preformation probability of an a cluster inside radioactive parent nuclei is investigated. The calculations are employed in the framework of the density-dependent cluster model for both eveneven and odd- A isotopes with 74 ≤ Z ≤ 83 . A realistic densitydependent nucleon-nucleon (NN) interaction with a finite-range exchange part is used to calculate the microscopic a -nucleus potential in the well-established double-folding model. The main effect of antisymmetrization under exchange of nucleons between the a and daughter nuclei has been included in the folding model through the finite-range exchange part of the NN interaction. The calculated potential is then implemented to find both the assault frequency and the penetration probability of the a particle by means of the Wentzel-Kramers-Brillouin approximation in combination with the Bohr-Sommerfeld quantization condition. We investigated the correlation between the a -particle preformation probability, S_a, and the energy levels of the parent nucleus for a emitters with atomic number $74 \le Z \le 83$. Based on the similarity in the behavior of S_a with the neutron number for two nuclei, we try to predict or confirm the unknown or doubted nuclear spins and parities in this mass region.

Keywords: A -Particle preformation; Nuclear spin; Double-folding model.

267. Measurement of "Pretzelosity" Asymmetry of Charged Pion Production in Semi-Inclusive Deep Inelastic Scattering on A Polarized He3 Target

Y. Zhang, X. Qian, K. Allada, C. Dutta, J. Huang, J. Katich, Y. Wang, K. Aniol, J.R.M. Annand, T. Averett, F. Benmokhtar, W. Bertozzi, P.C. Bradshaw and H. F. Ibrahim

Physical Review C, 90: 55209-55209 (2014) IF: 3.881

An experiment to measure single-spin asymmetries of semiinclusive production of charged pions in deep-inelastic scattering on a transversely polarized He3 target was performed at Jefferson Laboratory in the kinematic region of 0.16 lt x lt 0.35 and 1.4 lt Q2 lt 2.7 GeV2. Pretzelosity asymmetries on He3, which are expressed as the convolution of the h1T transverse-momentumdependent distribution functions and the Collins fragmentation functions in the leading order, were measured for the first time. Under the effective polarization approximation, we extracted the corresponding neutron asymmetries from the measured He3 asymmetries and cross-section ratios between the proton and He3 Our results show that both $p \pm$ on He3 and on neutron pretzelosity asymmetries are consistent with zero within experimental uncertainties. **Keywords:** Pretzelosity; Asymmetry; Semi-Inclusive; Pion; Deep-Inelastic; Polarized target; Momentum-Dependent distribution functions; Collins fragmentation functions; Crosssection ratios.

268. Measurement of Higher-Order Harmonic Azimuthal Anisotropy in Pbpb Collisions at V Snn = 2.76 Tev

Ali Yehia Ellithi Kamel

Physical Review C, 89: 44906-0 (2014) IF: 3.881

Measurements are presented by the CMSCollaboration at the Large Hadron Collider (LHC) of the higher-order harmonic coefficients that describe the azimuthal anisotropy of charged particles emitted in vsNN = 2.76 TeVPbPb collisions. Expressed in terms of the Fourier components of the azimuthal distribution, the n = 3-6 harmonic coefficients are presented for charged particles as a function of their transverse momentum (0.3 < pT <8.0 GeV/c), collision centrality (0%-70%), and pseudorapidity (|| < 2.0). The data are analyzed using the event plane, multiparticle cumulant, and Lee-Yang zeros methods, which provide different sensitivities to initial-state fluctuations. Taken together with earlier LHC measurements of elliptic flow (n = 2), the results on higher-order harmonic coefficients develop a more complete picture of the collective motion in high-energy heavy-ion collisions and shed light on the properties of the produced medium.

Keywords: Harmonic azimuthal anisotropy; Pbpb collisions.

269. Measurement of Jet Fragmentation in Pbpb and Pp Collisions at V Snn = 2.76 Tev

Ali Yehia Ellithi Kamel

Physical Review C, 90: 24908-0 (2014) IF: 3.881

The jet fragmentation function of inclusive jets with transverse momentum pT above 100 GeV/c in PbPb collisions has been measured using reconstructed charged particles with pT above 1 GeV/c in a cone of radius 0.3 around the jet axis. A data sample of PbPb collisions collected in 2011 at a nucleon-nucleon centerof-massenergy of vsNN = 2.76 TeV corresponding to an integrated luminosity of 150 µb-1 is used. The results for PbPb collisions as a function of collision centrality and jet transverse momentum are compared to reference distributions based on pp data collected at the same center-of-mass energy in 2013, with an integrated luminosity of 5.3 pb-1. A centrality-dependent modification of the fragmentation function is found. For the most central collisions, a significant enhancement is observed in the PbPb/pp fragmentation function ratio for charged particles with pT less than 3 GeV/c. This enhancement is observed for all jet pT bins studied.

Keywords: Jet Fragmentation; Pbpbcollisions; Pp collisions.

270. Single Spin Asymmetries in Charged Kaon Production from Semi-Inclusive Deep Inelastic Scattering on A Transversely Polarized He3 Target

Y. X. Zhao, Y. Wang, K. Allada, K. Aniol, J.R.M. Annand, T. Averett, F. Benmokhtar, W. Bertozzi, P.C. Bradshaw, P. Bosted, A. Camsonne and H. F Ibrahim

Physical Review C, 90: 55201-55201 (2014) IF: 3.881

We report the first measurement of target single spin asymmetries of charged kaons produced in semi-inclusive deep inelastic scattering of electrons off a transversely polarized He3 target. Both the Collins and Sivers moments, which are related to the nucleon transversity and Sivers distributions, respectively, are extracted over the kinematic range of 0.1 lt xbj lt 0.4 for K+ and K- production. While the Collins and Sivers moments for K+ are consistent with zero within the experimental uncertainties, both moments for K- favor negative values. The Sivers moments are compared to the theoretical prediction from a phenomenological fit to the world data. While the K+ Sivers moments are consistent with the prediction, the K- results differ from the prediction at the 2-sigma level.

Keywords: Asymmetry; Kaon; Semi-Inclusive; Deep Inelastic; Polarized target; Collins and sivers moments; Nucleon transversity.

271. Single Spin Asymmetries of Inclusive Hadrons Produced in Electron Scattering from A Transversely Polarized 3He Target

Y.X. Zhao (Hefei, CUST), K. Aniol (Cal State, L.A.), J.R.M. Annand (Glasgow U.), T. Averett (William-Mary Coll.), F. Benmokhtar and H. F Ibrahim

Physical Review C, 89: 42201-42201 (2014) IF: 3.881

We report the first measurement of target single spin asymmetries (AN) in the inclusive hadron production reaction, e+3Heh+X, using a transversely polarized 3He target. The experiment was conducted at Jefferson Lab in Hall A using a 5.9-GeV electron beam. Three types of hadrons (p±, K±, and proton) were detected in the transverse hadron momentum range 0.54 lt pT lt 0.74 GeV/c. The range of xF for pions was -0.29 lt xF lt -0.23 and for kaons was -0.25 lt xF lt -0.18. The observed asymmetry strongly depends on the type of hadron. A positive asymmetry is observed for p+ and K+. A negative asymmetry is observed for p-. The magnitudes of the asymmetries follow |Ap-| lt |Ap+| lt |AK+|. The K- and proton asymmetries are consistent with zero within the experimental uncertainties. The p+ and p- asymmetries measured for the 3He target and extracted for neutrons are opposite in sign with a small increase observed as a function of pT.

Keywords: Asymmetry; Inclusive reaction; Polarized target; Pion;Kaon; Proton;Transverse momentum.

272. Measurement of the 12C (e,e'p) 11B Two-Body Breakup Reaction at High Missing Momentum Values

P. Monaghan, R. Shneor, R. Subedi, B. D. Anderson, K. Aniol, J. Annand, J. Arrington, H. Benaoum, F. Benmokhtar, P. Bertin, W. Bertozzi and H. F Ibrahim

Journal of Physics G, 41: 105109-105109 (2014) IF: 2.838

The five-fold differential cross section for the 12C(e,e'p)11B reaction was determined over a missing momentum range of 200-400 MeV/c, in a kinematics regime with xB gt 1 and Q^2=2.0 (GeV/c)^2. A comparison of the results with previous lower missing momentum data and with theoretical models are presented. The extracted distorted momentum distribution is shown to be consistent with previous data and extends the range of available data up to 400 MeV/c. The theoretical calculations are from two very different approaches, one mean field and the other short range correlated, yet for this system the two

approaches show striking agreement with the data and each other up to a missing momentum value of 325 MeV/c. For larger momenta, the calculations diverge which is likely due to the factorization approximation used in the short range approach. **Keywords:** Cross section; Missing momentum; Distorted momentum distribution; Factorization; Approximation; short range approach.

273. Examples of the Failure of Proximity Approach when the Nuclear Surface is Irregular or has Concave Regions

M.Ismail and I.A.M.Abdul-Magead

Nuclear Physics A, 922: 168-179 (2014) IF: 2.499

We study the results of the proximity approach in calculating the fusion barrier parameters (the height of Coulomb barrier VBVB and its radius RBRB) compared with the results of double folding model (DFM). We considered five interaction systems as examples and made our study at several relative orientations for the interacting deformed nuclei. We found that VBVB and RBRB, evaluated by using the proximity approach, have nonphysical F - dependence when the value of hexadecapole deformation parameter 4<04<0 or at least one nucleus has octupole deformation order, 33. The results almost agree with those of DFM when 4=04=0. For positive 44 values the results of the two models almost agree in behavior but differ in values. The reason for failure when 44 has negative value is due to the existence of concave region in the nuclear surface, which does not satisfy the requirement of proximity approach based on gentlycurved surface. Since the existence of 66 and 88 induce irregularity and concave regions in the surface, we expect failure of proximity approach in this case, for an example, 66 was given. Keywords: Proximity approach of Nuclear potential; Doublefolding model.

274. Cms Heavy-Ion Overview

Ali Yehia Ellithi Kamel

Nuclear Physics A, 931: 13-0 (2014) IF: 2.449

The CMS Collaboration has recorded 150 μ b-1 and 35 nb-1 of PbPb and pPb collisions, at 2.76 TeV and 5.02 TeV, respectively. This paper highlights some of the observations made on these samples. A particular emphasis is given to the most recent results regarding collectivity, energy loss, nuclear effects and quarkonium suppression.

Keywords: Quark; Gluon plasma; Heavy-Ion collisions; CMS.

275. Transverse momentum and pseudorapidity dependence of charged particle production and nuclear modification factor in proton–lead collisions at $\sqrt{s_{NN}} = 5.02 \text{ TeV}$ with CMS

Ali Yehia Ellithi Kamel

Nuclear Physics A, 932: 174-178 (2014) IF: 2.449

The transverse momentum ($_{pT}pT$) spectra of charged particles at various pseudorapidity ranges up to a $_{pT}pT$ of 100 GeV/*c* are presented for proton–lead collisions at $\sqrt{s_{NN}} = 5.02$ TeVThe nuclear modification factor is measured by dividing the measured mid-pseudorapidity proton–lead spectrum by a proton–proton

reference distribution constructed based on earlier measurements at several collision energies using an interpolation method. In addition, the asymmetries in the charged particle yields between positive and negative pseudorapidity ranges are presented as a function of $_{p,T}$ pT up to 100 GeV/*c*.

Keywords: Nuclear; Modification factor; Cms; Lhc; Ppb; Proton Lead; Charged particle.

276. Energy-Dependent Microscopic Optical Potential for Scattering of Nucleons on Light Nuclei

M.Y.H. Farag, E.H. Esmael and H.M. Maridi

The European Physical Journal A, 50: 106: 1-10 (2014) *IF*: 2.421

We present an energy-dependent microscopic optical model potential for elastic scattering of nucleons on light nuclei. The single-folding model is used for the real part of the optical potential (OP), while the imaginary part is derived within the high-energy approximation theory. The energy dependence of the OP is determined from the parameterization of the volume integrals those calculated from the best-fit OP that fit the experimental data of the cross sections and analyzing powers. This energy-dependent OP is successfully applied to analyze the proton elastic scattering of 4,6,i8He, 6,7Li, and 9,10Be nuclei at low and intermediate incident energies up to 200MeV/nucleon **Keywords:** Optical model.

277. Crystal Structure and Electric Properties of the Organic–Inorganic Hybrid: [(Ch2)6(Nh3)2]Zncl4

M.F. Mostafa and S.S. El-khiyami

Journal of Solid State Chemistry, 209: 82-88 (2014) IF: 2.2

The new organic-inorganic hybrid [(CH2)6(NH3)2]ZnCl4, Mr=325.406 crystallized in a triclinic, P1⁻, a=7.2816 (5), b=10.0996 (7), c=10.0972 (7), a=74.368 (4)°, =88.046 (4)°, =85.974 (3)°, V=713.24 (9) 3 and Z=2, Dx=1.486 Mg m-3. Differential thermal scanning and x-ray powder diffraction, permittivity and ac conductivity indicated three phase transitions. Conduction takes place via correlated barrier hopping. **Keywords:** X-Ray crystal structure; Phase transition; Dielectric permittivity; Conductivity.

278. A Study of the Phase Transition of Reheated Diphenyl Carbazide (DPC) by using UV Spectroscopy

El-Kabbany F, Taha S and Hafez M

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 128: 481-488 (2014) IF: 2.129

Phase transition phenomenon in reheated diphenyl carbazide (DPC) is studied here using UV spectroscopy. The optical band gap for reheated DPC is obtained by measuring the optical diffused reflectance (DR) and equals to 3.55 eV. Also, the optical band gap is calculated using UV technique and equals to 3.548 eV. The absorbance of reheated DPC is studied at some selected temperatures in order to check the presence of phase transitions at 90 C and 125 C. According to the present work, the band gaps are calculated at 80 C, 110 C and 130 C and equal to 3.548 eV. But at 100 C, the optical band gap has changed to 4.139 eV. It was found that each phase of reheated DPC belongs to a certain

definite crystal structure. The presence of the phase transitions are checked and confirmed by scanning electron microscopy (SEM). The structural properties and morphology of reheated diphenyl carbazide are investigated by SEM. The SEM images are taken at some selected temperatures to confirm the presence of phase transitions.

Keywords: Dpc; Phase transitions; Uv spectroscopy.

279. Characterization and optical studies of 90/10 (wt/wt%) PVA/β-chitin blend irradiated with γ-rays

F.H. Abd El-Kader, S.A. Gaafer and M.F.H. Abd El-Kader

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 131: 564-570 (2014) IF: 2.129

X-ray diffraction, IR spectroscopy and UV/visible spectra were studied as a function of gamma irradiation doses (5-100 kGy) for 90/10 (wt/wt%) PVA/\beta-chitin. A new intense reflection peak at $2\theta = 21.5^{\circ}$ appeared in the X-ray spectrum of the sample irradiated at 50 kGy γ -dose. Besides, the band centered at 2931 cm⁻¹ in IR spectrum splits into two clearly separated bands around 2919 and 2941 cm⁻¹ for the sample irradiated at 10 kGy γ dose. The disappearance of the absorption band at 280 nm of PVA in the blend sample indicates that the ligand PVA becomes opaque in the UV region and provides evidence for the miscibility between homopolymers. The value of absorbance, in UV/visible range, at 10 kGy y-dose was the highest one compared to the other γ -doses. The location of the γ -doses on the chromaticity diagram was different, indicating the change in the spectral colors of the investigated blend. In addition, the absorption edge, band tail and color parameters values were determined as a function of γ-doses.

Keywords: PVA/β -chitin; Gamma irradiation; Optical parameters; IR spectroscopy.

280. Diffused Reflectance and Structure Analysis for the Nano-Matrix $(ZnO_{(1-x)}SiO_{2(X)})$ System

M. Hafez, I.S. Yahia and S. Taha

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 127: 521-529 (2014) IF: 2.129

Optical and structural properties of the investigated matrix $ZnO_{(1-x)}SiO_{2(x)}$ system were characterized by various techniques such as X-ray analysis and UV-VIS-NIR absorption. The structural changes of the studied nano-matrix $ZnO_{(1-x)}SiO_{2(x)}$ with the concentration of nanosilica are checked by X-ray analysis measurement. The crystal structures for ZnO, (ZnO)_{0.75}(SiO₂)_{0.25}, $(ZnO)_{0.50}(SiO_2)_{0.50}$ and $(ZnO)_{0.25}(SiO_2)_{0.75}$ and pure SiO₂ are hexagonal, monoclinic, tetragonal, orthorhombic and amorphous respectively and detailed crystal parameters are obtained. The electronic properties of $ZnO_{(1-x)}SiO_{2(x)}$ are investigated, where the optical band gaps for the five studied systems are 3.22 eV, 3.24 eV, 3.27 eV, 3.30 eV and 4.5 eV respectively. It is clear that the band gap increases with increasing SiO₂ content. Mixing the ZnO with SiO₂ enhance the UV response of these materials which is confirmed by diffused reflectance spectrum used to analyze the UV response of the studied systems.

Keywords: Diffused reflectance; Reflectance; Structural analysis ; $ZnO_{(1-x)}SiO_{2(x)}$.

281. Characterization and Annealing Performance of Calcium Phosphate Nanoparticles Synthesized by Co Precipitation Method

M.A. Ahmed, S.F.Mansour, S.I. El-dek, S.M. Abd-Elwahab and M.K. Ahmed

Ceramics International, 40: 12807-12820 (2014) IF: 2.086

Calcium phosphate ceramics CPCs nanopowders were synthesized via co - precipitation microwave technique. The influence of pH value and annealing temperature on the crystallinity , particle shape , morphology , surface area and microhardness was investigated . The results showed that the pH value is the crucial factor in the phase decomposition. The aspect ratio of the particles was found to decrease with increasing pH. In addition , the microhardness values were improved with the increase of pH value that was linked directly to the enhancement of the crystallinity.

Keywords: Calcium phosphateceramics; Hydroxyapatite; Hrtem; Fesem.

282. Optimizing the structure and magnetic properties of SmCo Nanoferrites Synthesizedbyauto-Combustionprocessingtechniques

M.A. Ahmed, N. Okasha, A.A. Mohamed and I. Mmdouh

Journal of Magnetism and Magnetic Materials, 358-359: 32-37 (2014) IF: 2.002

Nano-particles of polycrystalline SmxCoFe2–xO4; $0 \le x \le 0.04$ were prepared using flash auto-combustion method. It was obtained as dried powder after the successful chemical reaction of their respective metal nitrates solutions in the presence of urea as fuel. Synthesis of materials in single phase cubic spinel is determined using XRD analyses. The structure and composition of Sm doped Co–ferrite were analyzed and the nanosize was confirmed by TEM micrograph. The magnetic susceptibility (χ M) and hysteresis studies revealed the magnetic behavior through analysis of the change in Curie temperature (*T*C), saturation magnetization (*M*s), effective magnetic moment (μ eff), and coercivity (*H*c) of these nanomaterials

Keywords: Nanocomposite; Samarium cobaltnanocomposite; Structureproperty; Magnetic property.

283. Promising Wastewater Treatment Using Rare Earth-Doped Nanoferrites

M.A. Ahmed, Samiha T. Bishay, Rasha M. Khafagy and N.M. Saleh

Journal of Magnetism and Magnetic Materials, 350: 73-80 (2014) IF: 2.002

Single-phases of the spinel nanoferrites Zn 0.5 Co0 .5Al0. 5R0.04 Fe1.46O4; R=Sm, Pr, Ce and La, were synthesized using the flash auto combustion method. X-ray diffraction (XRD) result s indicated that doping nanoferrites with small concentrations of rare earth elements (RE) allowed their entrance to the spinel lattice. Transmission electron microscope (TEM) images revealed that doping with different RE elements resulted in the formation of different nanometric shapes such as nanospheres and nanowires. Doping with Sm3+ and Ce3+ resulted in the formation of nanospheres with average diameter of 14 and 30 nm respectively. In addition to the granular nanospheres, doping with Pr3+ and La3+ resulted in the formation of some nanowires with different aspect ratios (average length of 100 nm and diameter of 9 nm) and (average length of 150 nm and outer diameter of 22 nm) respectively. At fixed temperature, the Ac conductivity (s) increased as the RE ionic radius increases except for Ce, due to the role of valance fluctuation from Ce3+ to Ce4+ ions. La- and Pr-doped nanoferrites showed the highest ac conductivity values, which is most probably due to the presence of large numbers of nanowires in these two types of ferrites. For all entire samples, the effective magnetic moment (µeff) decreased, while the Curie temperature (TC) increased as the RE ionic radius increases. The synthesized rare earth nanoferrites showed promising results in purifying colored wastewater. La-doped ferrite was capable for up-taking 92% of the dye content, followed by Pr-doped ferrite, which adsorbed 85% of the dye, while Sm- and Ce-doped ferrites showed lower dye removal efficiency of 80% and 72% respectively. High dye uptake shown by La - and Pr - doped ferrites is most probably due to the presence of nanowires and their higher Ac conductivity values. These excellent results were not previously reported.

Keywords: Rare earth nanoferrite; Nanowire; Conductivity; Magnetic susceptibility; Wastewater De-Coloration.

284. Fascinating Properties of Multifunctional Nanocomposites Manganite / Magnetite

M.A. Ahmed, S.I. El-Dek and A. Abd Elazim

Superlattices and Microstructures, 74: 34-51 (2014) IF: 1.979

Multifunctional nanocomposites La0.6Sr0.4MnO 3/Fe3O4 (LSMO/Fe3O4) were prepared with different weight ratios and characterized using X-ray diffraction (XRD), high resolution transmission microscope (HRTEM) and vibrating sample magnetometer (VSM). The parent nanomaterials (LSMO and Fe3O 4) were prepared by citrate-nitrate auto combustion method and coprecipitation method respectively. Thermal dc magnetization curves were measured from room temperature up to 800 K for the nanocomposites. Vibrating sample magnetometer measurements reveal the enhancement of ferromagnetic properties with increasing magnetite ratio. Dielectric properties were reported and discussed for all investigated nanocomposites. The results recommend the use of such nanocomposites in memory devices and spintronics applications.

Keywords: HRTEM; Hysteresis; Manganitemagnetite; Nanocomposite; XRD.

285. Conduction and Magnetization Improvement of Bifeo3 Multiferroic Nanoparticles by Ag⁺ Doping

M.A. Ahmed, S.F. Mansour, S.I. El-Dek and M. Abu-Abdeen

Materials Research Bulletin, 49: 352-359 (2014) IF: 1.968

Nanometric multiferroic namely Ag doped (BiFeO3) was synthesized using flash auto combustion technique and glycine as a fuel. Single phase rhombohedral – hexagonal perovskite structure was obtained by annealing at 550 °C, as determined from XRD. High resolution transmission electron microscope (HRTEM) clarifies the hexagonal platelet shape with size 17.9 nm. Maximum room temperature AC conductivity was obtained at Ag content of x = 0.10. The results of this study promote the use of such multiferroic in solid oxide fuel cell applications.

Keywords: A. Magnetic materials; B. Chemical synthesis; C. X-Ray diffraction; C. Electron microscopy; D. Electrical properties.

286. Frequency Dependence of Dielectric Properties and Conductivity of Bulk Copper Sulfide

H.A.M. Ali, H.S. Soliman, M. Saadeldin and K. Sawaby

Materials Science in Semiconductor Processing, 18: 141-145 (2014) IF: 1.7

The dielectric properties and AC conductivity of bulk Cu2S in a pellet form were studied as functions of frequency and temperature. Both dielectric constant (e1) and dielectric loss (e2) were calculated. The complex plane diagram of the electric modulus was plotted for different temperatures. The AC conductivity was nearly independent of frequency in the low range. The mechanism of AC conductivity at higher frequency was interpreted in terms of the correlated barrier hopping model. AC conductivity is a thermally activated process. The AC activation energy was determined for different frequencies.

Keywords: Copper sulfide; Dielectric properties; Ac Conductivity

287. Study of the Optically Diffused Reflectance and Thermal-Microstructure for the Phase Transformation of AgNO₃

M. Hafez, I. S. Yahia and S. Taha

Applied Physics A, 116: 1445-1453 (2014) IF: 1.694

Optical, microstructural, and thermal properties of the investigated silver nitrate samples were characterized by various techniques, such as X-ray analysis, scanning electron microscopy, UV-Vis-NIR absorption and differential scanning calorimetry (DSC). The presence of structural phase transition [orthorhombic structure (phase II) to rhombohedral structure (phase I)] was checked by DSC and X-ray analysis measurements. The thermal energy required for such transformation is found to be 11.6 J/g. The optical band gaps of AgNO₃ are 1.4 and 2.02 eV for phase II and phase I, respectively, at the lowenergy region. But at highenergy region, the optical band gaps are 3.41 and 3.43 eV for phase II and phase I, respectively. Characteristic peaks for AgNO3 corresponding to (2 1 1), (0 0 4) and (3 5 1) for phase II and (0 0 4), (3 1 1) and (0 2 4) for phase I have been observed. The average crystalline size for AgNO3 samples and the values of dislocation density d and the strain e for the planes of two phases II and I are calculated and also the texture coefficient is determined. Such information can considerably aid in understanding the process of phase transformations in AgNO3. Keywords: Microstructure; Agno3 ; (Dsc);Uv-Vis-Nir.

288. Spectral Evolution of Nano-Second Laser Interaction with Ti Target in Nitrogen Ambient Gas

H. Hegazy, H. A. Abd El-Ghany , S. H. Allam and Th. M. El-Sherbini

Applied Physics B, 117(1): 34317-34352 (2014) IF: 1.634

The present work aimed to study the variation in the plasma parameters (temperature and density) of the Ti plasma generated by 1,064 and 532 nm lasers at different ambient N2 pressures for different delay times. The characterization of the plasma-assisted pulsed laser ablation of the titanium target is discussed. The emission spectra of the titanium plasma produced in the present
study have been carefully investigated over the whole UV-NIR (200-1,000 nm) spectral range. Boltzmann plots of suitable spectral lines have been employed to derive the excitation temperature, and the electron density is derived from the Stark widths of the Ti II spectral line at 350.49 nm. Keywords: Atomic physics ; Laser physics.

289. Laser-Induced Down-Conversion and Infrared **Phosphorescence Emissivity of Novel Ligand-Free Perovskite Nanomaterials**

M.A. Ahmed, Rasha M. Khafagy and O. El-sayed

Journal of Molecular Structure, 1062: 133-140 (2014) IF: 1.599

For the first time, standalone and ligand-free series of novel rareearth-based perovskite nanomaterials are used as near infrared (NIR) and mid infrared (MIR) emitters. Nano-sized La0.7Sr0.3M0.1Fe0.9O3; where M = 0, Mn2+, Co2+ or Ni2+ were synthesized using the flash auto-combustion method and characterized using FTIR, FT-Raman, SEM and EDX. Photoluminescence spectra were spontaneously recorded during pumping the samples with 0.5 mW of green laser emitting continuously at 532 nm. La0.7Sr0.3FeO3 (where M = 0) did not result in any infrared emissivity, while intense near and mid infrared down-converted phosphorescence was released from the M-doped samples.

The released phosphorescence greatly shifted among the infrared spectral region with changing the doping cation. Ni2+-doped perovskite emitted at the short-wavelength near-infrared region, while Mn2+ and Co2+-doped perovskites emitted at the midwavelength infrared region.

The detected laser-induced spontaneous parametric downconversion phosphorescence (SPDC) occurred through a twophoton process by emitting two NIR or MIR photons among a cooperative energy transfer between the La3+ cations and the M2+ cations. Combining SrFeO3 ceramic with both a rare earth cation (RE3+) and a transition metal cation (Mn2+, Co2+ or Ni2+), rather than introducing merely RE3+ cations, greatly improved and controlled the infrared emissivity properties of synthesized perovskites through destroying their crystal symmetry and giving rise to asymmetrical lattice vibration and the nonlinear optical character.

The existence of SPDC in the M2+-doped samples verifies their nonlinear character after the absence of this character in La0.7Sr0.3FeO3. Obtained results verify that, for the first time, perovskite nanomaterials are considered as nonlinear optical crystals with intense infrared emissivity at low pumping power of visible wavelengths, which nominates them for photonic applications and requires further studies regarding their lasing ability as laser active components. Such a single infraredemitting-perovskite nanomaterial replaced, for the first time, the need for a polymeric ligand, which was a routine approach in such an application. Also, it avoided the complicated synthesis of organic - inorganic hybrids , prevented wide spectral-range emissions usually produced by polymers, facilitated obtaining near-infrared emission spectra within certain limits of wavelengths, and is considered as a new approach for fabricating a standalone perovskite nanomaterial for phosphorescent optoelectronic components and military uses.

Keywords: Laser - Induced spontaneous parametric down-Conversion (SPDC); Rare-Earth-Based perovskites; Near / Mid Infrared-Emitting materials; Entangled two-Photon process.

290. Charge Transport and Glassy Dynamics in Polyisoprene

A. Abou Elfadl, S. El-Sayed, A. Hassen, F. H. Abd El-Kader and G. Said

Polymer Bulletin, 71: 2039-2052 (2014) IF: 1.491

The ac conductivity (rac) and electric modulus (M00) of polyisoprene (PI) with various molecular weights, 652 B Mw B 4,470, were analyzed. The scaling of both the rac and M00 data suggested that the investigated PI samples follow a temperatureindependent conductivity distribution relaxation mechanism. An intense peak was observed in M00(f) and attributed to the dc conductivity (rdc). The temperature dependence of rdc and the characteristic relaxation times, sc, verified Vogel - Fulcher -Tamman equations . Unlike the other studied samples, the PI samples with Mw = 1,370 and 4,470 exhibited non-decoupling between the arelaxation time, sa, and rdc. The fractional Debye-Stokes-Einstein law was well verified for PI samples with Mw = 652, 790, 1,040 and 1,920.

Keywords: Various molecular weights of polyisoprene; Electric modulus; Ac conductivity; Frequency temperature superposition (Fts).

291. Optical and Colorimetric Studies of Thorium Nitrate-Doped Poly(Vinyl Alcohol) Films

Khaled H. Mahmoud and Karam Atef

Polymer Composites, 35: 1786-1791 (2014) IF: 1.455

In this study, poly(vinyl alcohol) (PVA) films doped with thorium nitrate hydrate [Th(NO3)4] have been prepared using casting technique. The optical absorption spectra were recorded at room temperature in the wavelength range 200-800 nm. From the absorption edge studies, the values of the Urbach energy (Eu) have been evaluated. These energy values vary slightly with composition, indicating that the model based on electronic transitions between localized states is not preferable. Optical parameters such as refractive index and complex dielectric constant have been determined. The dispersion of the refractive index is discussed in terms of the single-oscillator Wemple-DiDomenico model. Color properties of the prepared samples were discussed in the framework of CIE L*u*v* color space.

Keywords: Urbach energy; Refractive index; Colour parameters; Single oscillator model.

292. Optical and Electrical Characterizations of Nanoparticle Cu₂S Thin Films

M. Saadeldin, H. S. Soliman, H. A. M. Ali and K. Sawaby

Chinese Physics B, 23: 47803-47803 (2014) IF: 1.3

Copper sulfide thin films are deposited onto different substrates at room temperature using the thermal evaporation technique. X-ray diffraction spectra show that the film has an orthorhombicchalcocite $(\gamma$ -Cu₂S) phase. The atomic force microscopy images indicate that the film exhibits nanoparticles with an average size of nearly 44 nm. Specrtophotometric measurements for the transmittance and reflectance are carried out at normal incidence in a spectral wavelength range of 450 nm-2500 nm. The refractive index, *n*, as well as the absorption index, k is calculated. Some dispersion parameters are determined. The analyses of ε_1 and ε_2 reveal several absorption peaks. The analysis of the spectral behavior of the absorption

coefficient, α , in the absorption region reveals direct and indirect allowed transitions. The dark electrical resistivity is studied as a function of film thickness and temperature. Tellier's model is adopted for determining the mean free path and bulk resistance.

293. Thermodynamic properties of a rotating Bose– Einstein condensation in a 2D optical lattice

Azza M. El-Badry, Ahmed S. Hassan and Hend A. Abdel-Gany

PhysicaB, 444: 54-57 (2014) IF: 1.276

In this paper, we consider the thermodynamic properties of a rotating Bose–Einstein condensation in a 2D optical lattice. A modified semiclassical approximation is suggested to calculate the condensate fraction, the transition temperature and the heat capacity. Our approach provides a consistent picture for the role of the optical potential and the rotation rate on the temperature dependence for the thermodynamic properties. The outcome results furnish useful qualitatively theoretical results for the future BEC experiments in such traps.

Keywords: Boson system; Optical lattice; Semiclassical approach.

294. Fusion Barrier Parameters for A Spherically Deformed Pair of Nuclei

M. Ismail, A.Y. Ellithi, M.M. Botros and A.F. Abdel Reheem

Canadian Journal of Physics, 92: 1411-1418 (2014) IF: 0.928

The interactions of 48Ca spherical nucleus are considered with the deformed targets 224Ra and 244Pu to form the superheavy elements 272Hs and 292114 (292Fl), respectively. The double folding model with effective density dependent M3Y-NN force, and the energy density functional method based on Skyrme force are used to derive the nucleus–nucleus interaction. The effect of deformation and orientation on the Coulomb barrier parameters is studied, and the results are compared with the corresponding quantities derived from a simple model based on the proximity approach for the nuclear part and simple analytical formula for the Coulomb interaction. Consistent behavior of the results is obtained at certain ranges for deformation parameters and orientations.

Keywords: Fusion barrier; Deformed nuclei; Double folding model.

295. On Moments of the Multiplicity Events of Slow Target Fragments in Relativistic Sulfur-Ion Collisions

A. Abdelsalam, S. Kamel, N. Rashed and N. Sabry

International Journal of Modern Physics E, vol.23: 1-20 (2014) IF: 0.842

A detailed study on the multiplicity characteristics of the slow target fragments emitted in relativistic heavy-ion collisions has been carried out at ELab = 3.7A and 200A GeV using 32S projectile. The beam energy dependence of the black particles produced in the full phase space of 32S-emulsion (32S-Em) interactions on the target size in terms of their moments (mean, variance, skewness and kurtosis) is investigated. The various order moments of target fragments emitted in the interactions of 32S beams with the heavy (AgBr) target nuclei are estimated in the forward (FHS) and backward (BHS) hemispheres. The

investigated values of ratio of variance to mean at both energies show that the multiplicity distributions (MDs) are not Poissonian and the strongly correlated emission of target fragments are in the forward directions. The degree of anisotropic fragment emission and nature of correlation among the emitted fragments are investigated. The energy dependence of entropy is examined in both hemispheres. The entropy values normalized to average multiplicity are found to be energy independent. Scaling of MD of black particles produced in these interactions has been studied to verify the validity of scaling hypothesis via two scaling (Koba– Nielsen–Olesen (KNO)-scaling and Hegyi-scaling) functions. A simplified universal function has been used in each scaling to display the experimental data.

Keywords: Target fragmentations; Nucleus–Nucleus collisions; Multiplicity moments; Scaling and Entropy; Multiplicity correlations.

296. The Properties of Nuclear Matter At Zero and Finite Temperatures

H. M. M. Mansour and Kh. S. A. Hassaneen

Physics of Atomic Nuclei, 77: 290-298 (2014) IF: 0.595

The properties of nuclear matter are studied in the frame of the Brueckner theory. The Brueckner-Hartree-Fock approximation plus two-body density-dependent Skyrme potential which is equivalent to three-body interaction are used. Various modern nucleon-nucleon potentials are used in the framework of the Brueckner-Hartree-Fock approximation, e.g.: CD-Bonn potential, Nijm1 potential, and Reid 93 potential. These modern nucleon-nucleon potentials fit the deuteron properties and are phase shifts equivalent. The equation of state at T = 0, pressure at T = 0, 8, and 12 MeV, free energy at T = 8 and 12 MeV, nuclear matter incompressibility, and the symmetry energy calculation are presented. The hot properties of nuclear matter are calculated using T 2-approximationmethod at low temperatures. Good agreement is obtained in comparison with previous theoretical estimates and experimental data, especially at low densities. Keywords: Brueckner; Hartree; Fock approximation; Density-Dependent skyrme potential; Nuclear matter; Three body forces.

297. Peristaltic Flow of Williamson Fluid with Heat and Mass Transfer Through Porous Medium in A Nonuniform Vertical Tube

H. M. Mansour and M. Y. Abou-ze

Wulfenia Journal Austeria, 21, No. 12: 101-131 (2014) IF: 0.294

This article deals with the influence of heat and mass transfer on peristaltic flow of non-Newtonian Williamson fluid in the gap between concentric tubes. A perturbation solution, under the assumptions of long wave length and low Reynolds number is obtained which satisfies the momentum, energy and concentration equations for the case of small porosity parameter and Weisseing number. Numerical results for the behaviors of the velocity, temperature and concentration as well as the skin friction, Nusselt number and Sherwood number with other physical parameters are obtained. Several graphs for these results of physical interest are displayed and discussed in detail.

Keywords: Peristaltic flow; Heat transfer; Mass transfer; Nonnewtonian fluid; and Porous Media.

Dept. of Zoology

298. Crystal Structure, Thermal, Electric and Magnetic Study of [(CH₂)₇(NH₃)₂]CoCl₂Br₂

M F Mostafa, S Abd-elal and A K Mohamed

Indian Journal of Physics, 88: 49-57 (2014)

1,7 - Heptanediammonium - dichlorodibromo-cobaltate (II), with molecular formula [(CH2)7(NH3)2]CoCl2Br2, has been synthesized . It is triclinic P1, a = 7.4042 (4) A $^\circ$, b = 10.3484 (5) A° , c = 11.3554 (6) A° , a = 66.289 (3) b = 78.425 (2), c = 86.546 (3). Its crystal structure contains distorted tetrahedral [CoCl2Br2]2- anions and zigzag [(CH2)7 (NH3) 2]2 cations which are connected via a network of hydrogen bonds. The largest difference in Co-Cl and Co-Br bond lengths are 0.081 A ° and largest difference in Br-Co-Cl angles is 8.1. The compound has been studied by thermal analysis, impedance spectroscopy and magnetic susceptibility. Thermal studies show three phase transitions at T1 = 378 K, T2 = 355 K, associated with solid-solid phase change and T3 = 333.8 K ascribed to chain conformation and reorientation. Permittivity and ac conductivity as a function of temperature (300-395 K) and frequency (0.06 kHz\f\100 kHz) is presented. AC conductivity is thermally activated in different phases. Conduction is mainly due to Cl- and Br- ion hopping in the high temperature range. Magnetic susceptibility yields an effective magnetic moment leff = 4.43 BM and Curie-Weiss temperature, H = -4.7 K which confirm tetragonal symmetry of [CoCl4]2- and weak antiferromagnetic interaction at low temperatures.

Keywords: X-Ray crystal structure; Thermal properties; Dielectric properties; Hopping conductivity; Magnetic susceptibility.

299. Fibulin-2 Is Involved in Early Extracellular Matrix Development of the Outgrowing Mouse Mammary Epithelium

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Cellular and Molecular Life Sciences, 71: 3811-3828 (2014) IF: 5.856

Cell-matrix interactions control outgrowth of mammary epithelium during puberty and pregnancy. We demonstrate here that the glycoprotein fibulin-2 (FBLN2) is strongly associated with pubertal and early pregnant mouse mammary epithelial outgrowth. FBLN2 was specifically localized to the cap cells of the terminal end buds during puberty and to myoepithelial cells during very early pregnancy (days 2-3) even before morphological changes to the epithelium become microscopically visible, but was down-regulated thereafter.

Exposure to exogenous oestrogen (E2) or E2 plus progesterone (P) increased Fbln2 mRNA expression in the pubertal gland, indicating hormonal control.

FBLN2 was co-expressed and co-localised with the proteoglycan versican (VCAN) and co-localised with laminin (LN), while overexpression of FBLN2 in HC-11 cells increased cell adhesion to several extracellular matrix proteins including LN and fibronectin, but not collagens.

Mammary glands from Fbln2 knockout mice showed no obvious phenotype but increased fibulin-1 (FBLN1) staining was detected, suggesting a compensatory mechanism by other fibulin family members.

We hypothesise that similar to embryonic aortic smooth muscle development, FBLN2 and VCAN expression alters the cell-matrix interaction to allow mammary ductal outgrowth and development during puberty and to enable epithelial budding during pregnancy. **Keywords:** Terminal end buds; Mammary gland ; Fibulin-2 · Versican ; Epithelial-Stromal interactions.

300. Hs3st2 Modulates Breast Cancer Cell Invasiveness Via Map Kinase- and Tcf4 (Tcf7l2)-Dependent Regulation of Protease and Cadherin Expression

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Int J Cancer., 135: 2579-2592 (2014) IF: 5.007

Heparan sulfate 3-O-sulfotransferase 2 (HS3ST2), an enzyme mediating 3-O-sulfation of heparan sulfate (HS), is silenced by hypermethylation in breast cancer. As HS has an important co-receptor function for numerous signal transduction pathways, the phenotypical changes due to HS3ST2 reexpression were investigated in vitro using high and low invasive breast cancer cell lines.

Compared to controls, highly invasive HS3ST2-expressing MDA-MB-231 cells showed enhanced Matrigel invasiveness, transendothelial migration and motility.

Affymetrix screening and confirmatory real-time PCR and Western blotting analysis revealed increased expression of several matrix metalloproteinases, cadherin-11, E-cadherin and CEACAM-1, while protease inhibitor and annexin A10 expression were decreased. Low invasive HS3ST2 -expressing MCF-7 cells became even less invasive, with no change in gelatinolytic MMP activity.

HS3ST2 expression increased HS-dependent basal and FGF2specific signaling through the constitutively active p44/42 MAPK pathway in MDA-MB-231 cells.

Increased MAPK activation was accompanied by upregulation of -catenin in MDA-MB-231, and of the transcription factor Tcf4 in both cell lines.

Dysregulation of Tcf4-regulated ion transporters and increased cytosolic acidification were observed in HS3ST2-expressing MDA-MB-231 cells, which is a possible underlying cause of increased chemosensitivity towards doxorubicine and paclitaxel in these cells.

This study provides the first in vitro evidence of the involvement of HS3ST2 in breast cancer cell invasion and chemosensitivity.

Keywords: Heparan sulfate; Metastasis; Chemosensitivity; Glycosaminoglycan; Cadherin; Signal transduction; Invasiveness.

301. MicroRNA-Dependent Targeting of the Extracellular Matrix as A Mechanism of Regulating Cell Behavior

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Biochim Biophys Acta., 1840: 2609-2620 (2014) IF: 3.829

Background: MicroRNAs are small noncoding RNAs which regulate gene expression at the posttranscriptional level by inducing mRNA degradation or translational repression.

MicroRNA-dependent modulation of the extracellular matrix and its cellular receptors has emerged as a novel mechanism of regulating numerous matrix-dependent processes, including cell proliferation and apoptosis, cell adhesion and migration, cell differentiation and stem cell properties.

Scope of review: In this review, we will present different mechanisms by which microRNAs and extracellular matrix constituents mutually regulate their expression, and we will demonstrate how these expression changes affect cell behavior. We will also highlight the importance of dysregulated matrix-related microRNA expression for the pathogenesis of inflammatory and malignant disease, and discuss the potential for diagnostic and therapeutic applications.

Major conclusions; MicroRNAs and matrix-dependent signal transduction processes form novel regulatory circuits, which profoundly affect cell behavior. As misexpression of microRNAs targeting extracellular matrix constituents is observed in a variety of diseases, a pharmacological intervention with these processes has therapeutic potential, as successfully demonstrated in vitro and in advanced animal models. However, a deeper mechanistic understanding is required to address potential side effects prior to clinical applications in humans.

General significance; A full understanding of the role and function of microRNA-dependent regulation of the extracellular matrix may lead to new targeted therapies and new diagnostics for malignant and inflammatory diseases in humans. This article is part of a Special Issue entitled Matrix-mediated cell behaviour and properties.

Keywords: MicroRNA; Competing endogenous rna; Proteoglycan; Integrin; Laminin; Therapeutics.

302. Normalization of Nano-Sized TiO₂-Induced Clastogenicity, Genotoxicity and Mutagenicity by Chlorophyllin Administration in Mice Brain, Liver, and Bone Marrow Cells

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Toxicological Sciences, 142: 21-32 (2014) IF: 4.478

The intensive uses of titanium dioxide (TiO₂) nanoparticles in sunscreens, toothpaste, sweats, medications, etc. making humans exposed to it daily by not little amounts and also increased its risks including genotoxicity. Thus, the present study was designed as one way to reduce nano-titanium-induced clastogenicity, genotoxicity, and mutagenicity in mice by co-administration of the free radical scavenger chlorophyllin (CHL). In addition, markers of oxidative stress were detected to shed more light on mechanism(s) underlying nano-sized TiO₂ genotoxicity. Male mice were exposed to multiple injection into the abdominal cavity for five consecutive days with either CHL (40 mg/kg bw/day), or each of three dose levels of nano-sized TiO₂ (500, 1000, or 2000 mg/kg bw/day) alone, or both simultaneously and sacrificed by cervical dislocation 24 h after the last treatment. After CHL coadministration, the observed dose-dependent genotoxicity of TiO2 nanoparticles indicated by the significant elevations in frequencies of both micronuclei and DNA damage induction was significantly decreased and returned to the negative control level. The observed induced mutations in p53 exons 5, 7, & 8 and 5 & 8 in the liver and brain, respectively, were declined in most cases. Moreover, CHL significantly decreased hepatic malondialdehyde level and significantly increased glutathione level and superoxide dismutase, catalase, and glutathione peroxidase activities that were significantly disrupted in animal groups treated with nano- TiO_2 alone. In conclusion, the evidenced *in vivo* genotoxicity of nano- TiO_2 in the present study was normalized after CHL co-administration which supports the previously suggested oxidative stress as the possible mechanism for titanium toxicity.

Keywords: Chlorophyllin; TiO_2 nanoparticles; Genotoxicity; Mice.

303. Cytokines Secreted by Macrophages Isolated from Tumor Microenvironment of Inflammatory Breast Cancer Patients Possess Chemotactic Properties

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The International Journal of Biochemistry and Cell Biology, 46: 138-147 (2014) IF: 4.24

Although there is a growing literature describing the role of macrophages in breast cancer, the role of macrophages in inflammatory breast cancer (IBC) is unclear. The aim of present study was to isolate and characterize tumor associated macrophages of IBC and non-IBC patients and define their role in IBC. Tumor infiltrating monocytes/macrophages (CD14+ and CD68+) were measured by immunohistochemistry using specific monoclonal antibodies. Blood drained from axillary vein tributaries was collected during breast cancer surgery and the percentage of CD14+ in the total isolated leukocytes was assessed by flow cytometric analysis. CD14+ cells were separated from total leukocytes by immuno-magnetic beads technique and were cultured overnight. Media conditioned by CD14+ were collected and subjected to cytokine profiling using cytokine antibody array. Wound healing and invasion assays were used to test whether cytokines highly secreted by tumor drained macrophages induce motility and invasion of breast cancer cells. We found that macrophages highly infiltrate into carcinoma tissues of IBC patients. In addition blood collected from axillary tributaries of IBC patients is highly enriched with CD14+ cells as compared to blood collected from non-IBC patients. Cytokine profiling of CD14+ cells isolated from IBC patients revealed a significant increase in secretion of tumor necrosis factor-a; monocyte chemoattractant protein-1/CC-chemokine ligand 2; interleukin-8 and interleukin-10 as compared to CD14+ cells isolated from non-IBC patients. Tumor necrosis factor-a, interleukin-8 and interleukin-10 significantly increased motility and invasion of IBC cells in vitro. In conclusion, macrophages isolated from the tumor microenvironment of IBC patients secrete chemotactic cytokines that may augment dissemination and metastasis of IBC carcinoma cells.

Keywords: Inflammatory breast cancer; Macrophages; Cytokines; Invasion; Motility.

304. MicroRNA Regulation of Proteoglycan Function in Cancer

Sherif A. Ibrahim, Hebatallah Hassan and Martin Götte

Febs J (Federation of European Biochemical Societies), 281: 5009-5022 (2014) IF: 3.986

MicroRNAs are small noncoding RNAs acting as physiological regulators of gene expression at the post-transcriptional level. In cancer, the expression of microRNAs is dysregulated compared to healthy tissue, suggesting a mechanistic role in disease progression. Recent experimental evidence supports the important molecular role of proteoglycans as microRNA targets in this process. Misexpression of specific microRNAs results in aberrant expression patterns of proteoglycans, as well as their biosynthetic enzymes. Consequently, cell proliferation and apoptosis, adhesion, migration, invasiveness, epithelial-to-mesenchymal transition and cancer stem cell properties are affected as a result of the multifunctional properties of proteoglycans. A pharmacological targeting of the microRNA-proteoglycan axis emerges as a new therapeutic concept in cancer.

Keywords: Cancer; Cancer stem cells; Cerna; Decorin; Glypican; Heparanase; Heparan sulfate; Microrna; Post-transcriptional regulation; Syndecan.

305. Cysteine Peptidases is Schistosomiasis Vaccines with Inbuilt Adjuvanticity

Rashika El Ridi, Hatem Tallima, Sahar Selim, Sheila Donnelly, Sophie Cotton, Bibiana Gonzales Santana and John P. Dalton

Plos One,(2014) IF: 3.534

Schistosomiasis is caused by several worm species of the genus Schistosoma and afflicts up to 600 million people in 74 tropical and sub-tropical countries in the developing world. Present disease control depends on treatment with the only available drug praziquantel. No vaccine exists despite the intense search for molecular candidates and adjuvant formulations over the last three decades. Cysteine peptidases such as papain and Der p 1 are well known environmental allergens that sensitize the immune system driving potent Th2-responses. Recently, we showed that the administration of active papain to mice induced significant protection (P<0.02, 50%) against an experimental challenge infection with Schistosoma mansoni.

Since schistosomes express and secrete papain-like cysteine peptidases we reasoned that these could be employed as vaccines with inbuilt adjuvanticity to protect against these parasites. Here we demonstrate that sub-cutaneous injection of functionally active S. mansoni cathepsin B1 (SmCB1), or a cathepsin L from a related parasite Fasciola hepatica (FhCL1), elicits highly significant (P<0.0001) protection (up to 73%) against an experimental challenge worm infection.

Protection and reduction in worm egg burden were further increased (up to 83%) when the cysteine peptidases were combined with other S. mansoni vaccine candidates, glyceraldehyde 3-phosphate dehydrogenase (SG3PDH) and peroxiredoxin (PRX-MAP), without the need to add chemical adjuvants.

These studies demonstrate the capacity of helminth cysteine peptidases to behave simultaneously as immunogens and adjuvants, and offer an innovative approach towards developing schistosomiasis vaccines.

Keywords: Schistosomiasis; Adjuvanticity; Vaccines.

306. Magnetite Nanoparticles Inhibit Tumor Growth and Upregulate the Expression of P53/P16 in Ehrlich Solid Carcinoma Bearing Mice

Heba Bassiony, Salwa Sabet, Taher A. Salah El-Din, Mona M. Mohamed and Akmal A. El-Ghor

Plos One, 9: 1-9 (2014) IF: 3.534

Background: Magnetite nanoparticles (MNPs) have been widely used as contrast agents and have promising approaches in cancer

treatment. In the present study we used Ehrlich solid carcinoma (ESC) bearing mice as a model to investigate MNPs antitumor activity, their effect on expression of p53 and p16 genes as an indicator for apoptotic induction in tumor tissues.

Method: MNPs coated with ascorbic acid (size: 25.065.0 nm) were synthesized by co-precipitation method and characterized. Ehrlich mice model were treated with MNPs using 60 mg/Kg day by day for 14 injections; intratumorally (IT) or intraperitoneally (IP). Tumor size, pathological changes and iron content in tumor and normal muscle tissues were assessed. We also assessed changes in expression levels of p53 and p16 genes in addition to p53 protein level by immunohistochemistry.

Results: Our results revealed that tumor growth was significantly reduced by IT and IP MNPs injection compared to untreated tumor. A significant increase in p53 and p16 mRNA expression was detected in Ehrlich solid tumors of IT and IP treated groups compared to untreated Ehrlich solid tumor. This increase was accompanied with increase in p53 protein expression. It is worth mentioning that no significant difference in expression of p53 and p16 could be detected between IT ESC and control group.

Conclusion: MNPs might be more effective in breast cancer treatment if injected intratumorally to be directed to the tumor tissues.

Keywords: Magnetite nanoparticles; Ehrlich tumor; P53; P16; Mice. 39 40 41

307. Promoter Hypermethylation and Suppression of Glutathione Peroxidase 3 Are Associated with Inflammatory Breast Carcinogenesis.

Mona M. Mohamed, Salwa Sabet, Dun-Fa Peng M. Akram Nouh Mohamed El-Shinawi and Wael El-Rifai

Oxidative Medicine and Cellular Longevity, 2014 (2014) IF: 3.363

Reactive oxygen species (ROS) play a crucial role in breast cancer initiation, promotion, and progression. Inhibition of antioxidant enzymes that remove ROS was found to accelerate cancer growth. Studies showed that inhibition of glutathione peroxidase-3 (GPX3) was associated with cancer progression. Although the role of GPX3 has been studied in different cancer types, its role in breast cancer and its epigenetic regulation have not yet been investigated.

The aim of the present study was to investigate GPX3 expression and epigenetic regulation in carcinoma tissues of breast cancer patients' in comparison to normal breast tissues. Furthermore, we compared GPX3 level of expression and methylation status in aggressive phenotype inflammatory breast cancer (IBC) versus non-IBC invasive ductal carcinoma (IDC).

We found that GPX3 mRNA and protein expression levels were downregulated in the carcinoma tissues of IBC compared to non-IBC. However, we did not detect significant correlation between GPX3 and patients' clinical-pathological prosperities. Promoter hypermethylation of GPX3 gene was detected in carcinoma tissues not normal breast tissues. In addition, IBC carcinoma tissues showed a significant increase in the promoter hypermethylation of GPX3 gene compared to non-IBC. Our results propose that downregulation of GPX3 in IBC may play a role in the disease progression.

Keywords: Glutathione peroxidase-3; Inflammatory breast Cancer; Hypermethylation; Reactive oxygen species.

308. Inflammatory Breast Cancer: New Factors Contribute to Disease Etiology: A Review

Mona M. Mohamed, Diaa Al-Raawi, Salwa F. Sabet and Mohamed El-Shinawi

Journal of Advanced Research, 5(5): 525-536 (2014) IF: 3

Inflammatory breast cancer (IBC) is a highly metastatic and fatal form of breast cancer. In fact, IBC is characterized by specific morphological, phenotypic, and biological properties that distinguish it from non-IBC. The aggressive behavior of IBC being more common among young women and the low survival rate alarmed researchers to explore the disease biology. Despite the basic and translational studies needed to understand IBC disease biology and identify specific biomarkers, studies are limited by few available IBC cell lines, experimental models, and paucity of patient samples. Above all, in the last decade, researchers were able to identify new factors that may play a crucial role in IBC progression. Among identified factors are cytokines, chemokines, growth factors, and proteases. In addition, viral infection was also suggested to participate in the etiology of IBC disease. In this review, we present novel factors suggested by different studies to contribute to the etiology of IBC and the proposed new therapeutic insights.

Keywords: Inflammatory breast cancer; Cytokines; Proteases; Viral infection.

309. A 3D Structural Model and Dynamics of Hepatitis C Virus NS3/4A Protease (Genotype 4a, Strain ED43) Suggest Conformational Instability of the Catalytic Triad: Implications in Catalysis and Drug Resistivity

Bradley Rimmerta, Salwa Sabet, Edward Ackad and Mohammad S. Yousef

Journal of Biomolecular Structure and Dynamics, 32(6): 950-958 (2014) IF: 2.983

Egypt has the highest prevalence of hepatitis C virus (HCV) infection worldwide with a frequency of 15%. More than 90% of these infections are due to genotype 4, and the subtype 4a (HCV-4a) predominates.

Moreover, due to the increased mobility of people, HCV-4a has recently spread to several European countries. The protease domain of the HCV nonstructural protein 3 (NS3) has been targeted for inhibition by several drugs.

This approach has had marked success in inhibiting genotype 1 (HCV-1), the predominant genotype in the USA, Europe, and Japan. However, HCV-4a was found to resist inhibition by a number of these drugs, and little progress has been made to understand the structural basis of its drug resistivity.

As a step forward, we sequenced the NS3 HCV-4a protease gene (strain ED43) and subsequently built a 3D structural model threaded through a template crystal structure of HCV-1b NS3 protease.

The model protease, HCV-4a, shares 83% sequence identity with the template protease, HCV-1b, and has nearly identical rigid structural features. Molecular dynamics simulations predict similar overall dynamics of the two proteases. However, local dynamics and 4D analysis of the interactions between the catalytic triad residues (His57, Asp81, and Ser139) indicate conformational instability of the catalytic site in HCV-4a NS3 protease. These results suggest that the divergent dynamics behavior, more than the rigid structure, could be related to the altered catalytic activity and drug resistivity seen in HCV-4a.

Keywords: HCV; Catalysis; Structure; Dynamics; Genotype 4.

310. Efficacy and Safety of Arachidonic Acid for Treatment of Schistosoma Mansoni-Infected Children in Menoufiya, Egypt

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American Journal of Tropical Medicine and Hygiene, (2014) IF: 2.736

Arachidonic acid (ARA), an omega-6 fatty acid, kills juvenile and adult schistosomes in vitro and displays highly significant and safe therapeutic effects in mice and hamsters infected with Schistosoma mansoni or S. haematobium. This study aims to examine the efficacy and safety of ARA in treatment of schoolage children infected with S. mansoni. In total, 66 S. mansoniinfected schoolchildren (20-23 children/study arm) received a single dose of 40 mg/kg praziquantel (PZQ), ARA (10 mg/kg per day for 15 days), or PZQ combined with ARA. The children were examined before and after treatment for worm egg counts in stool and blood biochemical and immunological parameters. ARA proved to be as efficacious as PZQ in treatment of schoolchildren with low infection intensity (78% and 85% cure rates, respectively). For moderate-intensity infection, the ARA and PZQ combination led to 100% cure rate. Biochemical, hematological, and immunological parameters were either unchanged or ameliorated after ARA therapy.

Keywords: Arachidonic acid-Schistosoma-Children

311. Integrating Multiple Fish Biomarkers and Risk Assessment is Indicators of Metal Pollution Along the Red Sea Coast of Hodeida, Yemen Republic

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Ecotoxicology and Environmental Safety, 110: 221-231 (2014) IF: 2.482

The marine environment of the Red Sea coast of Yemen Republic is subjected to increasing anthropogenic activities. The present field study assesses the impacts of metal pollutants on two common marine fish species; Pomadasys hasta and Lutjanus russellii collected from a reference site in comparison to two polluted sites along the Red Sea coast of Hodeida, Yemen Republic. Concentrations of heavy metals (Fe, Cu, Zn, Cd and Pb) in fish vital organs, metal pollution index (MPI), indicative of liver biochemical parameters functions (alanine aminotransferase [ALT] and aspartate aminotransferase [AST]) and kidney functions (urea and creatinine) as well as histopathological changes in gills, liver and kidney of both fish species are integrated as biomarkers of metal pollution. These biomarkers showed species-specific and/or site-specific response. The hazard index (HI) was used as an indicator of human health risks associated with fish consumption. The detected low HI values in most cases doesn't neglect the fact that the cumulative risk effects for metals together give an alarming sign and that the health of fish consumers is endangered around polluted sites. The levels of ALT, AST and urea in plasma of both fish species collected from the polluted sites showed significant increase in comparison to those of reference site. Histopathological

alterations and evident damage were observed in tissues of fish collected from the polluted sites. The investigated set of biomarkers proved to be efficient and reliable in biomonitoring the pollution status along different pollution gradients.

Keywords: Marine pollution ; Metal toxicity ; Pomadasys hasta ; Lutjanus russellii ; Red sea ; Risk assessment.

312. Is There A Sphingomyelin-Based Hydrogen Bond Barrier at the Mammalian Host-Schistosome Parasite Interface

Federica Migliardo, Hatem Tallima and Rashika El Ridi

Cell Biochemistry and Biophysics, 68(2): 359-367 (2014) IF: 2.38

Schistosomes develop, mature, copulate, lay eggs, and live for years in the mammalian host bloodstream, importing nutrients across the tegument, but entirely impervious to the surrounding elements of the immune system. We have hypothesized that sphingomyelin (SM) in the parasite apical lipid bilayer is responsible for these sieving properties via formation of a tight hydrogen bond network with the surrounding water. Here we have used quasi-elastic neutron scattering for characterizing the diffusion of larval and adult Schistosoma mansoni and adult Schistosoma haematobium in the surrounding medium, under various environmental conditions. The results documented the presence of a hydrogen bond barrier around larvae and adult schistosomes. The hydrogen bond network readily collapses if worms are subjected to hypoxic conditions, likely via activation of the parasite tegument-associated neutral sphingomyelinase, and consequent excessive SM hydrolysis. The slower dynamics of lung-stage larvae as compared to adult worms has been related to the existence of hydrogen-bonded networks of different strength and then to their differential resistance to immune attacks. Keywords: Schistosomes ; Lung; Stage schistosomula ; Sphingomyelin.

313. Cucullanus Egyptae Sp. Nov. (Nematoda, Cucullanidae) Infecting the European Eel Anguilla Anguilla in Egypt. Morphological and Molecular Phylogenetic Studies

Fathy Abdel-Ghaffar, Abdel-Rahman Bashtar Rewaida Abdel-Gaber, Kareem Morsy, Heinz Mehlhorn, Saleh Al Quraishy and Sanna Mohammed

Parasitology Research, 113(9): 3457-3465 (2014) IF: 2.327

A total of 80 specimens of the European eel Anguilla anguilla were collected during the period from February 2013 to March 2014 at the coast of the Gulf of Suez (Red Sea, Egypt). A new species of parasitic nematodes was recovered and described as Cucullanus egyptae. It was found in the eel's intestine with a prevalence of 68.7%. The morphology of the recovered parasite was studied by light and scanning electron microscopy. The adult worms had a wide cephalic extremity with a slit-like oral aperture being surrounded by a cuticular ring and delimited internally by a row of small teeth in addition to four sub-median cephalic papillae and one pair of lateral amphids. Body measurements showed that the male worms were smaller than females measuring 7.5-8.9 mm (8.3±0.2) in length and 1.6-1.9 mm (1.8±0.1) in width. Females measured 12.9-13.5 mm (13.1±0.2) in length and 2.9-3.2 mm (3.1±0.1) in width. The posterior end of the males is provided with ten pairs of caudal papillae and two

long spicules which are slightly sclerotized, equal in size measuring 0.59-0.65 mm (0.62±0.01) in length. Comparing the present worms with other species of the genus Cucullanus, several similarities were observed. However, peculiar new characteristics such as the precloacal sucker (especially the spicula length), the arrangement and the distribution of the post-cloacal papillae, and the position of the excretory pore make it reasonable to describe a new species. The sequence data of the small subunit (SSU) ribosomal DNA (rDNA) obtained from the present nematode supported its taxonomic position within the genus Cucullanus. The new species is closely related to the first clade of Spirurina and even more closely related to Cucullanus dodsworthi as a sister taxon with a high percentage of identity. The sequence of the recorded SSU rDNA of this parasite is deposited in the GenBank with the accession no. KF681520. It is proposed to name the new species C. egyptae as the first representative of Cucullanidae in Egypt with a new host record.

Keywords: Anguilla anguilla; Cucullanus sp.; Morphological; Phylogenetic study.

314. Evaluation of Biological and Chemical Insect Repellents and Their Potential Adverse Effects

Margit Semmler, Fathy Abdel-Ghaffar, Jürgen Schmidt and Heinz Mehlhorn

Parasitology Research, 113(1): 185-188 (2014) IF: 2.327

Plant extracts, particularly plant oils, had been used and were still in use as repellents against mosquitoes. Some of them (e.g., lavender, geraniol, and citriodiol) have been notified by the European Commission as active substances to be used in repellents, which are categorized as biocides in product type 19. In the literature, it is known that these substances must be added to repellent products in high concentrations (e.g., 20% and more) in order to reach repellent efficacy. Therefore, the question arose whether they also have repellent effects if they were added as fragrances at low concentrations of 0.25 or 1% to registered active substances in order to obtain a better scent of this product. In the present study, the repellent effects of 0.25 and 1% additions of 15 plant extracts (citronellol, cinerol, citral, menthol, linalyl acetate, Eucalyptus citriodora, Eucalyptus globulus, Cymbopogon nardus, lilac, sandalwood, Vitex agnus castus, rosewood, lavender, geraniol, and paramenthan diol) when exposed on skin to hungry Aedes aegypti mosquitoes. These experiments showed that there was no repellent effect in any of these compounds even when the test was done already 10 min after distributing any of the compounds onto the hands of volunteers. These experiments have proven that these 15 compounds do not produce repellent effects as long as they are used in low concentrations of 0.25 or 1% as fragrances to ameliorate the odor of a notified repellent that is brought onto the skin.

Keywords: Biological and Chemical insect repellents.

315. Gastrointestinal Parasites of Free-Living Indo-Pacific Bottlenose Dolphins (Tursiops Aduncus) in the Northern Red Sea, Egypt

S. Kleinertz, C. Hermosilla, A. Ziltener, S. Kreicker, J. Hirzmann, F. Abdel-Ghaffar and A. Taubert

Parasitology Research, 113(4): 1405-1415 (2014) IF: 2.327

The present study represents the first report on the gastrointestinal parasite fauna infecting the free-living and alive Indo-Pacific

bottlenose dolphins (Tursiops aduncus) inhabiting waters of the Red Sea at Hurghada, Egypt. A total of 94 individual faecal samples of the examined bottlenose dolphins were collected during several diving expeditions within their natural habitats. Using classical parasitological techniques, such as sodium acetate acetic acid formalin method, carbol fuchsin-stained faecal smears, coproantigen ELISA, PCR and macroscopical analyses, the study revealed infections with 21 different parasite species belonging to protozoans and metazoans with some of them bearing zoonotic and/or pathogenic potential. Four identified parasite species are potential zoonotic species (Giardia spp., Cryptosporidium spp., Diphyllobothrium spp., Ascaridida indet.); three of them are known to have high pathogenic potential for the examined dolphin species (Nasitrema attenuata, Zalophotrema spp. and Pholeter gastrophilus) and some appear to be directly associated with stranding events. In detail, the study indicates stages of ten protozoan species (Giardia spp., Sarcocystis spp., Isospora (like) spp, Cystoisospora (like) spp., Ciliata indet. I and II, Holotricha indet . Dinoflagellata indet , Hexamita (like) spp , Cryptosporidium spp.), seven trematode species (N. attenuata, Nasitrema spp. I and II, Zalophotrema curilensis, Zalophotrema spp., Pholeter gastrophilus, Trematoda indet.), one cestode species (Diphyllobothrium spp.), two nematode species (Ascaridida indet, Capillaria spp.) and one crustacean parasite (Cymothoidae indet.). Additionally, we molecularly identified adult worms of Anisakis typica in individual dolphin vomitus samples by molecular analyses. A. typica is a common parasite of various dolphin species of warmer temperate and tropical waters and has not been attributed as food-borne parasitic zoonoses so far. Overall, these parasitological findings include ten new host records for T. aduncus (i.e. in case of Giardia spp., Sarcocystis spp, Cryptosporidium spp, Nasitrema spp, Zalophotrema spp, Pholeter gastrophilus, A. typica, Capillaria spp Diphyllobothrium spp. and Cymothoidae indet.). The present results may be used as a baseline for future monitoring studies targeting the impact of climate or other environmental changes on dolphin's health conditions and therefore contribute to the protection of these fascinating marine mammals.

Keywords: Dolphins (Tursiops Aduncus) - Gastrointestinal Parasites

316. Haemonchus Longistipes Railliet and Henry, 1909 (Nematoda, Trichostrongylidae) from the Egyptian Dromedary, Camelus Dromedarius (Artiodactyla: Camelidae), First Identification on the Basis of Light and Ultrastructural Data

Morsy K, Bashtar AR, Fol M and Yehia S.

Parasitology Research, 113(12): 4579-4585 (2014) IF: 2.327

Haemonchus longistipes is a gastrointestinal abomasal nematode which is one of the most prevalent and pathogenic parasites infesting the stomach of ruminants. On the basis of light and ultrastructural data, the objective of the present study was to introduce a first identification of the cameline haemonchosis caused by H. longistipes. Abomasa of 42 Egyptian camels Camelus dromedarius (Artiodactyla: Camelidae) were collected monthly from September 2013 to April 2014 from the main slaughter house of Cairo, Egypt. Adult male and female nematode worms were recovered from 26 (62%) specimens of the examined abomasa. The parasites were of yellow color; the body was filiform (slender) tapered towards the anterior end in male and towards both ends in female. Buccal capsules absent, the buccal

cavity was small with a conspicuous dorsal lancet extended from dorsal wall. The cervical papillae were prominent and spine-like. The body length of the female worm was 16.6-20.5 (18.5 ± 0.3) mm. The anterior end to the cervical papillae was 3.19-4.30 (4.12 ± 0.5) mm. The vulva of the female had a linguiform process or flap, the tail is without a spine, and the anal pore at the posterior end of the body had a simple dorsal rim. The body of male was 10.4-14.7 (13.9 \pm 2.0) mm in length. The male bursa had elongated lobes supported by long, slender rays. The small dorsal lobe was asymmetrical with Y-shaped dorsal rays. The spicules were long with a length of 0.52-0.54 (0.53±0.05) mm, each provided with a small barb and pore near its extremity. Synlophe was bilaterally and dorsoventrally symmetrical; it extended from cephalic expansion over anterior 50% of prebursal or prevulvar body and consisted of a maximum of 42 ridges. The described species herein was compared with the three morphologically similar species Haemonchus mitchelli, Haemonchus okapiae, and H. longistipes with their synlophes consist of 42 ridges distributed over the anterior half of the body. These species can be separated by unique structural characteristics of their synlophes, spicules, and copulatory bursa. The most morphologically similar species to the recovered worm was H. longistipes. Also, some of the parameters with regard to morphology and morphometry of this parasite were described for the first time.

Keywords: Haemonchus longistipes ; Camelus dromedaries; Nematoda ; Light and Ultrastructural data.

317. Nature Helps: Food Addition of Micronized Coconut and Onion Reduced Worm Load in Horses and Sheep and Increased Body Weight in Sheep

Antje Jatzlau, Fathy Abdel-Ghaffar, Günter Gliem and Heinz Mehlhorn

Parasitology Research, 113(1): 305-310 (2014) IF: 2.327

Intense laboratory tests on experimentally infected mice and rats had shown that a mixture of micronized onions and coconut pulp decreases substantially (until disappearance) the worm load (trematodes, cestodes and nematodes) after oral uptake. As a consequence, feeding experiments of naturally infected sheep had been done in Egypt, in Saudi Arabia, and in Germany, which showed that treated animals grow up much better than untreated ones. The mean gain of body weight per animal was up to 6 kg within 4 weeks compared to untreated ones. These experiments were repeated again in the present study with naturally infected sheep and horses in Germany. Two types of professionally produced forage had been used: (1) mixture of 40% micronized onions, 40% coconut flakes, and 20% glucose besides sugar beet treacle: (2) mixture of 25% coconut flakes. 25% micronized onions, and 50% of the so-called muesli forage of Fa. Hveler, Dormagen, Germany consisting of some oils plus 20 different plant extracts and several vitamins. All experiments showed that feeding for 10 days led either to the full disappearance of the previously existing worm load or at least to an enormous reduction. When comparing the body weights of infected sheep before the start of the feeding and 4 weeks later, it was found that there was an increase of 5-8 kg (mean 7.5 kg) body weight in each treated animal, while nontreated ones had only weight increases between 0 and 5 kg (mean 2.37 kg). In the case of the horse treatment, the worm load decreased so enormously that mostly only single eggs or larvae were found in those horses that had accepted the onion-coconut food addition.

Keywords: Micronized coconut and onion; Nature helps.

318. Prevalence, Morphology, and Molecular Analysis of Serrasentis Sagittifer (Acanthocephala: Palaeacanthocephala: Rhadinorhynchidae), A Parasite of the Gilthead Sea Bream Sparus Aurata (Sparidae)

Fathy Abdel-Ghaffar, Abdel-Rahman Bashtar, Rewaida Abdel-Gaber, Kareem Morsy, Heinz Mehlhorn, Saleh Al Quraishy and Sanna Mohammed

Parasitology Research, 113: 2445-2454 (2014) IF: 2.327

Seventy specimens of the gilthead sea bream Sparus aurata of the Red Sea were collected during the period from March to November 2013; they were dissected and examined for parasitic acanthocephalans. Only 40 (57.14 %) specimens were found to be naturally infected with Serrasentis sagittifer belonging to family Rhadinorhynchidae. The infection was recorded in the intestine, pyloric ceca, and the external surfaces of some internal organs of the infected fish. Seasonally, the prevalence of infection was increased to 77.14 % during summer season and decreased to 37.14 % during winter. Light and scanning electron microscopic investigation revealed that the adult worm was elongated (with broad anterior and narrow posterior ends) and measured 6.9-8.6 (7.6±0.2)×0.57-0.73 (0.63±0.02) mm for male and 10.2–12.1 (11.5±0.2)×0.71– 0.82 (0.76±0.02) mm for female. Proboscis was long and cylindrical with a length of 0.97-1.6 mm (1.2±0.2) for male and 1.12-1.17 mm (1.14±0.02) for female. It was covered with numerous uniform spines arranged longitudinally as 9-11 rows each equipped by 15-18 spines. Spines were triangular, arrowshaped, strong, and covered with cuticular theca; they decreased in size from the apex to the base of the proboscis. The proboscis is followed by a short spineless neck region followed by the body proper which is supported by multiple combs of spines (16-20) on its ventral surface.Molecular analysis of 18S rDNA sequence for the parasite demonstrated a close identity (>83 %) between the present acanthocephalan and other previously described species within class Palaeacanthocephala with 98 % identity with the previously recorded S. sagittifer (acc. no. JX014227) which is supported by the morphological data and the presence of trunk spines arranged within rows (comb-like) and the presence of four cement glands in the males. So, according to the records of morphological and molecular analyses, the present parasite is classified as S. sagittifer belonging to class Palaeacanthocephala and family Rhadinorhynchidae with a new host record from the gilthead sea bream S. aurata of the Red Sea.

Keywords: Serrasentis sagittifer; Sparus aurata ;Acanthocephala . Palaeacanthocephala ; Rhadinorhynchidae ;Morphological and Molecular analysis.

319. Sarcocystis Arieticanis (Apicomplexa: Sarcocystidae) Infecting the Heart Muscles of the Domestic Sheep, Ovis Aries (Artiodactyla: Bovidae), From K. S. A. on the Basis of Light and Electron Microscopic Data

Saleh Al Quraishy, Kareem Morsy, Abdel-Rahman Bashtar and Fathy AbdelGhaffar

Parasitology Research, 113(10): 3823-3831 (2014) IF: 2.327

In the present study, the heteroxenous life cycle of Sarcocystis species from three strains of the slaughtered sheep at Al-Azizia

and Al-Saada abattoirs in Riyadh city, K.S.A., was studied. Muscle samples of the oesophagus, diaphragm, tongue, skeletal and heart muscles were examined. Varied natural infection rates in the muscles of the examined sheep strains were recorded as 83% in Niemy, 81.5% in Najdy and 90% in Sawakny sheep. Muscles of the diaphragm showed the highest infection level above all organs except Najdy sheep in which oesophagus has the highest rate. Also, the heart was the lowest infected organ (40% Niemy, 44% Najdy and 53% Sawakny). Microscopic sarcocysts of Sarcocystis arieticanis are easily identified in sections through the heart muscles of the domestic sheep Ovis aries (Artiodactyla: Bovidae). Cysts measured 38.5-64.4 µm (averaged 42.66 µm) in width and 62.4-173.6 μm (averaged 82.14 $\mu m)$ in length. The validity of this species was confirmed by means of ultrastructural characteristics of the primary cyst wall (0.1-0.27 µm thick) which revealed the presence of irregularly shaped crowded and hairylike projections underlined by a thin layer of ground substance. This layer consisted mainly of fine, dense homogenous granules enclosing the developing metrocytes and merozoites that usually contain nearly all the structures of the apical complex and fill the interior cavity of the cyst. Several septa derived from the ground substance divided the cyst into compartments. The merozoites were banana-shaped and measured 12-16 µm in length with centrally or posteriorly located nuclei. Experimental infection of carnivores by feeding heavily infected sheep muscles revealed that the dog, Canis familiaris, is the only final host of the present Sarcocystis species Gamogony, sporogonic stages and characteristics of sporulated oocysts were also investigated. Keywords: Sarcocystis; Arieticanis ;Apicomplexa; Light and Electron microscopic data.

320. Sarcocystis Schneideri N. Sp. (Sarcocystidae) Infecting the Barber Skink Eumeces Schneideri Schneideri (Scincidae) Daudin, 1802. A Light and Ultrastructural Study

Abdel-Rahman Bashtar, Zain Abd Al Aal, Wael Maarouf, Kareem Morsy and Saleh Al Quraishy

Parasitology Research, 113: 2153-2159 (2014) IF: 2.327

The current study provides the first record of infection with Sarcocystis species in the barber skink Eumeces schneideri schneideri (Scincidae) captured from the north region of Egypt around the cities of El-Hamam and Al-Dabaa, Mersa Matruh Governorate, Egypt. Morphology of the parasite cysts was described using light and transmission electron microscopy. Five out of 80 (6.25%) of the examined skinks were found to be infected. The infection was recorded firstly by light microscopy as spindle-shaped cysts embedded in the muscle tissue. The cysts were microscopic and measured 250-900 µm in length×50-100 μ m in width (mean, 575×75 μ m). The validity of this species was confirmed by means of ultrastructural characteristics of the primary cyst wall (0.28 µm thick) which revealed the presence of irregularly shaped crowded and osmiophilic knob-like projections underlined by a thin layer of ground substance measuring 0.15-0.17 µm (mean, 0.16 µm). This layer consisted mainly of fine, dense homogenous granules enclosing the developing metrocytes and merozoites that usually contain nearly all the structures of the apical complex and fill the interior cavity of the cyst. Several septa derived from the ground substance divided the cyst into compartments. The merozoites were banana-shaped and measured 3-5 µm in length and 1.5-2.5 in width with centrally or posteriorly located nuclei. The morphological and morphometric data

obtained during study were compared with those recorded previously from organisms within the Scincidae family. It was observed that this parasite possessed some distinguishing characteristics from the comparable species, which should be considered as a new species of the Sarcocystis genus, and the proposed name was Sarcocystis schneideri n. sp. with new host and locality records in Egypt.

Keywords: Sarcocystis schneideri; Eumeces schneideri swchneideri; Sarcocystidae ; Light and ultrastructural study.

321. Rigidity and Resistance of Larval- and Adult Schistosomes-Medium Interface

Federica Migliardo, Hatem Tallima and Rashika El Ridi

Biochemical and Biophysical Research Communications, 446: 255-260 (2014) IF: 2.281

Schistosomiasis is second only to malaria in prevalence and severity, and is still a major health problem in many tropical countries worldwide with about 200–300 million cases and with more than 800 million people at risk of infection. Based on these data, the World Health Organization recommends fostering research efforts for understanding at any level the mechanisms of the infection and then decreasing the social and economical impact of schistosomiasis.

A key role is played by the parasite apical lipid membrane, which is entirely impervious to the surrounding elements of the immune system. We have previously demonstrated that the interaction between schistosomes and surrounding medium is governed by a parasite surface membrane sphingomyelin-based hydrogen barrier. In the present article, the elastic contribution to the total motion as a function of the exchanged wave-vector Q and the mean square displacement values for Schistosoma mansoni larvae and worms and Schistosomahaematobium worms have been evaluated by quasi elastic neutron scattering (QENS). The results point out that S. mansoni larvae show a smaller mean square displacement in comparison to S. mansoni and S. haematobium worms. These values increased by repeating the measurements after one day. These differences, which are analogous to those observed for the diffusion coefficient we previously evaluated, are interpreted in terms of rigidity of the parasite-medium interaction. S. mansoni larvae are the most rigid systems, while S. haematobium worms are the most flexible.

In addition, temperature and hypoxia induce a weakening of the schistosome-medium interaction. These evidences are related to the strength of the hydrogen-bonded interaction between parasites and environment that we previously determined. We have shown that S. mansoni worms are characterized by a weakened interaction in respect to the larvae, while the S. haematobium worms more weakly interact with the surrounding medium than S. mansoni. The present QENS analysis allowed us to characterize the rigidity of larval- and adult S. mansoni and S. haematobiumhost interface and to relate it to the parasite resistance to the hostile elements of the surrounding medium and to the immune effectors attack.

Keywords: Schistosoma Mansoni; Schistosoma haematobium; Quasi elastic Neutron scattering; Rigidity; Elastic contribution; Mean square displacement.

322. Ecotoxicological Effect of Sublethal Exposure to Zinc Oxide Nanoparticles on Freshwater Snail Biomphalaria Alexandrina

Sohair R. Fahmy , Fathy Abdel-Ghaffar , Fayez A. Bakry and Dawlat A. Sayed

Archives of Environmental Contamination and Toxicology, 67: 192-202 (2014) IF: 1.96

Freshwater snails are used as sensitive biomarkers of aquatic ecosystem pollution. The potential impacts of zinc oxide nanoparticles (ZnONPs) on aquatic ecosystems have attracted special attention due to their unique properties. The present investigation was designed to evaluate the possible mechanisms of ecotoxicological effects of ZnONPs on freshwater snail Biomphalaria alexandrina. ZnONPs showed molluscicidal activity against B. alexandrina snails, and the LC50 was 145 µg/ml. Two tested concentrations of ZnONPs were selected: The first concentration was equivalent to LC10 (7 µg/ml), and the second was equivalent to LC25 (35 µg/ml). Exposure to ZnONPs (7 and 35 µg/ml) for three consecutive weeks significantly induced malondialdehyde and nitric oxide with concomitant decreases in glutathione and glutathione-S-transferase levels in hemolymph and soft tissues of treated snails. Moreover, ZnONPs elicited a significant decrease in total protein and albumin contents coinciding with enhancement of total lipids and cholesterol levels as well as activities of aspartate aminotransferase, alanine aminotransferase, and alkaline phosphatase in hemolymph and soft tissues of treated snails. This study highlights the potential ecological implications of ZnONP release in aquatic environments and may serve to encourage regulatory agencies in Egypt to more carefully monitor and regulate the industrial use and disposal of ZnONPs.

Keywords: Zinc Oxide Nanoparticles ; Biomphalaria Alexandrina ; Oxidative Stress.

323. Antifungal and Antihepatotoxic Effects of Sepia Ink Extract Against Oxidative Stress is A Risk Factor of Invasive Pulmonary Aspergillosis in Neutropenic Mice

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African Journal of Traditional Complementary and Alternative Medicines, 11(3): 148-159 (2014) IF: 0.56

Background: There is a great need for novel strategies to overcome the high mortality associated with invasive pulmonary aspergillosis (IPA) in immunocompromised patients. To evaluate the antifungal and antihepatotoxic potentials of Sepia ink extract, its effect on liver oxidative stress levels was analyzed against IPA in neutropenic mice using amphotercin B as a reference drug.

Materials And Methods: Eighty neutropenic infected mice were randomly assigned into four main groups. The 1(st) group was treated with saline, neutropenic infected (NI), the 2(nd) group was treated with ink extract (200 mg/kg) (IE) and the 3(rd) group was treated with amphotericin B (150 mg/kg) (AMB) and 4(th) group was treated with IE plus AMB. Treatment was started at 24 h after fungal inoculation (1×10(9) conidia/ml).

Results: The present study revealed good in vitro and in vivo antifungal activity of IE against A. fumigatus. IE significantly reduced hepatic fungal burden and returns liver function and histology to normal levels. Compared with the untreated infected group, mice in the IE, AMB, and IE+ AMB groups had increased glutathione reduced (GSH) and superoxide dismutase (SOD) and significantly reduced malondialdehyde (MDA) levels at 24 and 72 h after inoculation with A. fumigatus conidia.

Conclusion:It is then concluded that in combination with antifungal therapy (AMB), IE treatment can reduce hepatic fungal burden, alleviate hepatic granulomatous lesions and oxidative stress associated with IPA in neutropenic mice.

Keywords: Neutropenia; Invasive pulmonary aspergillosis; amphotericin B; Antifungal; Sepia ink extract; Oxidative stress.

Faculty of Agriculture

Dept. of Agricultural Biochemistry Section

324. Hepatoprotective Effects of Solanum Nigrum Linn Fruits Against Cadmium Chloride Toxicity in Albino Rats

Abdel-Rahim EA1, Abdel-Mobdy YE, Ali RF and Mahmoud HA.

Biological Trace Element Research, 160: 400-408 (2014) IF: 1.608

The present work is aimed to investigate the toxicity of 1/20 LD50 of cadmium chloride (CdCl2) onmale albino rats by oral ingestion and to determine the hepatoprotective effect of Solanum nigrum Linn (SN) dried fruits and their ethanolic extract against CdCl2 toxicity using biochemical parameters. Rats were divided into six groups; the first group is control, second group is CdCl2intoxicated rats, third group is fed with a semi-modified diet with S. nigrum fruits, fourth group rats ingested with dried extract, and intoxicated rats (groups 5 and 6) were treated with fruits and ethanolic extract of S. nigrum, respectively. The results showed that rats exposed to CdCl2 induced remarkable decrease in body weight gain, feed efficiency, and Hb, Hct, RBC, and WBC count and MCHC, but increase in MCVand MCH values. In the case of plasma enzymes, there were significant stimulations observed in ALT and AST, acid phosphatase, alkaline phosphatase, and LDH activities of CdCl2-intoxicated rats (group 2) compared to control (group 1). Plasma protein profile showed decreases in total soluble protein and albumin; also globulin content was decreased by CdCl2 ingestion. Under the same condition, plasma total bilirubin and glucose levels were increased in group 2. In addition, lipid peroxidation and antioxidative system (GSH, catalase, and SOD) of liver were harmed by CdCl2 ingestion. Whereas, normal rats treated with SN showed insignificant changes in groups 3 and 4 as compared to control (group 1). The treatment with dried fruits and their ethanolic extract in CdCl2intoxicated rats (groups 5 and 6) ameliorated and improved these harmful effects in all above parameters either for blood or liver. The results of this study suggest the protective effect of S. nigrum against liver injury happened by CdCl2 which may be attributed to its hepatoprotective activity and thereby.

Keywords: Cadmium; Cdcl2; Toxicity; Solanum nigrum; Hepatoprotective; Rats.

325. Possible anticancer activity of Rosuvastatine, Doxazosin, Repaglinide and Oxcarbazepin

Fathia Zaky El Sharkawi, Hany Abdelaziz El Shemy and Hussein Moustafa Khaled

Asian Pac J Cancer Prev, 15: 199-203 (2014) IF: 1.5

Background: Rosuvastatine, doxazosin, repaglinide and oxcarbazepin are therapeutic drugs available in the market for the treatment of different diseases. Potential to display antitumor activities has also been suggested. The aim of the current study was to evaluate their in vitro effects on some human transformed cell lines.

Materials and Methods: Cytotoxicity of the four drugs was tested in MCF-7, HeLa and HepG2 cells by the neutral red assay method and also the effect of rosuvastatine and doxazosin against Ehrlich Ascities Carcinoma Cells (EACC) by trypan blue assay.

Results: Rosuvastatine exerted the greatest cytotoxic effect against HepG2 cells with an IC50 value of 58.7±69.3; in contrast

doxazosin showed least activity with IC50=104.4 \pm 115.7. Repaglinide inhibited the growth of both HepG2 and HeLa cells with IC50 values of 87.6 \pm 117.5 and 89.3 \pm 119.5, respectively. Oxcarbazepine showed a potent cytotoxicity against both HeLa (IC50=19.4 \pm 43.9) and MCF7 cancer cells ((IC50=22 \pm 35.7).On the other hand the growth of EACC was completely inhibited by doxazosine (100% inhibition) while rosuvastatine had weak inhibitory activity (11.6%).

Conclusions: The four tested drugs may have cytotoxic effects against hepatic, breast and cervical carcinoma cells; also doxazosine may inhibit the growth of endometrial cancer cells. Further investigations in animals are needed to confirm these results.

Keywords: Rosuvastatine; Doxazosin; Repaglinide; Oxcarbazepin; Cell Lines; In vitro anticancer chemosensitivity.

326. The Extracts of Japanese Willow Tree Species are Effective Forapoptotic Desperation or Differentiation of Acute Myeloid Leukemia Cells

Fujita K, Nomura Y, Sawajiri M, Mohapatra PK, El-Shemy HA, Nguyen NT, Hosokawa M, Miyashita K, Maeda T, Saneoka H, Fujita S and Fujita T

Pharmacogn Mag, 10 (38): 125-131 (2014) IF: 1.112

Background: The antileukemic activity of hot water extract of plant parts of some Japanese willow tree species grown at different levels of nitrogen were examined. Materials and Methods: Water extracts of willow leaves were prepared for this studies in different level of nitrogen nutrition.

Results: The extracts obtained from the leaves and stem exhibited anti-leukemic activities prominently. The crude hot water extracts of the young growing parts including apex, matured leaves and stem, killed the blasts of acute myeloid leukemia (AML) cells, (HL60 and NB4) after 48h incubation, however, such desperation was far less in the root extract. Similar to the plant parts, response of extracts obtained from different willow species was not identical; the proportion of dead cells relative to whole cells of the culture medium ranged from 21% to 93% among the species. Leaf extracts obtained from the responsive willow species decreased the live cell percentage and increased the dead cell percentage at higher level of nitrogen nutrition. The mode of desperation of leaf extract treated AML cells in such species appeared to be cell apoptosis as shown by binding with fluorescein isothiocyanate (FITC) -labeled Annexin V.

Conclusion: Differentiation of alive AML cells continued unabated and apoptosis was poor when extract of an unresponsive species added to the culture medium.

Keywords: Annexin V; Apoptosis; Differentiation; Leukemia cell; Japanese willow tree species.

327. Phytochemical Screening, anti-oxidant activity and in Vitro Anticancer Potential of Ethanolic and water leaves extracts of Annona muricata (Graviola)

Yahaya Gavamukulya, Faten Abou-Elella, Fred Wamunyokoli and Hany AEl-Shemy

Asian Pac J Trop Med, 1: S355-63 (2014) IF: 0.926

Objective: To determine the phytochemical composition, antioxidant and anticancer ethanolic and water leaves extracts of Annona muricata (A. muricata) from the Eastern aUcgtiavnitdiae.s of Methods: Phytochemical screening was

conducted using standard qualitative methods danifdfe rae nCth pi-hystqoucahreem gicoaoldsn. eTshse oafn ftiito xtiedsat nwt aasc tuivsietdy wtoa sa sdseitgenrm thinee dre ulastiinvge tahbe u2n, d2a-ndciep hoefn tyhl-e 2d-etpeircmryinlheydd ursaiznygl tahnrede rdeidffuecreinngt cpeollw leinr ems. ethods whereas the in vitro anticancer activity was

Results: Phytochemical screening of the extracts revealed that they were rich in secondary clalacstosn mese,t aabnothlirtaeq cuoinmopnoeusn, dtasn snuicnhs, acsa radlkiaacl ogidlysc, ossaidpeosn,i npsh, etneorplse nanoidd sp,h fylatovsotneoroidlss., Tcootuaml pahriennso alincds in the water extract were (683.69?0.09) µg/mL gallic acid equivalents (GAE) while it was (372.92 e?x0t.r1a5c) tµ agn/md L47 G0.A51E µ ign/ mthLe GeAthEa nino ltihce eextthraancot.l iTch eex trreadcut.c Iinn gv iptroow aenr tiwoaxsid 2a1n6t. 4a1c tµivgi/tmy LIC in the water mg/mL and 0.9077 mg/mL for ethanolic and water leaves extracts of A. muricata respe5c0 twivaesl y2.. 0T4h5e6 ethanolic leaves extract was found to be selectively cytotoxic in vitro to tumor cell lines (EACC, Mit DhaAd a nnod cSyKtoBtRox3i)c w eiftfhe cICt o50n v nalouremsa ol fs p33le5.e8n5 cµegl/lms. L, 248.77 µg/mL, 202.33 µg/mL respectively, while The data also showed that water leaves extract of A. muricata had no anticancer effect at all tested concentrations

Conclusions: The results showed that A. muricata was a promising new antioxidant and anticancer agent.

Keywords: Annona muricata; Phytochemical screening; Antioxidant; Anticancer.

328. Influence of Murraya and celery leave extracts on Cowpea Beetles Mortality

Radwan S. Farag, Soad El-Gengaihi, Gamal El-Baroty, Samy M. Mohamed and Ayman M. Kamel

Fresenius Environmental Bulletin, 23: 2587-2593 (2014) IF: 0.527

Insecticidal activities of certain extracts from celery and murraya leaves were performed on cowpea beetles. The data show that the mortality percentage of the insects increased by increasing the concentration of chloroform and ethanol extracts of murraya and celery leaves.

The mortalities induced by the two extracts indicated that the mortality potency was basically greater for the chloroform extract than ethanol extract. Histological studies were conducted on cowpea beetles treated with various concentrations of chloroform and ethanol extracts of celery and murraya leaves. The data demonstrated the occurrence of various histological abnormalities in fat body of the treated beetles by murraya extract.

The histological examinations of cowpea beetles administered celery extract illustrate severe damage of insect brain tissues. Another set of experiments was carried out to assess the toxicity of ethanol and chloroform extracts at various levels on male Albino rats. In general, chloroform and ethanol extracts at 4% level possessed no significant effect on the activities of aspartate and alanine aminotransfereases, alkaline phosphatase and the level of creatinine. On the contrary, the extracts at 8% and 16% caused lowering effect on the enzyme activities and creatinine content.

Keywords: Celery; Murraya Leaves; Cowpea Beetles; Insecticidal Activity; Histological; Pharmacological studies.

Dept. of Agricultural Botany

329. Genetic mapping of the labile (Lab) gene: A recessive locus causing irregular spikelet fertility in Labile-Barley (Hordeum vulgare convar. labile)

Youssef HM, Koppolu R, Rutten T, Korzun V, Schweizer P and Schnurbusch T.

Theoretical and Applied Genetics, 127: 1123-1131 (2014) IF: 3.507

Key Message: The recessive labile locus mapped on chromosome 5HL causes irregular spikelet fertility and controls floret development as well as row-type in barley. The labile-barley displays a variable number of fertile spikelets at each rachis internode (0-3 fertile spikelets/rachis internode) which is intermediate between that observed in two- or six-rowed types. Previous re-sequencing of Vrs1 in 219 labile-barley (Hordeum vulgare L. convar. labile) accessions showed that all carried a sixrowed specific allele. We therefore hypothesized that this seemingly random reduction in spikelet fertility is most likely caused by the labile (lab) locus, which we aimed to phenotypically and genetically define. Here, we report a detailed phenotypic analysis of spikelet fertility in labile - barleys in comparison to two- and six-rowed genotypes using scanning electron microscopy analysis. We found that the first visible morphological deviation occurred during the stamen primordium stage, when we regularly observed the appearance of arrested central floral primordia in labile but not in two- or six-rowed barleys. At late stamen and early awn primordium stages, lateral florets in two-rowed and only some in labile-barley showed retarded development and reduction in size compared with fully fertile lateral florets in six-rowed barley. We used two F2 mapping populations to generate whole genome genetic linkage maps and ultimately locate the lab locus as a recessive Mendelian trait to a 4.5-5.8 cM interval at approximately 80 cM on chromosome 5HL. Our results will help identifying the role of the lab gene in relation to other spikelet fertility factors in barley.

Keywords: Barley; Labile gene; Genetic linkage; Whole genome mapping.

330. Protective Effects of Arbuscular Mycorrhizal Fungi on Wheat (Triticum Aestivum L.) Plants Exposed to Salinity

Neveen Bahaa Talaat and Bahaa T. Shawky

Environmental and Experimental Botany, 98: 20-31 (2014) IF: 3.003

Little information is available concerning arbuscular mycorrhizal fungi (AMF) influence on carbon andnitrogen metabolisms in wheat under saline conditions. Thus, this study will shed light on some differentmechanisms that play a role in the protection of wheat plants colonized by AMF against hyperosmoticsalinity. Two wheat (Triticum aestivum L.) cultivars, Sids 1 and Giza 168, were grown under non-saline orsaline conditions (4.7 and 9.4 dS m-1) with and without AMF inoculation . Root colonization was adverselyaffected by increasing salinity level , particularly in Giza 168 . Soil salinity decreased plant productiv-ity, membrane stability index , photochemical reactions of photosynthesis, the concentrations of N, K+, nitrate, chlorophyll , carbohydrates, and protein, the relative water content, and the activities of nitratereductase and carbonic anhydrase . The reduction was more pronounced in Giza 168. Mycorrhizal sym-biosis protected wheat

against the detrimental effect of salinity and significantly improved the aboveparameters, especially in Sids 1. Under saline conditions, wheat plants colonized by AMF had higher gasexchange capacity (increased net CO2 assimilation rate and stomatal conductance, and decreased inter cellular CO2concentration), compared with non-mycorrhizal ones . Concentrations of soluble sugars, freeamino acids, proline and glycinebetaine increased under saline conditions; these increases were moremarked in salt - stressed plants colonized by AMF, especially in Sids 1. Soil salinization induced oxidativedamage through increased lipid peroxidation and hydrogen peroxide levels, particularly in Giza 168.Mycorrhizal colonization altered plant physiology and significantly reduced the oxidative damage inplants exposed to salinity. Enhanced metabolism of carbon and nitrogen can be one of the most impor-tant mechanisms of plant adaptation to saline soils that are activated by AMF. This is the first reportdealing with mycorrhization effect on the activity of carbonic anhydrase under saline conditions.

Keywords: Arbuscular mycorrhiza; Photonthesis; Productivity: Protein synthesis; Salinity; Wheat.

331. Effective Microorganisms Enhance the Scavenging Capacity of the ascorbate-glutathione cycle in common bean (Phaseolus Vulgaris L.) Plants grown in salty soils

Neveen Bahaa Talaat

Plant Physiology and Biochemistry, 80: 136-143 (2014) IF: 2.352

No information is available regarding effective microorganisms (EM) influence on the enzymatic and non-enzymatic antioxidant defence system involved in the ascorbate glutathione cycle under saline conditions. Therefore, as a first approach, this article focuses on the contribution of EM to the scavenging capacity of the ascorbateeglutathione cycle in salt-stressed plants. It investigates some mechanisms underlying alleviation of salt toxicity by EM application. Phaseolus vulgaris cv. Nebraska plants were grown under non-saline or saline conditions (2.5 and 5.0 dSm1) with and without EM application. Lipid peroxidation and H2O2 content were significantly increased in response to salinity, while they decreased with EM application in both stressed and non-stressed plants. Activities of ascorbate peroxidase (APX; EC 1.11.1.11) and glutathione reductase (GR; EC 1.6.4.2) increased under saline conditions; these increases were more significant in salt-stressed plants treated by EM. Activities of monodehydroascorbate reductase (MDHAR; EC 1.6.5.4) and dehydroascorbate reductase (DHAR; EC 1.8.5.1) decreased in response to salinity; however, they were significantly increased in stressed plants treated with EM. Ascorbate and glutathione contents were increased with the increasing salt concentration; moreover they further increased in stressed plants treated with EM. Ratios of AsA/DHA and GSH/ GSSG decreased under saline conditions, whereas they were significantly increased with EM treatment in the presence or in the absence of soil salinization . The EM treatment detoxified the stress generated by salinity and significantly improved plant growth and productivity. Enhancing the H2O2-scavenging capacity of the ascorbate eglutathione cycle in EM-treated plants may be an efficient mechanism to attenuate the activation ofplant defences.

Keywords: Ascorbat eeglutathione cycle; Effective microorganisms; Phaseolus vulgaris; Plant growth; Plant productivity; Salinity stress.

332. Leaf Ion Homeostasis and Plasma Membrane H+-Atpase Activity in Vicia Faba Change After Extra Calcium and Potassium Supply Under Salinity

Sherif Hassan Morgan

Plant Physiology And Biochemistry, 82: 244-253 (2014) IF: 2.352

Salt stress in plants impacts apoplastic ion activities and cytosolic ionic homeostasis. The ameliorating effects exerted by calcium or potassium on compartmentation of ions in leaves under salinity are not fully understood. To clarify how calcium or potassium supply could ameliorate ion homeostasis and ATPase activities under salinity, 5 mM CaSO4 or 10 mM K2SO4 were added with, or without, 100 mM NaCl for 7 d and 21 d to Vicia faba grown in hydroponics. The apoplastic pH was detected with Oregon Green dextran dye in intact second-uppermost leaves by microscopybased ratio imaging. The cytosolic Ca2+, Na+, K+ activities and pH were detected in protoplasts loaded with the acetoxymethylesters of Fura-2, SBFI, PBFI and BCECF, respectively, using epifluorescence microscopy. Furthermore, total Ca2+, Na+, K+ concentrations and growth parameters were investigated. The ATPase hydrolyzing activity increased with time, but decreased after long salinity treatment. The activity largely increased in calcium-treated plants, but was depressed in potassium-treated plants after 7 d. The calcium supply increased Vmax, and the ATPase activity increased with salinity in a non-competitive way for 7 d and 21 d. The potassium supply instead decreased activity competitively with Na+, after 21 d of salinity, with different effects on Km and Vmax. The confirmed higher ATPase activity was related with apoplast acidification, cytosol alkalinization and low cytosolic [Na+], and thus, might be an explanation why extra calcium improved shoot and leaf growth.

Keywords: Apoplastic Ph; Calcium And Potassium Supply; Cytosolic Free Ions; Plasma Membrane H+-Atpase; Salinity.

333. Modulation of the ROS-scavenging System in Salt-Stressed Wheat Plants Inoculated with Arbuscular Mycorrhizal Fungi

Neveen Bahaa Talaat and Bahaa T. Shawky

J. Plant Nutr. Soil Sci., 177: 199-207 (2014) IF: 1.663

Although there is evidence for a positive involvement of the antioxidant defense system in plant response to salt stress, there is poor information regarding the influence of mycorrhizal symbiosis on enzymatic and nonenzymatic antioxidant defense in wheat under saline conditions. The present article focuses on the contribution of mycorrhizae to antioxidant defense in salt-stressed wheat plants. Two wheat (Triticum aestivum L.) cultivars, Sids 1 and Giza 168, were grown under nonsaline or two saline conditions (4.7 and 9.4 dS m-1) with and without arbuscular mycorrhizal fungi (AMF) inoculation. Salt stress considerably decreased root colonization and plant productivity, particularly in Giza 168. Interestingly, mycorrhizal colonization alleviated the adverse effect of salt stress and significantly enhanced plant productivity, especially in Sids 1. The concentration of glycinebetaine, the activities of antioxidative enzymes (superoxide dismutase, peroxidase, catalase, and glutathione

reductase) and the concentrations of antioxidant molecules (glutathione and ascorbate) were increased under saline conditions; these increases were more significant in salt-stressed mycorrhizal plants, especially in Sids 1. Salt stress induced oxidative damage through increased lipid peroxidation, electrolyte leakage, and hydrogen peroxide concentration, particularly in Giza 168. Mycorrhizal colonization altered plant physiology and significantly reduced oxidative damage. Elimination of reactive oxygen species (ROS) can be one of the mechanisms how AMF improve wheat adaptation to saline soils and increase its productivity.

Keywords: Antioxidant system; Arbuscular mycorrhiza; Productivity; Salinity; Triticum aestivum.

334. The Changes induced in the physiological, biochemical and anatomical characteristics of vicia faba by the Exogenous application of proline Underseawater Stress

M.G. Dawood, H.A.A. Taie, R.M.A. Nassar, M.T. Abdelhamid and U. Schmidhalter

South African Journal of Botany, 93: 54-63 (2014) IF: 1.34

The depletion of freshwater resources leads to the utilisation of various alternative sources ofwater, such as seawater.In this regard, the foliar application of proline is one of the alternative shotgun approaches to increase plant stress tolerance. A pot experiment was conducted in the wire house of the National Research Centre, Dokki, Cairo, Egypt, during the winter season of 2010-2011. The experiment consisted of three concentrations of proline (0, 25 and 50 mM) and two concentrations of diluted seawater (3.13 and 6.25 dSm-1), whereas control plantswere irrigated with tapwater (0.23 dSm-1). Diluted seawater caused significant reductions in growth parameters, photosynthetic pigments, some mineral contents (P, K, Ca+2), the K+:Na+ ratio and the level of total carbohydrates. In contrast, N, Na+, and Clcontents, osmoprotectants (soluble carbohydrates, total phenolic concentrations, free amino acids, proline), and activities of antioxidant enzymes (peroxidase and polyphenol oxidase) significantly increased with an increasing salinity level compared with control plants.

The foliar application of 25 mM proline caused significant increases in growth parameters, photosynthetic pigments, N, P, K+,and Ca+2 %, the K+:Na+ ratio, total carbohydrates, and soluble carbohydrates, accompanied by significant decreases in Na+, Cl-, phenolic contents, free amino acids, proline, and the activities of antioxidant enzymes compared

with the control. In addition, 25mMproline minimised the deleterious effect of salinity on the anatomical structure of the faba bean stem and leaf. The proline treatment at 50 mM was as essentially toxic to faba bean plants as to that of salinity stress. This toxicity was apparent by the reduction of growth parameters, photosynthetic pigments,N, P, K+, andCa+2, K+:Na+ ratio and significant increases in Na+ and Cl- concentrations. Therefore,

the exogenous application of proline at a concentration of 25mMpartially alleviated the toxicity of diluted seawater on faba bean plants, whereas the 50 mM proline treatment was toxic.

Keywords: Anatomical parameters; Antioxidant enzymes; Faba bean; Growth; Salinity; Seawater.

Dept. of Agricultural Microbiology

335. Bio-Preparates support the Productivity of potato plants grown under desert farming conditions of north sinai: five years of field trials

Mohammed T. Abbas, Mervat A. Hamza, Hanan H. Youssef, Gehan H. Youssef, Mohamed Fayez, Mohamed Monib and Nabil A. Hegazi

Journal of Advanced Research, 5: 41-48 (2014) IF: 3

Organic agriculture as well as good agricultural practices (GAPs) intrigues the concern of both consumers and producers of agricultural commodities. Bio-preparates of various rhizospheric microorganisms (RMOs) are potential sources of biological inputs supporting plant nutrition and health.

The response of open-field potatoes to the application of RMO bio-preparates, the biofertilizer "Biofertile" and the bioagent "Biocontrol", were experimented over 5 successive years under N-hunger of north Sinai desert soils. Both vegetative and tuber yields of a number of tested cultivars were significantly improved due to rhizobacterial treatments. In the majority of cases, the biofertilizer "Biofertile" did successfully supply ca. 50% of plant N requirements, as the yield of full N-fertilized plants was comparable to those received 50% N simultaneously with bio-preparates treatment.

The magnitude of inoculation was cultivardependent; cvs. Valor and Oceania were among the most responsive ones. Bio-preparate introduction to the plant–soil system was successful via soaking of tubers and/or spraying the plant canopy. The "Biocontrol" formulation was supportive in controlling plant pathogens and significantly increased the fruit yields. The cumulative effect of both bio-preparates resulted in tuber yield increases of ca. 25% over control.

Keywords: Potatoes; Organic farming; Rhizospheric microorganisms; Biofertilizers; Biocontrol; North sinai.

336. Marine Yeast Isolation and Industrial Application

Abdelrahman Saleh Zaky, Gregory A. Tucker, Zakaria Yehia Daw and Chenyu Du

Fems Yeast Research, 14 (6): 813-825 (2014) IF: 2.436

Over the last century, terrestrial yeasts have been widely used in various industries, such as baking, brewing, wine, bioethanol and pharmaceutical protein production. However, only little attention has been given to marine yeasts.

Recent research showed that marine yeasts have several unique and promising features over the terrestrial yeasts, for example higher osmosis tolerance, higher special chemical productivity and production of industrial enzymes.

These indicate that marine yeasts have great potential to be applied in various industries. This review gathers the most recent techniques used for marine yeast isolation as well as the latest applications of marine yeast in bioethanol, pharmaceutical and enzyme production fields.

Keywords: Marine yeast; Isolation; Biofuel; Enzyme; Pharmaceuticals; Seawater.

Dept. of Agricultural Zoology and Nematology 337. Specific Microbial Attachment to Root Knot Nematodes in Suppressive Soil

Mohamed Adam, Andreas Westphal, Johannes Hallmann and Holger Heuer

Appl Environ Microb, 80: 2679-2686 (2014) IF: 3.952

Understanding the interactions of plant-parasitic nematodes with antagonistic soil microbes could provide opportunities for novel crop protection strategies. Three arable soils were investigated for their suppressiveness against the root knot nematode eloidogyne hapla. For all three soils, M. hapla developed significantly fewer galls, egg masses, and eggs on tomato plants in unsterilized than in sterilized infested soil. Egg numbers were reduced by up to 93%. This suggested suppression by soil microbial communities. The soils significantly differed in the composition of microbial communities and in the suppressiveness to M. hapla. To identify microorganisms interacting with M. hapla in soil, second-stage juveniles (J2) baited in the test soil were cultivation independently analyzed for attached microbes. PCR-denaturing gradient gel electrophoresis of fungal ITS or 16S rRNA genes of bacteria and bacterial groups from nematode and soil samples was performed, and DNA sequences from J2-associated bands were determined. The fingerprints showed many species that were abundant on J2 but not in the surrounding soil, especially in fungal profiles. Fungi associated with J2 from all three soils were related to the genera Davidiella and Rhizophydium, while the genera Eurotium, Ganoderma, and Cylindrocarpon were specific for the most suppressive soil. Among the 20 highly abundant operational taxonomic units of bacteria specific for J2 in suppressive soil, six were closely related to infectious species such as Shigella spp., whereas the most abundant were Malikia spinosa and Rothia amarae, as determined by 16S rRNA amplicon pyrosequencing. In conclusion, a diverse microflora specifically adhered to J2 of M. hapla in soil and presumably affected female fecundity.

Keywords: Microbial attachment; Suppressive soil.

338. Bacterial antagonists of fungal pathogens also control root-knot nematodes by induced systemic resistance of tomato plants

Mohamed Adam, Holger Heuer and Johannes Hallmann

Plos One, 9/2: 1-8 (2014) IF: 3.534

The potential of bacterial antagonists of fungal pathogens to control the root-knot nematode Meloidogyne incognita was investigated under greenhouse conditions. Treatment of tomato seeds with several strains significantly reduced the numbers of galls and egg masses compared with the untreated control. Best performed Bacillus subtilis isolates Sb4-23, Mc5-Re2, and Mc2-Re2, which were further studied for their mode of action with regard to direct effects by bacterial metabolites or repellents, and plant mediated effects. Drenching of soil with culture supernatants significantly reduced the number of egg masses produced by M. incognita on tomato by up to 62% compared to the control without culture supernatant. Repellence of juveniles by the antagonists was shown in a linked twin-pot set-up, where a majority of juveniles penetrated roots on the side without inoculated antagonists. All tested biocontrol strains induced systemic resistance against M. incognita in tomato, as revealed in a split-root system where the bacteria and the nematodes were inoculated at spatially separated roots of the same plant. This reduced the production of egg masses by up to 51%, while inoculation of bacteria and nematodes in the same pot had only a minor additive effect on suppression of M. incognita compared to induced systemic resistance alone. Therefore, the plant mediated effect was the major reason for antagonism rather than direct mechanisms. In conclusion , the bacteria known for their antagonistic potential against fungal pathogens also suppressed M. incognita. Such "multi-purpose" bacteria might provide new options for control strategies, especially with respect to nematode-fungus disease complexes that cause synergistic yield losses.

Keywords: Bacterial antagonists; Fungal pathogens; Root-knot nematodes; Induced systemic resistance.

339. Mating clusters in the mosquito parasitic nematode, Strelkovimermis spiculatus

Limin Dong, Manar Sanad, Yi Wang, Yanli Xu, Muhammad S.M. Shamseldean and Randy Gaugler

Journal of Invertebrate Pathology, 117: 19-25 (2014) IF: 2.601

Mating aggregations in the mosquito parasitic nematode, Strelkovimermis spiculatus, were investigated in the laboratory. Female postparasites, through their attraction of males and, remarkably, other females, drive the formation of mating clusters. Clusters may grow in size by merging with other individual or clusters. Female molting to the adult stage and reproductive success are enhanced in larger clusters. Male mating behavior is initiated when the female begins to molt to the adult stage by shedding dual juvenile cuticles posteriorly. Males coil their tail around the adult cuticle, migrating progressively along the female in intimate synchrony with the molting cuticle until the vulva is exposed and mating can occur. The first arriving male is assured of access to a virgin female, as his intermediate location between the vulva and subsequently arriving males blocks these competitors. Males deposit an adhesive gelatinous copulatory plug into and over the vulva before departing the female. Fecundity was greater in larger mating clusters, but this was a function of a greater rate of molting which is a prerequisite for mating. Males compete for virgin females by emerging and molting to the adult stage earlier than females. Mating aggregations have previously only been examined in snakes, but these studies have tended to be observational as snakes offer a challenging system for study. The relatively easy to culture and manipulate mermithid system may offer a model for experimental studies of male-male competition, protandry, copulatory plugs and female choice in mating clusters.

Keywords: Strelkovimermis spiculatus; Aggregation; Copulatory plug ; Male–male competition; Mating cluster; Protandry.

340. Identification of Msp1 Gene Variants in Populations of Meloidogyne Incognita using PCR-DGGE

Mohamed Adam, Johannes Hallmann and Holger Heuer

Journal of Nematology, 46(3): 275-280 (2014) IF: 0.689

Effectors of root-knot nematodes are essential for parasitism and prone to recognition by adapted variants of the host plants. This selective pressure initiates hypervariability of effector genes. Diversity of the gene variants within nematode populations might

correlate with host preferences. In this study we developed a method to compare the distribution of variants of the effector gene msp1 among populations of Meloidogyne incognita. Primers were designed to amplify a 234-bp fragment of msp1. Sequencing of cloned PCR products revealed five msp1 variants from seven populations that were distinguishable in their reproduction on five host plants. A protocol for denaturing gradient gel electrophoresis (DGGE) was developed to separate these msp1 variants. DGGE for replicated pools of juveniles from the seven populations revealed ten variants of msp1. A correlation between the presence of a particular gene variant and the reproductive potential on particular hosts was not evident. Especially race 3 showed substantial variation within the population. DGGE fingerprints of msp1 tended to cluster the populations according to their reproduction rate on pepper. The developed method could be useful for analyzing population heterogeneity and epidemiology of M. incognita.

Keywords: Genetics; Host preference; Meloidogyne incognita; Pathogenicity gene; Pcr-dgge; Root-knot nematode; Technique.

Dept. of Agronomy

341. Development of Co2 Balance for Estimation of Ventilation Rate In Naturally Cross-Ventilated Dairy Barns

Mohamed Samer and Mohamed Elsayed Abuarab

Transactions of the ASABE, 57(4): 1255-1264 (2014) IF: 0.834

The determination of ventilation rates through naturally ventilated livestock barns is complicated and shows large uncertainties. One key issue is to develop further the measurement methods. Experiments were performed to study air exchange rates (AER) occurring in a naturally ventilated dairy barn during spring seasons. The ventilation rates (VR) were determined simultaneously by three different methods: the combined effects of wind pressure and temperature difference forces (WT method), the exact CO2 balance (CO2-ex), and the CO2 balance for a onehour interval (CO2-h). During each experiment, CO2 concentrations and air temperatures were continuously measured and recorded inside and outside the barn. Furthermore, the wind velocity (speed and direction) was recorded by a weather station. The CO2 concentration measurements required to implement the CO2-ex were conducted at the same time interval as the measurements of wind velocity and temperature required to implement the WT method. However, the CO2 concentration measurements required to implement the CO2-h were conducted at a wider time interval, and the measurements for the WT method fell in the middle of this time interval. The results showed that the CO2-h produced reliable results (p < 0.05; R2 = 0.856) in relation to the VR values derived from the independent variables outdoor temperature, indoor temperature, and wind velocity (speed and direction). Therefore, the hourly CO2 balance is more accurate than the exact CO2 balance.

Keywords: Aerodynamics; Air exchange rate; Co2 balance; Dairy barns; Gas emissions; Indoor air; Natural ventilation; Ventilation rate.

342. Advances in Effects of Sound Waves on Plants

Reda HE Hassanien, Tian-zhen HOU, Yu-feng LI and Bao-ming LI Journal of Integrative Agriculture, 13: 335-348 (2014) IF: 0.625 **Basic Science Sector**

Keywords: Acoustic technology; Sound waves; Plants growth.

Sound waves technology has been applied to different plants. It

has been found that sound waves were at different frequencies,

sound pressure levels (SPLs), exposure periods, and distances

from the source of sound influence plant growth. Experiments

have been conducted in the open field and under greenhouse

growing conditions with different levels of audible sound

frequencies and sound pressure levels. Sound waves at 1 kHz and

100 dB for 1 h within a distance of 0.20 m could significantly

promote the division and cell wall fluidity of callus cells and also

significantly enhance the activity of protective enzymes and

endogenous hormones. Sound waves stimulation could increase

the plant plasma-membrane H+-ATPase activity, the contents of

soluble sugar, soluble protein, and amylase activity of callus.

Moreover, sound waves could increase the content of RNA and

the level of transcription. Stress-induced genes could switch on under sound stimulation. Sound waves at 0.1-1 kHz and SPL of

(70±5) dB for 3 h from plant acoustic frequency technology

(PAFT) generator within a distance ranged from 30 to 60 m every other day significantly increased the yield of sweet pepper,

cucumber and tomato by 30.05, 37.1 and 13.2%, respectively. Furthermore, the yield of lettuce, spinach, cotton, rice, and wheat

were increased by 19.6, 22.7, 11.4, 5.7, and 17.0%, respectively.

Sound waves may also strengthen plant immune systems. It has

been proved that spider mite, aphids, gray mold, late blight and

virus disease of tomatoes in the greenhouses decreased by 6.0, 8.0, 9.0, 11.0, and 8.0%, respectively, and the sheath blight of rice

was reduced by 50%. This paper provides an overview of literature for the effects of sound waves on various growth

Dept. of Animal Production

parameters of plant at different growth stages.

343. Single Nucleotide Polymorphism and Haplotype Effects Associated with Somatic Cell Score in German Holstein Cattle

Hamdy Abdel-Shafy, Ralf H Bortfeldt, Jens Tetens and Gudrun A Brockmann

Genetics Selection Evolution, 46: 35-0 (2014) IF: 3.747

Background : To better understand the genetic determination of udder health, we performed a genome-wide association study (GWAS) on a population of 2354 German Holstein bulls for which daughter yield deviations (DYD) for somatic cell score (SCS) were available . For this study, we used genetic information of 44 576 informative single nucleotide polymorphisms (SNPs) and 11 725 inferred haplotype blocks.

Results: When accounting for the sub-structure of the analyzed population, 16 SNPs and 10 haplotypes in six genomic regions were significant at the Bonferroni threshold of $P \le 1.14 \times 10^{-6}$. The size of the identified regions ranged from 0.05 to 5.62 Mb. Genomic regions on chromosomes 5, 6, 18 and 19 coincided with known QTL affecting SCS, while additional genomic regions were found on chromosomes 13 and X. Of particular interest is the region on chromosome 6 between 85 and 88 Mb, where QTL for mastitis traits and significant SNPs for SCS in different Holstein populations coincide with our results. In all identified regions, except for the region on chromosome X, significant SNPs were present in significant haplotypes. The minor alleles of identified SNPs on chromosomes 18 and 19, and the major alleles of SNPs on chromosomes 6 and X were favorable for a lower SCS. Differences in somatic cell count (SCC) between alternative SNP alleles reached 14 000 cells/mL.

Conclusions: The results support the polygenic nature of the genetic determination of SCS, confirm the importance of previously reported QTL, and provide evidence for the segregation of additional QTL for SCS in Holstein cattle. The small size of the regions identified here will facilitate the search for causal genetic variations that affect gene functions. **Keywords:** Gwas;Snps; Haplotypes; Mastitis.

344. Bovine Embryo Survival Under Oxidative-Stress Conditions is Associated with Activity of the NRF2-Mediated Oxidative-Stress-Response Pathway

Ahmed Amin, Ahmed Gad, Dessie Salilew-Wondim, Sigit Prastowo, Eva Held, Michael Hoelker, Franca Rings, Ernst Tholen, Christiane Neuhoff, Christian Looft,Karl Schellander and Dawit Tesfaye

Molecular Reproduction and Development, 81: 497-513 (2014) IF: 2.675

In present study, we sought to examine the ability of preimplantation bovine embryos to activate the NF-E2-related factor2 (NRF2)-mediated oxidative-stress response under an oxidative stress environment. In vitro 2-, 4-, 8-, 16-cell-, and blastocyst-stage embryos were cultured under low (5%) or high (20%) oxygen levels. The expression of NRF2, KEAP1 (NRF2 inhibitor), antioxidants downstream of NRF2, and genes associated with embryo metabolism were analyzed between the embryo groups using real-time quantitative PCR. NRF2 and KEAP1 protein abundance, mitochondrial activity, and accumulation of reactive oxygen species (ROS) were also investigated in blastocysts of varying competence that were derived from high- or low-oxygen levels. The expression levels of NRF2 and its downstream antioxidant genes were higher in 8-cell, 16-cell, and blastocyst stages under high oxygen tension, whereas KEAP1 expression was down-regulated under the same conditions. Higher expression of NRF2 and lower ROS levels were detected in early (competent) blastocysts compared to their late (noncompetent) counterparts in both oxygen-tension groups. Similarly, higher levels of active nuclear NRF2 protein were detected in competent blastocysts compared to their noncompetent counterparts. Thus, the survival and developmental competence of embryos cultured under oxidative stress are associated with activity of the NRF2-mediated oxidative stress response pathway during bovine pre-implantation embryo development.

Keywords: Oxidative stress; Bovine embryos; NRF2.

345. Short Communication: Validation of Somatic Cell Score-Associated Loci Identified in A Genome-Wide Association Study in German Holstein Cattle

Hamdy Abdel-Shafy, Ralf H. Bortfeldt, Monika Reissmann and Gudrun A. Brockmann

Journal of Dairy Science, 97: 2481-2486 (2014) IF: 2.55

Recently, we identified 6 genomic loci affecting daughter yield deviations (DYD) for somatic cell score (SCS) in a genome-wide association study (GWAS) performed with German Holstein bulls. In the current study, we tested if these loci were associated with SCS in cows using their own performance data. The study was performed with 1,412 German Holstein cows, of which 483 were daughters of 71 bulls that had been used in the GWAS. We tested 10 single nucleotide polymorphisms (SNP) representing 6

genomic regions that were associated with DYD for SCS in bulls. All tested SNP were significant in cows. Seven of them, located on Bos taurus autosomes (BTA) 6, 13, and 19, had the same direction of effect as those previously reported in the bull population. The most significant associations were detected on BTA6 and BTA19, accounting for 1.8% of the total genetic variance. The major allele of the 2 SNP on BTA6 and the minor allele of the 2 SNP on BTA19 were favorable for lower SCS. The differences between the homozygous genotype classes were up to 15,000 cells/mL. The verification of SNP associated with SCS in this study provides further evidence for the functional role of the linked genomic regions for immune response and contributes to identification of causative mutations. In particular, SNP with minor frequency of the favorable allele possess high potential to reduce SCS in German Holstein cattle by selection. Keywords: Candidate gene; Mastitis resistance; Single nucleotide polymorphism; Validation study.

346. Confocal Fluorescence assessment of bioenergy/ redox status of dromedary camel (camelus dromedarius) oocytes before and after in vitro Maturation

Roberto Russo, Davide Monaco, Marcello Rubessa, Khalid A El-Bahrawy, Ashraf El-Sayed, Nicola A Martino,Benedicte Beneult, Francesca Ciannarella, Maria E Dell'Aquila, Giovanni M Lacalandra and Manuel Filioli Uranio

Reproductive Biology and Endocrinology, 12: 1-16 (2014) IF: 2.409

Background: Reproductive biotechnologies in dromedary camel (Camelus dromedarius) are less developed than in other livestock species. The in vitro maturation (IVM) technology is a fundamental step for in vitro embryo production (IVP), and its optimization could represent a way to increase the success rate of IVP. The aim of the present study was to investigate the bioenergy/oxidative status of dromedary camel oocytes before and after IVM by confocal microscopy 3D imaging.

Methods: Oocytes were retrieved by slicing ovaries collected at local slaughterhouses. Recovered oocytes were examinedbefore and after IVM culture for nuclear chromatin configuration and bioenergy/oxidative status, expressed as mitochondria (mt) distribution and activity, intracellular Reactive Oxygen Species (ROS) levels and distribution and mt/ROS colocalization.

Results: The mean recovery rate was 6 oocytes/ovary. After IVM, 61% of oocytes resumed meiosis and 36% reached the Metaphase II stage (MII). Oocyte bioenergy/redox confocal characterization revealed changes upon meiosis progression. Immature oocytes at the germinal vesicle (GV) stage were characterised by prevailing homogeneous mt distribution in small aggregates while MI and MII oocytes showed significantly higher rates of pericortical mt distribution organized in tubular networks (P < 0.05). Increased mt activity in MI (P < 0.001) and MII (P < 0.01) oocytes compared to GV stage oocytes was also observed. At any meiotic stage, homogeneous distribution of intracellular ROS was observed. Intracellular ROS levels also increased in MI (P < 0.01) and MII (P < 0.05) oocytes compared to GV stage oocytes. The mt/ROS colocalization signal increased in MI oocytes (P < 0.05).

Conclusions: This study provides indications that qualitative and quantitative indicators of bioenergy and oxidative status in dromedary camel oocytes are modified in relation with oocyte meiotic stage. These data may increase the knowledge of camel

oocyte physiology, in order to enhance the efficiency of IVP procedures.

Keywords: Dromedary camel oocyte; In vitro maturation (IVM); Mitochondrial distribution pattern; Mitochondrial activity; Intracellular reactive oxygen species (ROS) levels; Mitochondria/ROS colocalization.

347. Morphological and Glycan Features of the **Camel Oviduct Epithelium**

Gianluca Accogli, Davide Monacoa, Khalid Ahmed El Bahrawy, Ashraf Abd El-Halim El-Sayedc, Francesca Ciannarella, Benedicte Beneulte, Giovanni Michele Lacalandra and Salvatore Desantis

Annals of Anatomy-Anatomischer Anzeiger, 196: 197-205 (2014) *IF*: 2.075

This study describes regional differences in the oviduct of the one-humped camel (Camelus dromedarius) during the growth phase (GP) and the mature phase (MP) of the follicular wave by means of morphometry, scanning electron microscopy (SEM) and glycohistochemistry investigations. Epithelium height significantly increased in the ampulla and decreased in the isthmus passing from the GP to the MP.

Under SEM, non-ciliated cells displayed apical blebs (secretory) or short microvilli. Cilia glycocalyx expressed glycans terminating with sialic acid linked a2,6 to Gal/GalNAc (SNA affinity) throughout the oviducts of GP and MP and sialic acid linked a2,3 to GalB1,3GalNAc (MAL II and KOH-sialidase (Ks)-PNA staining) throughout the MP oviducts. Non-ciliated cells displayed lectin-binding sites from the supra-nuclear cytoplasm to the luminal surface.

Ampulla non-ciliated cells showed O-linked (mucin-type) sialoglycans (MAL II and K-s-PNA) during GP and MP and Nlinked sialoglycans (SNA) during the MP. Isthmus non-ciliated cells expressed SNA reactivity in GP and MP, also K-s-PNA binders in MP, and MAL II and PNA affinity (Gal
^β1,3GalNAc) during GP. Gal
^β1,3GalNAc was sialilated in the non-ciliated cells MP, whereas it expressed $\alpha 2,6$ - and $\alpha 2,3$ -linked sialic acids. In GP intraluminal substance reacted with SNA, MAL II, K-s-PNA in ampulla and only with MAL II in the isthmus and UTJ. These results demonstrate that the morphology and the glycan pattern of the camel oviductal epithelium vary during the follicular wave and that could relate to the region-specific functions.

Keywords: Oviduct; Glycoproteins; Sialic acid; Lectin histochemistry; Sem; Camel; Follicular wave.

348. Effect of Freezing Extender Composition and Male Line on Semen Traits and Reproductive **Performance in Rabbits**

M. P. Viudes-de-Castro, R. Lavara, H. M. Safaa, F. Marco-Jiméneza, G. M. K. Mehaisena3 and J. S. Vicente

Animal, 8: 1-6 (2014) IF: 1.784

This study was conducted to elucidate the effect of different freezing extenders on two lines selected for hyperprolificacy and longevity (H and LP, respectively). In extender A, dimethyl sulphoxide (Me2SO) and sucrose were used as cryoprotectants. In extenders B and C, the sucrose was replaced by 20% egg yolk, and in extender C the Me2SO was substituted by acetamide. Semen was packaged in 0.25 ml plastic straws and cooled at 5°C

for 45 min, and then was frozen in liquid nitrogen vapour for 10 min before being plunged into the liquid nitrogen. Thawing was carried out by immersing the straws in a water bath at 50°C for 10 Frozen-thawed semen characteristics and reproductive S. parameters were affected by freezing. Extender C showed significantly lower post-thawing quality traits than any of the three extenders. Acrosome integrity was significantly improved when Me2SO was used as cryoprotectant. Sucrose replacement by 20% egg yolk had no effect on acrosome integrity but provided significantly lower sperm motility and viability. Freezing extender affected fertility rate, total born, number of implantation sites and gestational losses, obtaining better results when extender A was used.

The acrosomal integrity after frozen-thawed process showed a significant correlation with fertility at 12th day and also at birth, indicating that an increase in acrosomal integrity leads to an increase in both fertilities (12th day and at birth). A positive correlation between motility of semen and implantation sites was found.

The post-thawing quality traits of semen were not affected by the genetic line, although LP line showed higher total born and lower foetal and gestational losses. The findings of this study suggest that freezing extender composition has a significant effect on the success of rabbit sperm for preservation, and when Me2SO was used as permeable cryoprotectant sucrose provided better protection compared with egg yolk and improved reproductive traits, and, on the other hand, the male genotypes used in the present study had no effect on frozen-thawed sperm parameters but negatively affected some of the reproductive parameters.

Keywords: Rabbit; Spermatozoa; Freezing extender; Genotype; Fertility.

349. Complementary Responses Between Hydrolyzed Feather Meal, Fish Meal and Soybean Meal Without Amino Acid Supplementation in Nile Tilapia **Oreochromis Niloticus Diets**

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Aquacult Int, 22: 1377-1390 (2014) IF: 0.96

The purpose of this study was to evaluate hydrolyzed feather meal (HFM) as a substitute for fish meal (FM) or soybean meal (SBM) in Nile tilapia fry diets. Triplicate groups of fish (initial body weight 2.30 g \pm 0.01) were fed seven isonitrogenous and isocaloric diets formulated to contain 30 % crude protein and 19.70 kJ g⁻¹ gross energy for 8 weeks.

The control diet (CD) contained 22 % local FM and 30 % SBM, whereas in the other six diets, HFM replaced 33, 66 or 100 % of FM or SBM. The best weight gain (11.46), specific growth rate (3.14) and feed conversion ratio (1.24) of tilapia fry fed SBM33%, CD, FM33% and SBM66% diets were exhibited. Final body weight and protein

retention increased in a linear pattern with increasing amino acids in the experimental diets with the exception of leucine and valine. The results indicated that good-quality HFM can successfully replace FM or SBM by up to 33 and 66 %, respectively, in Nile tilapia fry diets without compromising growth and protein utilization. The results also support the benefits of combining different sources of plant and animal proteins in Nile tilapia diets. Keywords: Hydrolyzed feather meal; Fish meal; Soybean meal; Amino acid; Nile tilapia; Fry.

350. Nutritional Factors Affecting Abdominal Fat Deposition in Poultry: A Review

A. M. Fouad and H. K. El-Senousey

Asian-Australasian Journal of Animal Sciences, 27(7): 1057-1068 (2014) IF: 0.56

The major goals of the poultry industry are to increase the carcass vield and to reduce carcass fatness, mainly the abdominal fat pad. The increase in poultry meat consumption has guided the selection process toward fast-growing broilers with a reduced feed conversion ratio. Intensive selection has led to great improvements in economic traits such as body weight gain, feed efficiency, and breast yield to meet the demands of consumers, but modern commercial chickens exhibit excessive fat accumulation in the abdomen area. However, dietary composition and feeding strategies may offer practical and efficient solutions for reducing body fat deposition in modern poultry strains. Thus, the regulation of lipid metabolism to reduce the abdominal fat content based on dietary composition and feeding strategy, as well as elucidating their effects on the key enzymes associated with lipid metabolism, could facilitate the production of lean meat and help to understand the fat-lowering effects of diet and different feeding strategies.

Keywords: Abdominal fat content; Lipogenesis; Lipolysis; Nutritional factors; Poultry.

351. the Effect of Feed Consumption Levels on Growth Performance and Apparent Digestibility of Nutrients in White Pekin Ducks

Zhi-Guo Wena, Ming Xiea, Ahmed-Mohamed Fouad, Jing Tanga, Uzma Maqboola, Wei Huanga and Sheng-Shui Houa

Journal of Applied Animal Research, 43: 112-117 (2014) IF: 0.479

An experiment was designed to contain eight feed consumption levels (ad libitum, 300, 330, 360, 390, 420, 450, 480 g/day/bird) to evaluate the effects of feed consumption levels on growth performance and apparent digestibility of nutrients for White Pekin ducks from 35 days to 42 days of age. Ninety-six 35-dayold male Pekin ducks were randomly assigned into eight treatments, each containing six replicate pens with two birds per pen. All birds of the treatment group 1 as the control group was fed ad libitum and the birds of the treatment groups from 2 to 8 were quantitatively fed by force-feeding. The feed intake was 300, 330, 360, 390, 420, 450, 480 g/day/bird for treatment groups 2 through 8, respectively.

Results of growth performance showed that feed consumption levels affected final body weight and average daily gain significantly (P < 0.05) but not feed/gain (P > 0.05). Based on the broken-line regression model analysis with body weight gain data, the optimum feed consumption level for Pekin ducks was 414.2 g/day, which was close to group 6 (420 g/day) that achieved the best growth performance as compared with other groups. Apparent digestibility of nutrients did not differ significantly among the groups at the first 2 days of the experimental period (P > 0.05), whereas apparent digestibility of dry matter and crude protein significantly decreased (P < 0.05) with increasing feed consumption level at the final 2 days of experimental period. Therefore, the results indicated that excess feed consumption could not improve body weight gain further but make apparent digestibility of nutrients decline in overfed Pekin ducks.

Keywords: Pekin duck; Growth performance; Feed consumption level; Nutrient digestibility.

Dept. of Dairy Sciences

352. Preservation Methods of Buffalo and Bovine Colostrum as a Source of Bioactive Components

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International Dairy Journal, 39: 24-27 (2014) IF: 2.297

Colostrum from the first milkings postpartum from buffaloes and cows were pasteurised at 63 °C for 30 min, 60 °C for 60 min, or 72 °C for 15 s. Freezing ($_{20}$ °C) or freeze-drying was used for colostrums storage. Viscosity and the active concentration of immunoglobulins (IgG and IgM), insulin-like growth factor 1 (IGF-1) and lactoferrin of colostrum were determined. Pasteurisation at 60 °C for 60 min had no effect on the IgG activity and viscosity of colostrum. Freezing of pasteurised colostrum (60 °C for 60 min) did not cause differences in the IgG and lactoferrin concentrations, while, freeze-drying of pasteurised colostrum (60 °C for 60 min) did not alter the IgG, IgM, IGF-1 and lactoferrin concentrations. Storage of colostrum at _20 °C for 3 months did not affect the concentrations of IgG and IgM, but these were decreased in freeze-dried colostrum stored at 7 ± 1 °C for 3 months.

Keywords: Preservation; Colostrum; Bioactive components.

353. the Addition of Buttermilk Powder and Transglutaminase Improves Textural and Organoleptic Properties of fat-Free Buffalo Yogurt

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Dairy Science and Technology, 94: 297-309 (2014) IF: 1.126

To meet the increased consumer demand for yogurt with reduced fat content, various efforts have been made to improve the quality of reduced-fat variants that still is regarded as having inferior quality. As an alternative, a yogurt was produced from buffalo skim milk with the addition of microbial transglutaminase (TG; 1 U.g-1 protein) and buttermilk powder (BMP; 1 and 2% "w/w"). For comparison, a fat-free variant without TG or BMP and a fullfat vogurt were studied. Monitoring the pH drop during incubation time revealed that TG did not interfere with the pH reduction, while BMP addition accelerated the decline in pH. TG treatment or BMP addition substantially improved the water holding capacity functionality of the yogurt gel. Electrophoretic analysis revealed that the addition of BMP enhanced the reactivity of TG as indicated by the appearance of high molecular weight protein polymer bands. These results were confirmed by scanning electron microscope analysis. The addition of TG and BMP, either individually or in combination, showed a marked impact on gel network, resulting in a more compact and dense gel structure accompanied by irregular agglomerated clusters of protein aggregates. Fat-free yogurts of individually BMP addition exhibited the most desirable organoleptic attributes as indicated by a sensory panel and were perceived as similar to the full-fat yogurt perception. Overall, the addition of TG or BMP appeared to have potential as a valuable alternative in fat-free yogurt production, and BMP can be used as a source of extra protein,

which in turn offers promising option to develop innovative functional fat-free yogurt.

Keywords: Fat-free yogurt ; Transglutaminase; Buttermilk; Microstructure.

Dept. of Economic Entomology and Insecticides

354. Residues, Dissipation and Safety Evaluation of Chromafenozide in Strawberry Under Open Field Conditions

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Food Chemistry, 152: 18-22 (2014) IF: 3.259

The dissipation and residual levels of new generation insecticide chromafenozide in strawberries under field conditions were studied using HPLC-DAD after QuEChERS extraction. The method was validated using blank samples spiked at three levels and the results showed that recoveries ranged from 99% to 110%. The intra- and inter-day relative standard deviations were less than 7.5% and 9.2%, respectively. Estimated limit of detection and limit of quantification for chromafenozide were 0.003 and 0.01 mg/kg, respectively. The residues of chromafenozide were found to dissipate following first order kinetics and its half-life ranged from 3.53 to 4.07 days. The results showed that the use of chromafenozide at recommended dose does not pose any hazards to consumers. These results can be utilised in formulating spray schedules and safety evaluation for chromafenozide insecticide in strawberry.

Keywords: Chromafenozide; Dissipation; Safety evaluation; Residues; Strawberry.

355. Concerted Action of Target-Site Mutations and High Epsps Activity in Glyphosate-Resistant Junglerice (Echinochloa Colona) Fromcalifornia

Rocío Alarcón-Reverte, Alejandro García, Susan BWatson, Ibrahim Abdallah, Sebastián Sabaté,d María J Hernández,e Franck E Dayan and Albert J Fischer

Pest Manag Sci, 10: 3878-0 (2014) IF: 2.743

Background: Echinochloa colona is an annual weed affecting field crops and orchards in California. An E. colona populationcarrying a mutation in the EPSPS gene endowing resistance to glyphosate, the most widely used non-selective herbicide,was recently identified in the Northern Sacramento Valley of California. Plants from this population, from a suspected glyphosate-resistant (GR) population, and from one susceptible (S) population collected in the Northern Sacramento Valley of California,were used to generate threeGRandoneS selfedlines to study possiblemechanisms involvedinglyphosate resistance.

Results: Based on theamount of glyphosate required to kill50% of the plants (LD50), GR lineswere 4–9-fold more resistant than S plants and accumulated less shikimate after glyphosate treatment. GR and S lines did not differ in glyphosate absorption , translocation or metabolism. A different target-site mutation was found in each of two of the GR lines corresponding to Pro106Thr and Pro106Ser substitutions ; the mutations were found in different homoeologous EPSPS genes. No mutation was found in the third GR line, which exhibited 1.4-fold higher basal EPSPS activity and a fivefold greater LD50 than S plants. Quantitative

RT-PCR revealed that GR lines had similar or lower EPSPS expression than S plants.

Conclusion: It is demonstrated that individuals with different glyphosate resistance mechanisms can coexist in the same population, individuals from different populations may carry different resistance mechanisms and different mechanisms can act in concert within single E. colona plants. However, other plant factors or resistance mechanisms appear to modulate plant expression of EPSPS sensitivity to glyphosate .

Keywords: 5-Enolpyruvylshikimate-3-phosphate synthase; EPSPS expression; EPSPS inhibition assay; Polyploidy; Resistance mechanism.

356. Comparative Effectiveness of Different Modified atmospheres Enriched with Carbon Dioxide and Nitrogen on Larval Instars of Almond Moth Ephestia Cautella (Walker) (Lepidoptera: Pyralidae)

Mohamed Y. Hashem, Sayeda S. Ahmed, Mohsen A. El-Mohandes, Abd Rabou E. Hussain and Saad M. Ghazy

Journal of Stored Products Research, 59: 314-319 (2014) IF: 1.491

The aim of this study was to determine the effectiveness of modified atmospheres (MAs) based on either high carbon dioxide (CO₂) or high nitrogen (N₂) contents at 30 C in controlling all larval instars of the almond moth Ephestia cautella, a major pest of dried fruits. The tested MAs were 20%, 40%, and 60% CO₂ in air, as well as 97% and 98% N2, with different exposure times. Results showed that the 1st, 2nd, 3rd, 4th and 5th instar larval mortalities of E. cautella responding to modified atmospheres (MAs) enriched with either CO_2 or N_2 increased significantly (P < 0.01) with increasing either exposure length or gas concentration. MAs enriched with CO₂ were more effective than those containing N₂. Three and six days were required to completely kill all larval instars with 60% CO₂ and 98% N₂, respectively. The 1st and 2nd instar larvae were more susceptible to all tested MAs than the later instars. It is recommended that MAs can be employed for controlling all larval instars of almond moth E. cautella.

Keywords: Dried fruits; Gases; Mortality; Susceptibility; Toxicity.

357. Comparative Effects of Different Modified Atmosphere Exposures at 20 $^{\circ}$ and 34 $^{\circ}$ C on the Immature Stages of Angoumois Grain Moth Sitotroga Cerealella (Olivier) (Lepidoptera: Gelechiidae)

Sayeda S. Ahmed, Mohamed Y. Hashem and Samir I. El-Sherif

Journal of Stored Products Research, 56: 54-59 (2014) IF: 1.491

This study aimed to determine the sensitivity of newly-laid eggs, 4th instar larvae and 3-day-old pupae of Sitotroga cerealella to four modified atmospheres (MAs) containing 30% (MA1), 45% (MA2), 65% (MA3) and 75% (MA4) CO2 in air at 20° and 34 °C, and exposure periods between 2 h and 288 h. Results showed that egg mortality and adult emergence reduction from treated larvae or pupae increased gradually with the increase of either exposure period or CO₂ concentration in air at both 20 and 34 C.

Suppression of adult emergence from treated larvae reached 100% after 12 days at 20 C for all MAs, but was achieved after 3 days for MA4 (75% CO₂) and 6 days for MA1, MA2 and MA3 at 34 C. Suppression of adult emergence from treated pupae at 20 C reached 100% after 11 days for MA1 and MA2 and after 9 days for MA3 and MA4, while at 34 C it reached 100% after 5 days for MA1, and 4 days for MA2, MA3 and MA4. The order of sensitivity of S. cerealella stages to MAs at both 20 and 34 °C was eggs > pupae > larvae. The most effective MA treatment was that containing 75% CO2 at 34 °C. This combination killed all eggs and larvae within 3 days and all pupae within 4 days. **Keywords:** Egg; Larva; Pupa; CO₂; Mortality; Reduction.

358. Effectso Carbon Dioxide on Sitotroga Cerealella (Olivier) Larvae and Their Enzyme Activity

Mohamed Y. Hashem, Ismail I. Ismail, Adel F. Lutfallah and Soheir F. Abd El-Rahman

Journal of Stored Products Research, 59: 17-23 (2014) IF: 1.491

The susceptibility of 4th instar larvae of Sitotroga cerealella to modified atmospheres (MAs) containing 25, 40 and 60% CO₂ in air at 27 °C with different exposure periods was determined. Also, changes in the activity level of several enzymes were analyzed. Reduction in percentage adult emergence from the treated larvae tended to increase with CO2 concentration and with exposure period. The reduction in emergence of adult from the 4th instar larvae reached 100% after 264 h for 25% CO₂, after 240 h for 40% CO2 and after 168 h for 60% CO2. The larvae showed the highest rates of escape for 25% CO₂. This could be due to the fact that at higher CO₂ contents the narcotic effect overrode the repellent effect. Trehalase, acid phosphatase, acetylcholinesterase, phenoloxidase and lactate dehydrogenase (LDH) enzyme concentrations were found to be higher in the treated larvae. Larvae exposed to MAs exhibited decreasing activity of amylase, alkaline phosphatase and adenosine triphosphatase (ATP'ase) enzymes. Additionally, MAs led to an increase in the total protein, triglyceride and lactate content.

Keywords: Sitotroga cerealella; Carbon dioxide; Larvae; Activity of enzymes.

359. Insecticidal Efficacy of Certain Bio-Insecticides, Diatomaceous Earth and Modified Atmospheres Against Rhyzopertha Dominica (F.) (Coleoptera: Bostrichidae) on Stored Wheat

sayeda sayed ahmed abd elsamad

Fawzy I. Eissa, Nour El-Hoda A. Zidan, Mohamed Y. Hashem and Sayeda S. Ahmed

Journal of Stored Products Research, 57: 30-35 (2014) IF: 1.491

Efficacy of three bio-insecticides (i.e. Spinosad, Beauveria bassiana and Metarhizium anisopliae), one inert dust (i.e., diatomaceous earth), and modified atmospheres (MAs) with high carbon dioxide concentrations as alternative treatments to methyl bromide for the control of the lesser grain borer, Rhyzopertha dominica (Fabricius) on wheat was investigated in laboratory bioassays. Results showed that spinosad was the most effective bio-insecticide against R. dominica followed by diatomaceous earth inert dust at all exposure periods. Exposure of R. dominica

90

adults to spinosad at 0.5 mg/kg for 168 h resulted in 100% mortality. It was also noted that mortality of R. dominica was enhanced as dosage rate and exposure interval increased. Observations at 21 days post-treatment with diatomaceous earth (DE) showed that 100% of the exposed individuals of R. dominica died on wheat treated with the highest two rates i.e., 8 and 16 g kg⁻¹. The mortality of R. dominica adults responding to modified atmospheres (MAs) reached 100% mortality after 7 days with 80% CO₂ and after 8 days with 60% CO₂. MAs containing 40% and 20% CO₂ recorded 96% mortality at 8 and 9 days, respectively. LT₅₀ and LT₉₅ values together confirm that the highest toxicity was recorded for MA containing 80% CO₂ while the remaining MAs were progressively less toxic.

Keywords: Bio-insecticides; Inert dust; Modified atmospheres; Lesser grain borer.

360. Comparative Isoenzyme Electrophoreses Between the Brown-Spotted Locust, Cyrtacanthacris Tatarica and the Desert Locust, Schistocerca Gregaria

G. Elsayed and S. A. M. Amer

Insect Science, 14: 1-7 (2014) IF: 0.921

The desert locust, Schistocerca gregaria (Forskål) (Orthoptera: Acrididae), and the brown-spotted locust, Cyrtacanthacris tatarica (Linné) (Orthoptera : Acrididae), were collected from Saudi Arabia to investigate their relationships. Native polyacrylamide gel electrophoreses of five arbitrarily chosen metabolic enzymes extracted from the leg muscles of the two locust taxa were conducted. These enzymes were acid phosphatase (Acph), alcohol dehydrogenase (Adh), β ester-ase (β est), malic enzyme (Mal) and malate dehydrogenase (Mdh). Twenty presumptive gene loci and 26 polymorphic alleles were recorded. Acph did not discriminate between the two locust species, while the other four isoenzymes discriminated between them. Most of the alleles were monomeric, but Mal and Mdh exhibited dimeric alleles in the samples of C. tatarica. ßest frac-tions were more expressed in C. tatarica, and the three enzymes ßest, Mal, and Mdh discriminated clearly between the two species. The similarity coefficient that was calculated according to the number of sharing alleles between the two locusts was found to be 0.69. The isoenzyme variation presented herein seemed to reflect either their physiological adaptation or the taxonomic consequences between the two taxa. Collecting more isoenzymes for more sam-ples could have taxonomic value.

Keywords: Gene locust; Guardian locust; Saudi arabia.

361. Assessment of Two Trichogramma Species for the Control of Tuta Absoluta in North African tomato greenhouses

Sayed Ashraf Gamal El din El Arnaouty

African Entomology, 22: 801-809 (2014) IF: 0.772

In this study we compared the efficiency of two Trichogramma (Hymenoptera: Trichogrammatidae) species, the indigenous T. euproctidis Girault and the cosmopolitan T. achaeae Nagaraja & Nagarkatti, for the biological control of the tomato leaf miner, Tuta absoluta (Meyrick) (Lepidoptera: Gelechiidae). Three release doses (25, 50 and 75 parasitoids/m2) for each species were tested in a two-year experiment (growing seasons: 2011/2012 and 2012/2013), in protected tomato cultivations in

Egypt. The results show that both Trichogramma species were significantly efficient, especially at higher doses, in keepingdown T. absoluta mines during both experimentation years. Although no significant differences were found between the efficiency of the two species, the inclusion into Egyptian integrated and biological T. absoluta management programmes of the autochthonous species, T. euproctidis, might be preferred for its adaptation to Egyptian environmental conditions and for its expected lower non-target effect on the local fauna.

Keywords: Biological control; Inundative release; Tomato leaf miner; Egypt; Indigenous.

362. A First Record of Blaesoxipha Rufipes (Diptera: Sarcophagidae) Parasitizing Poekilocerus Bufonius (Orthoptera: Pyrgomorphidae) in Saudi Arabia

G. Elsayed and Samy M. Sayed

Entomological News, 124: 33-37 (2014) IF: 0.442

The tropical grasshopper (Usherhopper), Poekilocerus bufonius (Orthoptera: Pyrgomorphidae) is found on several host plants such as Calotropis procera, Aizoon canarense, Zygophyllum simplex and Pulicaria crispa in Saudi Arabia (KSA). Many species of Sarcophagidae and Tachinidae parasitize P. bufonius. Here we present the first published record of Blaesoxipha rufipes parasitizing P. bufonius and the first record of its occurrence in Saudi Arabia. We collected 568 adults of the host from five regions in the Middle West of KSA. These were dissected in order to study the parasitoid distribution, parasitism ratio and sex ratio. The parasitoid occurred in all regions investigated but its incidence gradually decreased from East to West. We found that hopper females were significantly more infested (=32.3%) than males (=18.3%). Also, the number of maggots per infested host ranged from 2 to 11 and averaged 6.7 with a significant difference in the mean number of parasitoids for each infested adult male (=3.8) vs. adult female (=7.7). Parasitoid sex ratio overall was 40.1%:59.1% males to females. Occurrence of this parasitoid in KSA suggests further study to investigate its potential as a biological control agent for more damaging Orthoptera.

Keywords: Poekilocerus bufonius; Blaesoxipha rufipes; Biological control; Parasitism; Distribution; Sex ratio.

363. Efficacy of Different Biological Methods for Controlling the Tomato Leaf Miner, Tuta Absoluta (Meyrick) (Lepidoptera: Gelechiidae) on Tomato in Greenhouse in Egypt

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Egyptian Journal of Biological Pest Control, 24(2): 523-528 (2014) IF: 0.408

The tomato leaf miner, Tuta absoluta (Meyrick) (Lepidoptera: Gelechiidae) is one of the most devastating pests. It has become a serious threat to tomato production in Egypt. Five greenhouse trials were conducted on tomato crop during winter plantation of 2013-14 explored control strategies using the egg-parasitoid, Trichogramma achaeae Nagaraja and Nagarkatti (at a rate of 50 adults/m²), microbial control (using Bacillus thuringiensis at a rate of 2g/L) and the insect predator, Macrolophus caliginosus Wagner (at a rate of 1/2 adults/m²) in a commercial tomato farm at Berkash district, Giza, Egypt, beside a combination of the three bioagents (T. achaeae, M. caliginosus and Bt) at a rate of 25

adults/m², 1/4 adult /m², 1g/ L, respectively. Obtained results showed that all treatments presented a highly significant efficatcy in reducing T. absoluta mines, especially the combination of the three bioagents.

Keywords: Biological control; Tuta absoluta; Trichogramma achaeae; Bacillus thuringiensis; Macrolophus caliginosus; Greenhouse; Egypt.

Dept. of Genetics

364. Genotype × Environment Interaction QTL mapping in Plants: Lessons From Arabidopsis

Mohamed El-Soda, Marcos Malosetti, Bas J. Zwaan, Maarten Koornneef and Mark G.M. Aarts

Trends In Plant Science, 19: 390-398 (2014) IF: 13.479

Plant growth and development are influenced by the genetic composition of the plant (G), the environment (E), and the interaction between them (G × E). To produce suitable genotypes for multiple environments, G × E should be accounted for and assessed in plant-breeding programs. Here, we review the genetic basis of G × E and its consequence for quantitative trait loci (QTL) mapping in biparental and genome-wide association (GWA) mapping populations. We also consider the implications of G × E for understanding plant fitness trade-offs and evolutionary ecology.

Keywords: Genotype \times environment interaction; QTL; Environment interaction; Phenotypic plasticity; Antagonistic pleiotropy.

365. Functional Diversification of Duplicated Chalcone Synthase Genes in Anthocyanin Biosynthesis of Gerbera Hybrida

Xianbao Deng, Hany Bashandy, Miia Ainasoja, Juha Kontturi, Milla Pietiäinen, Roosa A. E. Laitinen, Victor A. Albert, Jari P. T. Valkonen, Paula Elomaa and Teemu H. Teeri.

New Phytologist, 201(4): 1469-1483 (2014) IF: 6.545

Chalcone synthase (CHS) is the key enzyme in the first committed step of the flavonoid biosynthetic pathway and catalyzes the stepwise condensation of 4-coumaroyl-CoA and malonyl-CoA to naringenin chalcone. In plants, CHS is often encoded by a small family of genes that are temporally and spatially regulated. Our earlier studies have shown that GCHS4 is highly activated by ectopic expression of an MYB-type regulator GMYB10 in gerbera (Gerbera hybrida). The tissue- and development-specific expression patterns of three gerbera CHS genes were examined. Virus-induced gene silencing (VIGS) was used to knock down GCHS1 and GCHS4 separately in gerbera inflorescences. Our data show that GCHS4 is the only CHS encoding gene that is expressed in the cyanidin-pigmented vegetative tissues of gerbera cv Terraregina. GCHS3 expression is pronounced in the pappus bristles of the flowers. Expression of both GCHS1 and GCHS4 is high in the epidermal cells of gerbera petals, but only GCHS1 is contributing to flavonoid biosynthesis. Gerbera contains a family of three CHS encoding genes showing different spatial and temporal regulation. GCHS4 expression in gerbera petals is regulated post-transcriptionally, at the level of either translation elongation or protein stability.

Keywords: Anthocyanin; Asteraceae; Chalcone synthase; Flavonoid; Gerbera hybrida.

366. Genotype–Environment Interactions Affecting Preflowering Physiological and Morphological Traits of Brassica Rapa Grown in two Watering Regimes

Mohamed El-Soda, Martin P. Boer, Hedayat Bagheri I, Corrie J. Hanhart, Maarten Koornneef, and Mark G. M. Aarts

Journal of Experimental Botany, 65: 697-708 (2014) IF: 5.794

Plant growth and productivity are greatly affected by drought, which is likely to become more threatening with the predicted global temperature increase. Understanding the genetic architecture of complex quantitative traits and their interaction with water availability may lead to improved crop adaptation to a wide range of environments. Here, the genetic basis of 20 physiological and morphological traits is explored by describing plant performance and growth in a Brassica rapa recombinant inbred line (RIL) population grown on a sandy substrate supplemented with nutrient solution, under control and drought conditions. Altogether, 54 quantitative trait loci (QTL) were identified, of which many colocated in 11 QTL clusters. Seventeen QTL showed significant QTL-environment interaction (Q×E), indicating genetic variation for phenotypic plasticity. Of the measured traits, only hypocotyl length did not show significant genotype-environment interaction (G×E) in both environments in all experiments. Correlation analysis showed that, in the control environment, stomatal conductance was positively correlated with total leaf dry weight (DW) and aboveground DW, whereas in the drought environment, stomatal conductance showed a significant negative correlation with total leaf DW and aboveground DW. This correlation was explained by antagonistic fitness effects in the drought environment, controlled by a QTL cluster on chromosome A7. These results demonstrate that $Q \times E$ is an important component of the genetic variance and can play a great role in improving drought tolerance in future breeding programmes.

Keywords: Antagonistic fitness effect; Brassica rapa; Drought; Genotype–environment interaction; Plasticity; Root/Shoot ratio; Stomatal Conductance.

Dept. of Soil Sciences

367. Changes in Amino Acids Content of Humic Acids Sequentially Extracted from Peat and Sod– Podzolic Soil

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Canadian Journal of Soil Science, 94: 575-583 (2014) IF: 1

Changes in amino acids (AA) and peptides are thought to be part of humic acids (HA), but debate whether they are an integral part of the HA is still going. Humic acids sequentially extracted from peat and sod-podzolic soil were analyzed for their AA content, elemental composition and by Fourier transform infrared spectroscopy. Extracted HA were hydrolyzed in 6 M HCl for 16 h for AA release, which was detected by a capillary electrophoresis system. Alanine, arginine, sum of aspartic acid and asparagine, sum of cysteic acid and cysteine, sum of glutamic acid and glutamine, glycine, histidine, leucine and isoleucine, lysine, methionine, phenylalanine, proline, serine, threonine, tyrosine, valine were identified. The total content of hydrolyzable AA in sod-Podzol HA increased by 6.2–8.2% with increasing the extraction cycles while an inverse tendency was observed for AA released from peat HA. Moreover, individual AA expressed as percentages of total AA were constant values with coefficients of variation lower than 20% for the studied HA. **Keywords:** Humic acids; Amino acids; Sequential extraction; Fourier transform infrared spectroscopy; Capillary electrophoresis.

Faculty of Veterinary Medicine

Dept. of Biochemistry

368. the Potential Effects of Spirulina Platensis (Arthrospira Platensis) on Tissue Protection of Nile Tilapia (Oreochromis Niloticus) Through Estimation of P53 Level

Mai D. Ibrahem and Marwa A. Ibrahim

Journal of Advanced Research, 5: 133-136 (2014) IF: 3

The current study was designed to investigate the potential effect of Spirulina platensis, Arthrospira platensis, (SP) on tissue protection of Nile tilapia (Oreochromis niloticus) through estimation of P53 level. Five isonitrogenous and isocaloric rations containing graded levels of dried SP5, 7.5,10, 15, and 20 g/kg diet were fed separately to five equal groups of O. niloticus fingerlings,additional control group was assigned for 3 months. Liver samples were separately collected from each group by the end of each month. The expression level of P53 showed a substantial decrease among the treated groups in a time-dependent manner. It is therefore advisable to incorporate SP in diets for tissue protection and antioxidant effects in cultured O. niloticus **Keywords:** Spirulina platensis (Sp); Tissue protection P53 Expression Level Oreochromis Niloticus.

369. Vitamin E Attenuates Neurotoxicity Induced by Deltamethrin in Rats

Mona K Galal, Abdel Azim A Khalaf, Hanan A Ogaly and Marwa A Ibrahim

Bmc Complementary and Alternative Medicine, 14: 1-7 (2014) IF: 1.877

Background: The safety of Deltamethrin (DM) has been raised as a point of concern. The current investigation was envisaged to explore the responsiveness of oxidative stress parameters, DNA fragmentation and expression levels of TP53, cycloxygenase 2 (COX2) and cytochrome p4502E1 (CYP2E1) as toxicological endpoint in rats treated with DM. as well as attention was provided to the neuroprotective effect of vitamin E (VE). **Methods:** Four different groups of rats were used in this study, group I served as control, group II received DM (0.6 mg/kg BW), group III received both DM plus VE and finally group IV received VE only (200 mg/kg BW). The treatment regimen was extending for one month for all groups and the brain tissues were collected for further analysis.

Results: The obtained results showed a highly statistically significant increase in lipid peroxidation (LPO) content, nitric oxide concentration, and DNA fragmentation percentage and expression level of CYP2E1, TP53 and COX2 genes, in addition statistical significant reduction in total antioxidant capacity in DM treated group as compared to control were detected. Oral administration of VE attenuated the neurotoxic effects of DM through improvement of oxidative status, DNA fragmentation percentage and suppressing the expression level of CYP2E1, TP53 and COX2 genes.

Conclusion: From this study we concluded that VE supplementation has beneficial impacts on DM neurotoxicity in rats through its antioxidant and antiapoptotic properties. **Keywords:** Deltamethrin; Brain; Apoptosis; Oxidative stress; Vitamin E.

Dept. of Food Hygeine and Control

370. Effects of Meat pH on growth of 11 species of Psychrotolerant clostridia on vacuum packaged beef and Blown Pack Spoilage of the Product

Mohamed Kamel Hussein Youssef and Xianqin Yang

Food Microbiology, 39: 13-18 (2014) IF: 3.374

The aim of the study was to determine the effects of meat pH on the abilities of 11 psychrotolerant Clostridium spp. to grow on, and to possibly cause blown pack spoilage of vacuum packaged beef. Beef steaks of pH 5.4–5.6, 5.7–5.9 or \geq 6.0, i.e. of normal, intermediate or high pH were prepared and vacuum packaged. Groups of 3 steaks of the same pH range were inoculated with log phase cultures of Clostridium algoriphilum, Clostridium bowmanii. Clostridium algidixylanolyticum, Clostridium estertheticum, Clostridium frigoris, Clostridium frigidicarnis, Clostridium gasigenes, Clostridium lacusfryxellense, Clostridium psychrophilum, Clostridium tagluense or Clostridium vincentii. Each pack was resealed immediately after the steak was inoculated, and pack volumes were determined by water displacement, immediately after resealing and at intervals during storage at 2 °C for 56 days. All of the clostridia grew in packs of high pH beef but none caused pack swelling. Packs of intermediate pH beef inoculated with C. estertheticum began to swell after 14 days, with a mean rate of increase of pack volumes of 6.80 ml/day. One pack of intermediate pH beef inoculated with C. frigoris was swollen after 37 days. Packs of normal pH beef that had been inoculated with C. estertheticum began swelling after 14 days with a mean rate of increase of pack volumes of 7.70 ml/day. Packs of normal or intermediate pH beef inoculated with other clostridia did not swell. After storage, the numbers of most Clostridium spp., as determined by real-time PCR were greater on beef of high pH than of lower pH values, but the numbers of C. frigidicarnis and C. lacusfryxellense were highest on intermediate pH meat, the numbers of C, estertheticum were higher on meat of lower than of high pH, and the numbers of C. tagluense were the same on meat of all pH values. With high pH meat, glucose was reduced to very low level in rinse fluids from packs that had been inoculated with any Clostridium sp. With intermediate and normal pH meat, glucose was reduced to very low concentrations in only rinse fluids from beef that had been inoculated with C. estertheticum.

Keywords: Blown pack spoilage; Early onset; Psychorotolerant clostridia; Meat pH; Glucose; Lactose.

371. The Relationship Between Numbers of Bacteria on Surfaces and in Deep Tissues of Mechanically Tenderized Beef

Mohamed K. Youssef, Xianqin Yang and Colin O. Gill

Food Control, 46: 502-507 (2014) IF: 2.819

The objective of the study was to identify factors affecting the fractions of the bacteria naturally present on surfaces of beef cuts that are carried into deep tissues when the meat is mechanical tenderized by piercing with banks of thin blades. The surfaces and ten strips of meat from the deep tissues of beef primal cuts tenderized first and last on each of five days at a retail store meat fabrication facility were sampled for enumeration of total aerobic counts. Each strip was excised from the whole thickness of a cut

after surfaces were sterilized. The mean log numbers of total aerobes recovered from the surfaces of cuts tenderized first or last each day were 2.18 and 1.57 log cfu cm-2, respectively. The mean log numbers recovered per strip from individual cuts tenderized first or last each day ranged from 0.30 to 1.45 and from 0.03 to 1.04 log cfu, respectively. These findings indicate that bacteria from the tenderizing equipment augmented the numbers of aerobes on the surfaces of cuts tenderized first each day, with some of the additional aerobes being carried into deep tissues. Subsequently, pieces of cuts stored in air at 2 °C were tenderized at a laboratory using commercial equipment. Each cut was divided into three pieces with one piece being not treated, one being sprayed with water and one being sprayed with 5% lactic acid. The mean log numbers of total aerobes recovered from the surfaces of not treated pieces of cut stored for 0, 2, 4, 6, 10 or 14 days were 0.6, 0.8, 2.6, 4.2, 8.5 and 8.9 log cfu cm-2, respectively. No aerobes were recovered from the deep tissues of any of the pieces of cuts tenderized on day 0. Mean log numbers recovered from the deep tissues of not treated tenderized pieces of cuts stored for 2, 4, 6, 10 or 14 days were 0.3, 0.3, 2.2, 7.8 and 8.1 log cfu per strip, respectively. Spraying with 5% lactic acid reduced the mean log numbers of aerobes on pieces of cuts stored for 2, 4, or 6 days by 1, 2 or 2 log units, respectively, but did not reduce the numbers on pieces of cuts stored for 10 or 14 days. Mean log numbers recovered from the deep tissues of tenderized pieces of cuts sprayed with 5% lactic acid were not significantly different (P > 0.05) from the mean log numbers recovered from the corresponding, tenderized not treated pieces of cuts. These findings showed that the fraction of the total aerobes on cut surfaces that are carried into deep tissues during mechanical tenderizing can vary with the stage of growth of the spoilage flora; and that reduction of numbers of aerobes on the surface by treatment with lactic acid before tenderizing does not necessarily reduce the numbers carried into deep tissues during tenderizing. Keywords: Beef; Mechanical tenderizing; Surface contaminants; Deep tissue contaminants.

372. Storage life at 2 °C or -1.5 °C of Vacuum-Packaged Boneless and Bone-in Cuts from Decontaminated Beef Carcasses

Mohamed K Youssef, Colin O Gill and Xianqin Yang

Journal of The Science of Food and Agriculture, 94: 3118-3124 (2014) IF: 1.879

Background: The microbiological condition of beef produced at North American plants has been improved as a result of the use of effective carcass-decontaminating treatments. The effect of these treatments on the storage life of beef has not been established. In this study, beef primal cuts in vacuum packs stored at -1.5 or 2 °C for up to 160 days were assessed for their microbiological and organoleptic properties.

Results: The odours of boneless cuts were acceptable after storage at either temperature for =160 days; and the flavours of steaks from boneless cuts stored at 2 or -1.5 °C for =70 or =120 days, respectively, were acceptable. The storage life of bone-in cuts stored at 2 or -1.5 °C was, respectively, shorter or the same as that of boneless cuts stored at the same temperature. More than 20 microbial species thatwere mostly obligate aerobeswere present on both types of cuts before storage. After storage for =30 days, the microflora was dominated by carnobacteria and Enterobacteriaceae were present in the flora from early storage times. **Conclusions:** A storage life of 120–140 days was attained by vacuum-packaged beef primals from decontaminated carcasses stored at -1.5 °C. The bone-in cuts stored at 2 °C were spoiled at earlier times, probably by Enterobacteriaceae

Keywords: Vacuum packaged; Bone-in cuts; Boneless cuts; Storage life; Organoleptic; Carnobacteria.

373. Effects of Selected Cooking Procedures on the Survival of Escherichia Coli O157: H7 in Inoculated Steaks Cooked on a Hot Plate or Gas Barbecue Grill

Gill, C. O., Devos, J., Youssef, M. K.and Yang, X.2

Journal of Food Protection, 77: 919-926 (2014) IF: 1.797

Beef steaks (2 cm thick) were each inoculated at three sites in the central plane with Escherichia coli O157:H7 at 5.9 \pm 0.3 log CFU per site. Temperatures at steak centers were monitored during cooking on a hot plate or the grill of a gas barbeque. Steaks were cooked in groups of five using the same procedures and cooking each steak to the same temperature, and surviving E. coli O157:H7 at each site was enumerated. When steaks cooked on the hot plate were turned over every 2 or 4 min during cooking to between 56 and 62°C, no E. coli O157:H7 was recovered from steaks cooked to =58 or 62°C, respectively. When steaks were cooked to =71°C and turned over once during cooking, E. coli O157:H7 was recovered from steaks in groups turned over after =8 min but not from steaks turned over after 10 or 12 min. E. coli O157:H7 was recovered in similar numbers from steaks that were not held or were held for 3 min after cooking when steaks were turned over once after 4 or 6 min during cooking. When steaks were cooked on the grill with the barbeque lid open and turned over every 2 or 4 min during cooking to 63 or 56°C, E. coli O157:H7 was recovered from only those steaks turned over at 4min intervals and cooked to 56°C. E. coli O157:H7 was recovered from some steaks turned over once during cooking on the grill and held or not held after cooking to 63°C. E. coli O157:H7 was not recovered from steaks turned over after 4 min during cooking to 60°C on the grill with the barbeque lid closed or when the lid was closed after 6 min. Apparently, the microbiological safety of mechanically tenderized steaks can be assured by turning steaks over at intervals of about 2 min during cooking to =60°C in an open skillet or on a barbecue grill. When steaks are turned over only once during cooking to =60°C, microbiological safety may be assured by covering the skillet or grill with a lid during at least the final minutes of cooking.

Keywords: Cooking procedures; Escherichia coli O157:H7; Beef steaks.

374. Unusual Compositions of Microflora of Vacuum-Packaged Beef Primal Cuts of Very Long Storage Life

Youssef, M. K., Gill, C. O., Tran, F. and Yang, X.

Journal of Food Protection, 77: 2161-2167 (2014) IF: 1.797

Vacuum-packaged top butt cuts from a beef packing plant that does not use any carcass decontaminating interventions were assessed for their organoleptic and microbiological properties during storage at 2 or -1.5°C. Cuts stored at 2°C were acceptable after storage for 140 days but were unacceptable after 160 days because of persistent sour, acid odors. Odors of cuts stored at – 1.5°C for 160 days were acceptable. The numbers of aerobes on cuts increased from <1 log CFU/cm2 to 7 or 6 log CFU/cm2 for

cuts stored at 2 or -1.5°C, respectively. The numbers of Enterobacteriaceae increased from <-1 log CFU/cm2 to 5 or 3 log CFU/cm2 for cuts stored at 2 or -1.5°C, respectively. Bacteria recovered from initial microflora were, mainly, strictly aerobic organisms. Bacteria recovered from cuts stored for 160 days were mainly Carnobacterium spp. that grew on an acetate-containing agar generally selective for lactic acid bacteria other than Carnobacterium. C. divergens and C. maltaromaticum were recovered from cuts stored at 2°C, but C. maltaromaticum was the only species of Carnobacterium recovered from cuts stored at -1.5°C. No lactic acid bacteria of genera that usually predominate in the spoilage microflora of vacuum-packaged beef at late storage times were recovered from the spoilage microflora. The findings indicate that carnobacteria, initially present at very small numbers, grew exponentially to persistently dominate the spoilage microflora of vacuum-packaged beef cuts of unusually long storage life.

Keywords: Vacuum packaging; Storage life; Microflora; Beef.

Dept. of Microbiology

375. The Consequences of a Sudden Demographic Change on the Seroprevalence Pattern, Virulence Genes, Identification and Characterisation of Integron-Mediated Antibiotic Resistance in the Salmonella Enterica Isolated from Clinically Diarrhoeic Humans in Egypt

K. M. Osman, W. M. M. Hassan and R. A. H. Mohamed

Eur J Clin Microbiol Infect Dis, 33: 1323-1337 (2014) IF: 2.544

The present study was undertaken to identify and characterise integrons and integrated resistance gene cassettes among eight multidrug-resistant (MDR) Salmonella serovars isolated from humans in Egypt. Virulotyping by polymerase chain reaction (PCR) was used for the detection of the presence of virulence genes. Integron PCR was used to detect the presence of class 1 in the MDR strains. The associated individual resistance gene cassettes were identified using specific PCRs. The isolated serovars were Salmonella Grampian (C1; 2/5), Larose (C1; 1/5), Hato (B; 1/5) and Texas (B; 1/5). Among the Salmonella serovars, five Salmonella isolates showed the highest resistance to amoxicillin, ampicillin, chloramphenicol, lincomycin, gentamicin, nalidixic acid, streptomycin and trimethoprim (100 %), followed by neomycin,norfloxacin and tetracycline (80 %), while the lowest resistance was recorded to colistin sulphate and ciprofloxacin in percentages of 20 and 40 %, respectively. The invA, avrA, ssaQ, mgtC, siiD and sopB genes were detected in all isolates (100 %), while the spvC and gipA genes were totally (100 %) absent from all isolates. The remaining three virulence genes were diversely distributed as follows: the bcfC gene was detected in all isolates except Salmonella Hato (80 %); the sodC1 gene was detected only in Salmonella Grampian and Salmonella Texas (60 %); and the sopE1 gene was detected only in Salmonella Grampian, Hato and Texas (60 %). Class 1 integrons were detected in 90 % of the MDR isolates, comprising serovars Muenster, Florian, Noya, Grampian, Larose, Hato and Texas. Of the class 1 integron-positive isolates, 45 % harboured Salmonella genomic island 1 (SGI1) either right junction or right and left junction having an A-C-S-T phenotype. Of the class 1 integronpositive isolates, 44 % harboured integron gene cassette aadA2, while 11 % harboured the floR gene present in multidrug resistance flanked by two integrons of SGI1. The results of the

present study indicate that class 1 integrons carrying gene cassettes conferring resistance mainly to aminoglycosides are widespreadamong the MDR Salmonella serovars isolated from humans in Egypt, indicating the important role of these genetic elements in the dissemination of multidrug resistance. **Keywords:** Salmonella serovars.

376. Confirmed Low Prevalence of Listeria Mastitis in She-Camel Milk

Kamelia M. Osman, Ahmed Samir, Ahmed Orabi and Tara Rava Zolnikov

Acta Tropica, 130: 1-6 (2014) IF: 2.519

She-camel milk is an alternative solution for people allergic to milk; unfortunately, potential harmful bacteria have not been tested in she-camel milk. Listeria monocytogenes is one harmful bacterium that causes adverse health effects if chronically or acutely ingested by humans. The purpose of this study was to estimate the prevalence, characterize the phenotypic, genetic characterization, virulence factors, and antibiopotential harmful bacteria resistance profile of Listeria isolated from the milk of she-camel. Udder milk samples were collected from 100 shecamels and screened for mastitis using the California mastitis test (46 healthy female camels, 24 subclinical mastitic animals and 30 clinical mastitic animals). Samples were then examined for the presence of pathogenic Listeria spp; if located, the isolation of Listeria was completed using the International Organization for Standards technique to test for pathogenicity. The isolates were subjected to PCR assay for virulence-associated genes. Listeria spp. were isolated from 4% of samples and only 1.0% was confirmed as L. monocytogenes. The results of this study provide evidence for the low prevalence of intramammary Listeria infection; additionally, this study concludes she-camel milk in healthy camels milked and harvested in proper hygienic conditions may be used as alternative milk for human consumption.

Keywords: Listeria species; She-camel; Mastitis; Virulence genes; Biofilm formation; Antibiotic resistance.

377. Lyme Borreliosis: A Neglected Zoonosis in Egypt

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Acta Tropica, 140: 188-192 (2014) IF: 2.519

Borrelia burgdorferi, the causal organism of Lyme borreliosis. In Egypt, available data about the occurrence of Lyme disease are scarce and no structured studies documented the presence of Lyme borreliosis in Egyptian animals and tick reservoirs verifying its zoonotic evidence. Besides, no successful trials to isolate B. burgdorferi from clinical samples have occurred. This study was conducted to investigate B. burgdorferi infection as an emerging zoonosis neglected in Egypt. A total number of 92 animals, tick and human companion specimens were collected and subjected for culture, PCR and/or serodetection. B. burgdorferi has been detected and isolated from Egyptian animal breeds. We also detected the presence of outer surface protein A gene of B. burgdorferi by PCR as well as anti-B. burgdorferi IgM by ELISA in human contacts who were suffering from fever of unknown origin. This report represents the first systematic study on animals associated with patients suffering from febrile illness to confirm the emerging of such neglected zoonosis in Egypt. Keywords: B. Burgdorferi; Isolation; Detection; Egypt.

378. Chlamydia Species in Free-Living Cattle Egret (*Bubulcus Ibis*) and Hoopoe (*Upupa Epops*) in Egypt

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International Journal of Veterinary Science and Medicine, 2: 1-6 (2014) IF: 2

Little information is available on the presence of chlamydia infection in wildlife. This study was conducted to assess the occurrence of chlamydiae in asymptomatic birds from two species of wild birds (Cattle Egret and Hoopoe) in Egypt. In the present study Chlamydiaceae was analyzed using Giemsa stain, Gime'nez stain, fluorescent antibody test (FAT) and PCR. The results of these techniques were compared with CFT for detecting Chlamydia psittaci antibodies among the examined birds. The results reveal that 96.4%, 81.8%, 89.1%, 80.0% and 58.2% of the examined samples were positive for chlamydiosis using PCR, Giemsa stain, Gime'nez stain, FA, and CFT respectively among Hoopoe.

The percentages were 90.6%, 77.4%, 83.0%, 75.5% and 66.0% respectively for the previous tests among Cattle Egret birds. The results suggest that Cattle Egret and Hoopoe may be reservoir of Chlamydiaceae species and thus shed the organisms in their excreta. The shedding of chlamydiae by free living birds in Egypt may expose humans that come in contact with these birds to zoonotic risks.

Keywords: Complement eixation test (CFT); C. Psittaci; Fluorescent antibody test (FAT); PCR; Wild birds.

379. Sequencing Analysis of Mycoplasma Gallisepticum Wild Strains in Vaccinated Chicken Breeder Flocks

Khalifa R, Eissa S, El-Hariri M and Refai M

J Mol Microbiol Biotechnol., 24(2): 98-104 (2014) IF: 1.487

Mycoplasma gallisepticum MG infection is still of continuing economic concern in commercial broiler breeder chicken flocks in Egypt. MG infection continues to emerge despite the application of vaccination programs in breeder flocks. This prompted flock surveillance including MG isolation and molecular characterization of the circulating MG strains. The present study was concerned with 15 broiler breeder flocks of different ages 5-51 weeks).

Three flocks were apparently healthy and 12 flocks were diseased. The aim of the study was to characterize the MG strains recovered from tracheal swabs. Four positive MG DNA extracts identified by rt-PCR and confirmed by isolation were subjected to sequencing of the mgc2 gene and intergenic spacer region (IGSR).

The current molecular study demonstrated the presence of 3 different wild-type MG strains (RabE1-08, RabE2-09 and RabE3-09) in vaccinated diseased flocks, while the fourth strain RabE4-08, which was isolated from a nonvaccinated apparently healthy breeder flock, scored 100% of homology and similarity to the F-strain vaccine by the sequence analysis of mgc2 and IGSR. It can be assumed that the vaccine F strain, which is supposed to replace field strains not only failed to do that, but also infected nonvaccinated flocks. Accordingly, there is a need to revise the control program including vaccine strategy in parallel with biosecurity measures.

380. Salmonella Enterica in Imported and Domestic Day-Old Turkey Poults in Egypt: Repertoire of Virulence Genes and Their Antimicrobial Resistance Profiles

K.M. Osman, S.H. Marouf, A.M. Erfan and N. AlAtfeehy

Rev. Sci. Tech. Off. Int. Epiz., 33: 1017-1026 (2014) IF: 0.967

Globalisation and international trade facilitate the rapid spread and transmission of foodborne pathogens. This study was designed to determine the serovars, distribution of virulence genes (invA, avrA, ssaQ, mgtC, siiD, sopB, gipA, sodC1, sopE1, spvC, bcfC) and antibiotic resistance profiles in salmonellae recovered from imported and domestic day-old turkey poults in Egypt. The prevalence of salmonellae in the imported poults was 4% (6/150) : S. Enteritidis was the most frequent isolate (1.3%; 2/150), followed by Typhimurium, Virchow, Larochelle and a non-typeable strain, each with 0.7% (1/150) prevalence. The prevalence of salmonellae in the domestic poults was < 2%(2/150) and serotyping indicated a prevalence of 1.3% (1/150) for both Typhimurium and Altona. In polymerase chain reaction screening, the genes invA, sopB and bcfC were detected in all the Enteritidis, Typhimurium, Virchow, Larochelle, Altona and nontypeable isolates (100%); the gene gipA was absent from all isolates. Carriage of invA, sopB and bcfC among the Enteritidis, Typhimurium, Virchow, Larochelle, Altona and non-typeable isolates was associated with a core pattern of resistance to three antibiotics: streptomycin, nalidixic acid and chloramphenicol. The detection of S. Enteritidis, Typhimurium, Virchow, Larochelle, and Altona in turkey poults has important implications because these serovars are a significant cause of foodborne illness and enteric fever in humans.

Keywords: Antibiotic resistance; Poults; Salmonella enteritidis salmonella typhimurium.

381. Salmonella Enterica Serotypes Isolated from Squabs Reveal Multidrug Resistance and A Distinct Pathogenicity Gene Repertoire

K.M. Osman, S.H. Marouf, O.A. Mehana and N. AlAtfeehy

Rev Sci Tech Oie, 33: 997-1006 (2014) IF: 0.967

The consumption of squab (young unfledged pigeons) as part of the cuisine of many countries, together with the observation that squabs are vectors of zoonotic agents, may make them a public health risk. This study was designed to determine the serotypes, distribution of 11 virulence genes (invA, avrA, ssaQ, mgtC, siiD, sopB, gipA, sodC1, sopE1, spvC, bcf C) and the antimicrobial resistance profiles of salmonellae recovered from squabs. Six isolates were identified from among 45 (13.3%) squabs sampled. Three serotypes were identified according to the Kauffmann-White serotyping scheme: Salmonella Typhimurium (4/6; 66.7%), S. Braenderup (1/6; 16.7%) and S. Lomita (1/6; 16.7%). Polymerase chain reaction analyses revealed the presence of invA, sopB and bcfC in all six isolates, whereas sopE1 and gipA were absent. All six isolates were resistant to lincomycin and streptomycin, but all were susceptible to ciprofloxacin, colistin sulphate and gentamicin. Among the S. Typhimurium isolates, identified: penicillins, seven resistance profiles were aminoglycosides, fluoroquinolones, lincosamides, phenicols, tetracyclines and sulphonamides; four resistance profiles were identified in the isolates of S. Braenderup and S. Lomita: aminoglycosides, fluoroquinolones, lincosamides and polymyxin.

Thus, the distribution of resistance to the antibiotics was largely dependent on serotype identity. The presence of invA, avrA, ssaQ, mgtC, siiD, sopB and bcfC was associated with resistance to chloramphenicol; invA, sopB and bcfC with resistance to streptomycin and lincosamide; and invA and sodC1 with resistance to trimethoprim–sulfamethoxazole. The identification of serotypes S. Typhimurium, S. Braenderup and S. Lomita in the squab samples

has important implications because these serotypes are significant causes of food poisoning and enteric fever in humans.

Keywords: Antibiotic resistance; Pigeon; Salmonella braenderup; Salmonella lomita; Salmonella.

382. Isolation and Characterization of Salmonella Enterica in day-Old Ducklings in Egypt

Kamelia M. Osman, Sherif H. Marouf, Tara R. Zolnikov and Nayerah AlAtfeehy

Pathogens and Global Health, 108: 37-48 (2014) IF: 0.841

Importing day-old ducklings (DOD) unknowingly infected with non-typhoid Salmonella (NTS) may be associated with disease risk. Domestic and international trade may enhance this risk. Salmonella enteric serovars, their virulence genes combinations and antibiotic resistance, garner attention for their potentiality to contribute to the adverse health effects on populations throughout the world. The aim of this study was to estimate the risk of imported versus domestic DOD as potential carriers of NTS. The results confirm the prevalence of salmonellosis in imported ducklings was 18.5% (25/135), whereas only 12% (9/75) of cases were determined in the domestic ducklings. Fourteen serovars (Salmonella enteritidis, Salmonella kisii, Salmonella typhimurium, Salmonella gaillac, Salmonella uno, Salmonella eingedi, Salmonella shubra, Salmonella bardo, Salmonella inganda, Salmonella kentucky, Salmonella stanley, Salmonella virchow,Salmonella haifa, and Salmonella anatum) were isolated from the imported ducklings, whereas only S. enteritidis, S. typhimurium, S. virchow, and S. shubra were isolated from the domestic ducklings. The isolated Salmonella serovars were 100% susceptible to only colistin sulphate and 100% resistant to lincomycin. The 14 Salmonella serovars were screened for 11 virulence genes (invA, avrA, ssaQ, mgtC, siiD, sopB, gipA, sodC1, sopE1, spvC, and bcfC) by PCR. The invA, sopB, and bcfC genes were detected in 100% of the Salmonella serovars; alternatively, the gipA gene was absent in all of the isolated Salmonella serovars. The 11 virulent genes were not detected in either of S. stanley or S. haifa serovars. The results confirm an association between antibiotic resistance and virulence of Salmonella in the DOD. This study confirms the need for a country adherence to strict public health and food safety regimes. Keywords: Antibiotic resistance; Day-old ducklings; Salmonella serovars; Virulence genes.

383. Phenotypic, Antimicrobial Susceptibility Profile and Virulence Factors of Klebsiella Pneumoniae Isolated From Buffalo and Cow Mastitic Milk

Kamelia M. Osman, Hany M. Hassan, Ahmed Orabi and Ahmed S. T. Abdelhafez

Pathogens and Global Health, 108: 191-199 (2014) IF: 0.841

Studies on the prevalence and virulence genes of Klebsiella mastitis pathogens in a buffalo population are undocumented.

Also, the association of rmpA kfu, uge, magA, Aerobactin, K1 and K2 virulent factors with K. pneumoniae buffalo, and cow mastitis is unreported. The virulence of K. pneumoniae was evaluated through both phenotypic and molecular assays. In vivo virulence was assessed by the Vero cell cytotoxicity, suckling mouse assay and mice lethality test. Antimicrobial susceptibility was tested by diskdiffusion method. The 45 K. pneumoniae isolates from buffalo (n510/232) and cow (n535/293) milk were isolated (45/525; 8.6%) and screened via PCR for seven virulence genes encoding uridine diphosphate galactose 4 epimerase encoding gene responsible for capsule and smooth lipopolysaccharide synthesis (uge) , siderophores (kfu and aerobactin), protectines or invasins (rmpA and magA), and the capsule and hypermucoviscosity (K1 and K2). The most common virulence genes were rmpA, kfu, uge, and magA (77.8% each). Aerobactin and K1 genes were found at medium rates of 66.7% each and K2 (55.6%). The Vero cell cytotoxicity and LD (50) in mice were found in 100% of isolates. A multidrug resistance pattern was observed for 40% of the antimicrobials. The distribution of virulence profiles indicate a role of rmpA, kfu, uge, magA, Aerobactin, and K1 and K2 in pathogenicity of K. pneumoniae in udder infections and invasiveness, and constitutes a threat for vulnerable animals, even more if they are in combination with antibiotic resistance.

Keywords: K. Pneumoniae; Buffalo; Cow mastitis; Virulence genes; Antibiotic susceptibility.

384. Prevalence , Pathogenic Capability, Virulence Genes , Biofilm formation, and Antibiotic Resistance of Listeria in Goat and Sheep Milk Confirms Need of Hygienic Milking Conditions

Kamelia M. Osman, Tara Rava Zolnikov, Ahmed Samir and Ahmed Orabi

Pathog Glob Health, 108: 21-29 (2014) IF: 0.841

Goat and sheep milk is consumed by human populations throughout the world; as a result, it has been proposed as an alternative, nutrient-rich milk to feed infants allergic to cow's milk. Unfortunately, potentially harmful bacteria have not been thoroughly tested in goat or sheep milk. Listeria monocytogenes is a harmful bacterium that causes adverse health effects if ingested by humans. The purpose of this study was to estimate the prevalence and characterize the phenotype, genotype, virulence factors, biofilm formation, and antibiopotential of Listeria isolated from the milk of goat and sheep. Udder milk samples were collected from 107 goats and 102 sheep and screened for mastitis using the California mastitis test (CMT). Samples were then examined for the presence of pathogenic Listeria spp; if detected, the isolation of pathogenic Listeria (L. monocytogenes and Listeria ivanovii) was completed using isolation and identification techniques recommended by the International Organization for Standards (ISO 11290-1, 1996), in addition to serological, in vitro and in vivo pathogenicity tests. The isolates were subjected to PCR assay for virulence associated genes (hlyA, plcA, actA, and iap). Pathogenic Listeria spp. were isolated from 5.6% of goat and 3.9% sheep milk samples, with 33.3 and 25% of these selected samples respectively containing L. monocytogenes. The results of this study provide evidence of the low-likelihood of contamination leading to the presence of L. monocytogenes in raw goat and sheep milk; however, this study also confirmed a strong in vitro ability for biofilm formation and pathogenic capability of L. monocytogenes if discovered in the

milk. L. monocytogenes may be present in goat and sheep milk and in order to reduce the exposure, hygienic milking conditions must be employed for the milk to be considered a safe alternative for human consumption.

Keywords: Antibiotic resistance; Biofilm formation; Ewe; Goat; Listeria species; Virulence genes.

Dept. of Obstetrics, Reproduction & Artificial Insemination

385. L-Carnitine Supplementation During Vitrification of Mouse Germinal Vesicle Stage-Oocytes and Their Subsequent in Vitro Maturation Improves Meiotic Spindle Configuration and Mitochondrial Distribution in Metaphase II Oocytes.

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Human Reproduction, 29: 2256-2268 (2014) IF: 4.585

Study question: How does L-carnitine (LC) supplementation during vitrification and in vitro maturation (IVM) of germinal vesicle stage (GV) -oocytes improve the developmental competence of the resultant metaphase II (MII) oocytes?summary answer: LC supplementation during both vitrification of GV oocytes and their subsequent IVM improved nuclear maturation as well as meiotic spindle assembly and mitochondrial distribution in MII oocytes.what is known already: Vitrification of GV -oocytes results in a lower success rate of blastocyst development compared with nonvitrified oocytes. LC supplementation during both vitrification and IVM of mouse GV -oocytes significantly improves embryonic development after IVF.study design, size, duration: GV -oocytes were collected from (B6.DBA)F1 and B6 mouse strains and subjected to vitrification and warming with or without 3.72 mM LC supplementation. After IVM with or without LC supplementation, the rate of nuclear maturation and the quality of MII oocytes were evaluated. At least 20 oocytes/group were examined, and each experiment was repeated at least three times. All experiments were conducted during 2013-2014. Participants / materials, setting, methods: Extrusion of the first polar body in IVM oocytes was observed as an indication of nuclear maturation. Spindle assembly and chromosomal alignment were examined by immunostaining of a-tubulin and nuclear staining with 4,6diamidino-2-phenylindole (DAPI). Mitochondrial distribution and oxidative activity were measured by staining with Mitotracker Green Fluorescence Mitochondria (Mitotracker Green FM) and chloromethy ltetramethy lrosamine (Mitotracker Orange CMTMRos), respectively. ATP levels were determined by using the Bioluminescent Somatic Cell Assay Kit. main results and the role of chance : LC supplementation during both vitrification and IVM of GV -oocytes significantly increased the proportions of oocytes with normal MII spindles to the levels comparable with those of non-vitrified oocytes in both mouse strains. While vitrification of GV - oocytes lowered the proportions of MII oocytes with peripherally concentrated mitochondrial distribution compared with non-vitrified oocytes, LC supplementation significantly increased the proportion of such oocytes in the (B6.DBA)F1 strain. LC supplementation decreased the proportion of oocytes with mitochondrial aggregates in both vitrified and non-vitrified oocytes in the B6 strain. The oxidative activity of mitochondria was mildly decreased by vitrification and drastically increased by LC supplementation irrespective of vitrification in

both mouse strains. No change was found in ATP levels irrespective of vitrification or LC supplementation. Results were considered to be statistically significant at P, 0.05 by either x2- or t-test.limitations, reasons for caution: It remains to be tested whether beneficial effect of LC supplementation during vitrification and IVM of GV-oocytes leads to fetal development and birth of healthy offspring after embryo transfer to surrogate females.wider implications of the findings: This protocol has the potential to improve the quality of vitrified human oocytes and embryos during assisted reproduction treatment.study funding / competing interest : Partially supported by the Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant and Mitacs Elevate Postdoctoral Fellowship, Canada.

Keywords: Oocyte; Vitrification; Ivm; L-Carnitine; Mitochondria .

386. Role of PTGS2-Generated PGE₂ During Gonadotrophin - Induced Bovine Oocyte Maturation and Cumulus Cell Expansion

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Reproductive Biomedicine Online, 28(3): 388-400 (2014) IF: 2.98

Prostaglandin E2 (PGE2) is an autocrine / paracrine factor which mediates gonadotrophin (Gn) stimulation of cumulus expansion and oocyte maturation in rodents. Its role in bovine oocyte maturation is less characterized. This study detected PTGS2 (COX2) and PGE synthases (PTGES1, PTGES2 and PTGES3) in bovine cumulus - oocyte complexes (COC). Only PTGS2 and PTGES1 expression changed during maturation. In Gn-free media, no cumulus expansion and 45% nuclear maturation was achieved, while Gn-induced maturation showed full cumulus expansion (score 3) and ~87% maturation. PGE2 supplementation without Gn induced mild cumulus expansion (score 0.5-1) but increased nuclear maturation to levels similar to those obtained with Gn alone. In the presence of Gn, exogenous PGE2 did not affect expansion or nuclear maturation and subsequent embryo development. Treatment with PTGS2 selective inhibitor (NS398), PTGS2-specific siRNA or PTGER2-receptor antagonist (AH6809) resulted in ~20-25% reduction in nuclear maturation. NS398 and AH6809 did not affect cumulus expansion. Most oocytes not reaching metaphase of second meiosis (MII) following NS398, AH6809 and PTGS2-specific siRNA treatments were at MI. After longer maturation, NS398-treated oocytes had normal MII rate and uncompromised embryo development. PGE2 has a limited role in cumulus expansion in bovine COC but is important for the timing of Gn-induced nuclear maturation.

Keywords: AH6809; Cox2; NS398; oocytes; PGE₂; siRNA.

387. Accuracy of B-Mode Ultrasonography for Diagnosing Pregnancy and Determination of Fetal Numbers in Different Breeds of Goats

Haney Samir Mohamed Mohamed Sayed Ahmed

Animal Reproduction Science, 147: 25-31 (2014) IF: 1.581

Atotal of 150 does of different breeds were used to evaluate the accuracy of transrectal (TRU)and transabdominal ultrasonography (TAU) for pregnancy diagnosis and fetal number

esti-mation and to study the effect of breed and age of goats on the accuracy of ultrasonography.All does were scanned by TRU at days 17-22, 24-29 and 31-36 and by TAU at days 39-44and 46-51 after breeding. The sensitivity (Se) of TRU for detecting pregnant does increased significantly (81.6% vs.97.7%; P < 0.0005) from days 17–22 to 24–29. There was a significant (P <0.05) effect ofbreed of goats on the specificity (Sp) of TAU for diagnosing non-pregnancy between days39 and 51. In addition, there was a significant (P < 0.01) effect of breed of goats on theSe and Sp of TRU for determination of does carrying multiples and singles, respectively, between days 24 and 36. The sensitivity of TAU for diagnosing pregnant does tended to besignificantly (P = 0.06) higher in young does (1.5–2 yr) than in older does (>2–9 yr) at days39-44. The accuracy of TRU for determination of does carrying singles was significantly (P < 0.05) higher in young does than that in older ones at days 24-29.In conclusions, TRU could be accurately used for early pregnancy diagnosis and fetalnumber estimation at days 24-29 and days 31-36, respectively, with accuracy similar tothat of TAU at days 39-51. Furthermore, breed and age of does might influence the accuracyof ultrasonography for pregnancy diagnosis and fetal numbers estimation.

Keywords: Pregnancy Diagnosisfetal Numbersultrasonography; Goats.

Dept. of Parasitology

388. MERS Coronavirus Neutralizing Antibodies in Camels, Eastern Africa, 1983–1997

Marcel A. Müller, Victor Max Corman, Joerg Jores, Benjamin Meyer, Mario Younan, Anne Liljander, Berend-Jan Bosch, Erik Lattwein, Mosaad Hilali, Bakri E. Musa, Set Bornstein and Christian Drosten

Emerging Infectious Disease, 20: 2093-2095 (2014) IF: 7.327

To analyze the distribution of Middle East respiratory syndrome coronavirus (MERS-CoV)–seropositive dromedary camels in eastern Africa, we tested 189 archived serum samples accumulated during the past 30 years. We identified MERS-CoV neutralizing antibodies in 81.0% of samples from the main camel-exporting countries, Sudan and Somalia, suggesting long-term virus circulation in these animals

Keywords: Dromedary camel; Reservoir; Middle east respiratory syndrome MERS; Coronavirus; Antibody; Viruses; Africa.

389. Redescription of Sarcocystis Fusiformis Sarcocysts from the Water Buffalo (Bubalus Bubalis)

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Parasitology, on line 11August, 2014: 1-10 (2014) IF: 2.35

Four valid species of Sarcocystis have been reported from the water buffalo (Bubalus bubalis): Sarcocystis fusiformis, Sarcocystis buffalonis, Sarcocystis levinei and Sarcocystis dubeyi. Here , we redescribe structure of S. fusiformis sarcocysts by scanning and transmission electron microscopy (SEM , TEM). Twenty-one macroscopic sarcocysts from oesophagus of the water buffalo in Egypt were examined by light microscopy, SEM and TEM. The sarcocyst wall was up to 9 μ m thick, depending on the section and the technique. In 5 μ m paraffin-embedded sections, the sarcocyst wall was indistinct, 2–5 μ m thick and appeared smooth. In 1 μ m plastic-embedded sections stained with toluidine blue, the sarcocyst wall was 2.5–5.2 μ m thick and had

branched villar protrusions (vp)-like branches of a dead tree. By SEM, the sarcocyst wall had a mesh-like structure with irregularly shaped vp that were folded over the sarcocyst wall. On each vp there were uniform papillomatous structures that were 100 nm wide. By TEM, vp were up to 6 μ m long and contained filamentous tubular structures, most of which were parallel to the long axis of the projections; granules were absent from these tubules. By TEM, bradyzoites within the same cyst varied from 11·2 to 16·8 μ m in length. By TEM, bradyzoites had a very long (10 μ m) convoluted mitochondrion, up to 12 dense granules, but only 2 rhoptries. This redescription should help to differentiate the sarcocysts of S. fusiformis from similar sarcocysts in domestic and wild ruminants.

Keywords: Sarcocystis fu siformis; Sarcocyst; Water buffalo (Bubalus Bubalis); Electron microscopy; Ultrastructure.

Dept. of Pathology

390. Pathology of Gastric Lesions in Donkeys: a Preliminary Study

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Equine Veterinary Journal, 46: (2014) IF: 2.369

Reasons for performing study: Donkeys (Equus africanus asinus) are important working animals, particularly in countries where the majority of the population lives below the poverty line. Gastric ulceration has been shown to be common in British donkeys but donkeys from other parts of the world have not been as extensively researched.

Objectives: This study was performed as a preliminary overview of the severity and distribution of gastric lesions in mature donkeys and to document which parasites were present. Study design: Descriptive study of pathological findings.

Methods: Stomachs of 35 mature draught donkeys were examined grossly and histopathology samples taken from 5 regions of the gastric mucosa.

Results: Gross examination revealed hyperaemia, oedema, erosions and ulcers in addition to parasitic lesions. Histopathological examination revealed hyperkeratosis, acanthosis, vacuolar degeneration of stratified squamous cells, gastritis, erosions, ulcerations, scarring, hyperactivity of mucus glands, periglandular fibroplasia and parasitic granulomes with infestation by Gasterophilus spp. larvae, Habronema spp. and Draschia megastoma.

Conclusions: In donkeys, ulceration of the nonglandular regions of the stomach is more prominent than the glandular regions and parasitic infestations were frequent.

Keywords: Horse; Stomach; Pathology; Gastritis; Gasterophilosis; Habronemiasis; Donkeys.

391. Evaluation of Hepatotoxic and Genotoxic Potential of Silvernanoparticles in Albino Rats

El Mahdy MM, Eldin TA, Aly HS, Mohammed FF and Shaalan MI

Experimental And Toxicologic Pathology, 67: 21-29 (2014) IF: 2.005

Silver nanoparticles (AgNPs) have wide medical applications regarding their antimicrobial effects. Theyare applied also in appliances such as refrigerators and washing machines. For assessment of toxicologicalpotential of silver nanoparticles 20 mature female albino rats were divided into four groups (five rats

pereach). Animals were injected i/p by different doses of approximately 8.7 nm silver nanoparticles (1, 2 and 4 mg/kg b.w) daily for 28 days in addition to control group which were injected by deionized water only.Indicators of oxidative stress in liver determination of silver nanoparticles tissue. tissue concentration, description of hepatic histopathological alterations and detection of possible chromosomal aberrations inbone marrow were carried out. Results revealed various hepatic histopathological lesions that were dosedependent. The effect of Ag-NPs on hepatic malondialdhyde (MDA) and glutathione (GSH) levels werevariable in different treated groups compared with the control. The tissue residues of silver nanoparticleswere found in hepatic tissue and related to original treated dose. Finally, silver nanoparticles inducedvariable chromosomal aberrations that were dose dependent. Conclusion: Silver nanoparticles had theability for inducing various hepatic histopathological alterations indicating hepatocytotoxicity presum-ably by oxidative stress, in addition to the induction of chromosomal aberrations in bone marrow cellsdenoting the genotoxicity of nanosilver particles.

Keywords: Albino rats; Chromosomal aberrations; Hepatocellular histopathology; Oxidative stress; Silver nanoparticles.

Dept. of Pathology

392. Camel milk inhibits murine hepatic carcinogenesis, Initiated by diethylnitrosamine and Promoted by Phenobarbitone

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International Journal of Veterinary Science and Medicine, 2: 136-141 (2014) IF: 2

This study was carried out in order to investigate the possible inhibitory effect of camel milk (CM) on induced hepatocarcinogenesis in rats. Twenty-eight male rats were assigned into 4 groups (7 rats per group). Group I served as control negative. Group II treated with camel milk. Group III was injected I/P with diethylnitrosamine (DENA) (200 mg/kg) as a single dose and after one week received 500 ppm phenobarbitone in drinking water. Group IV injected with DENA as group III and treated with camel milk. Estimation of AST, ALT, albumin, total protein and alpha fetoprotein (AFP) in the serum of euthanized rats was performed. Histopathological examination and immunohistochemical staining of AFP and placental glutathione s transferase of the liver were carried out. Biochemical result at 38th week revealed an increase in serum AFP and a decrease in

serum albumin on group III although no significance was detected. Histopathologically, the size of altered hepatic foci was smaller in the milk treated group (group IV). The number of mitotic figures observed in group IV was lower than group III. Hepatocellular carcinoma developed only in group III but not group IV. Immunohistochemical staining of AFP demonstrated an intense positive staining in group III and a weak positive staining in group IV. Similarly, the area percent of preneoplastic P-GST positive foci in liver was higher in group III than group IV. In conclusion, camel milk halted the progression of hepatocellular carcinoma.

Keywords: Diethylnitrosamine; Camel milk; Alpha fetoprotein; Immunohistochemistry; Hepatocellular carcinoma.

393. Effect of Aflatoxin Induced Immunosuppression on Pathogenesis of H9N2 Avian Influenza Virus

Hala MF El Miniawy, Kawkab A Ahmed, Ahmed A El-Sanousi and Marwa M Salah Khattab

Pakistan Veterinary Journal, 34: 234-238 (2014) IF: 1.392

The study was performed to investigate the immunosuppressive effect of aflatoxin on the pathogenesis of H9N2 AI virus in SPF chickens. The experiment was carried out on 110 unvaccinated day old SPF chicks. They were divided into four groups of 25 birds each. Group I was kept as a non-treated and non-infected control; group II was intranasally infected with H9N2 AI virus at the 4th week of age; group III was fed on a diet containing 0.75 ppm aflatoxin from day one through the entire experiment period and group IV was fed on diet containing 0.75 ppm aflatoxin as group III and infected intranasally with H9N2 AI virus at the 4th week of age. Five chicks were kept as contact control (without infection) to group II and group IV. Five chickens from each group were slaughtered at 4th, 9th, 14th, 20th and 27th DPI Serum was collected from all slaughtered birds (5 serum samples/group/slaughter time) for serology (HI). Specimens from nasal conchae, trachea, lungs, liver, kidneys, bursa of Fabricius, thymus, spleen, pancreas and brain were collected from slaughtered birds for histopathology and immunohistochemistry. The histopathological lesions were more severe and persist till the end of the experiment in group IV. Using immunoperoxidase technique viral antigens were detected in the nasal conchae, trachea, lungs, thymus, kidneys and brain in group II while in group IV it extended further to the pancreas and bursa of Fabricius. In conclusion, the immunosuppression caused by aflatoxin increased the severity of lesions and allowed the virus to be disseminated to more organs

Keywords: Avian influenza virus; (H9N2); Aflatoxin; Pathology; Immunoperioxidase; Chickens.

Dept. of Pharmacology

394. Analyses and Decreasing Patterns of Veterinary Antianxiety Medications in Soils

A. M. Abd El-Aty Jeong-Heui Choia, Marc Lamshöft, Sebastian Zühlke, A.M. Abd El-Aty,Md. Musfiqur Rahman, Sung Woo Kim, Jae-Han Shim and Michael Spitellera

Journal of Hazardous Materials, 275: 154-165 (2014) IF: 4.331

An ultrasonic-assisted extraction method was developed to detect 16 antianxiety medications in soil samples using liquid chromatography - high resolution mass spectrometry (LC -HRMS), Orbitrap mass spectrometer. The determination method resulted in satisfactory sensitivity, linearity, recovery, repeatability, and within laboratory reproducibility Acepromazine, azaperone, and xylazine were incubated in control, amended, and sterilized soils . The amendment with powdered blood meal affected the relatively fast dissipations of acepromazine, azaperone, and xylazine in the soils. Dissipation kinetics of acepromazine were consistent with bi-phasic kinetics (first-order multi compartment) and the other couples were fit to single first-order kinetics. A hydroxylated acepromazine was identified from soil samples using Orbitrap mass spectrometry. According to sorption batch experiments, the adsorption of acepromazine and azaperone was greatly high, whereas that of xylazine was relatively low. Xylazine was persistent in the incubated soils, and acepromazine demonstrated fast initial

dissipation; hence, xylazine could have a potential harmful effect on the environment. To the best of our knowledge, this is the first report on the dissipation and adsorption–desorption patters of animal pharmaceutical tranquilizers and a , blockers. **Keywords:** Tranquilizers; A-Blockers; Orbitrap mass spectrometry; Ultrasonic - Assisted extraction; Dissipation kinetics ; Adsorption ; Desorption isotherms.

395. A matrix sensitive gas chromatography method for the analysis of pymetrozine in red pepper: application to dissipation pattern and PHRL

Jin Jang, Musfiqur Rahman, Ah-Young Ko, A.M. Abd El-Aty Jong-Hyouk Park, Soon-Kil Cho and Jae-Han Shim

Food Chemistry, 146: 448-454 (2014) IF: 3.259

A gas chromatography (GC) method for the analysis of pymetrozine was developed after utilizing matrix enhancement effect of pymetrozine to nitrogen phosphorus detector (NPD). Samples were extracted with acetonitrile and purified through primary secondary amine (PSA) and C18 dispersive sorbent. Matrix-matched calibration curve prepared after spiking standard pymetrozine across the studied range of concentrations (0.003-1.0 mg/L) into blank red pepper extract was excellent with a determination coefficients (R2) = 1. Recovery studies were carried out at three concentration levels (0.04, 0.4, and 2.0 mg/kg, n = 3) and the rates were ranged between 77.2% and 109.1%, with relative standard deviations ranged from 1.3% to 16.4%. The developed method was applied to field samples to characterize the dissipation pattern, half life, and pre-harvest residue limits (PHRL). The dissipation rates of the analyte were ascribed to first-order kinetics with half-life of 2.7 and 2.5 days for recommended and double the recommended doses. From the PHRL curve, we could predict that if the residue level of pymetrozine is below the 1.23 mg/kg at 10 days or 0.71 mg/kg at 7 days before harvest, then the residues will be below the maximum residue limits (MRL = 0.2 mg/kg) established by the Korea Food and Drug Administration (KFDA).

Keywords: Pymetrozine; Gas chromatography; Matrix effect; Pre-harvest residue limit; Mass confirmation.

396. A Modified QuEChERS Method for Simultaneous Determination of Flonicamid and its Metabolites in Paprika Using Tandem Mass Spectrometry

Ah-Young Ko, A.M. Abd El-Aty, Musfiqur Rahman, Jin Jang, Sung-Woo Kim, Jeong-Heui Choi and Jae-Han Shim

Food Chemistry, 157: 413-420 (2014) IF: 3.259

A modified quick, easy, cheap, effective, rugged and safe (QuEChERS) acetate-buffered sample preparation method was developed to improve extraction recovery of flonicamid and its two metabolites (4-trifluoromethylnicotinic acid and N- (4-trifluoromethylnicotinoyl)glycine) in paprika followed by analysis using tandem mass spectrometry. Acidified acetonitrile (containing 5% acetic acid) was used as an extraction solvent and partitioning was carried out using sodium chloride. The extract was then cleaned up using C₁₈. The linearity over a concentration range of 0.005–1 µg/mL was good with a determination coefficient (R^2) > 0.9997. Recovery at three different fortification levels was 82.2–101.7% with a relative standard deviation <10 for all analytes. The limit of quantitation of 0.01 mg/kg was quite

lower than the maximum residue level set by the Korea Food and Drug Administration (2 mg/kg). The method was successfully applied to determine flonicamid and its metabolites from field incurred samples. The undulating residue pattern observed for the parent analyte together with its metabolites could explain the movement behavior of systemic pesticides into plants over time. **Keywords:** Method development; Validation; Improved sample preparation; Tandem mass spectrometry; Paprika.

397. Development of A Simple Extraction and Oxidation Procedure for the Residue Analysis of Imidacloprid and its Metabolites in Lettuce Using Gas Chromatography

Ah-Young Ko, Musfiqur Rahman, A.M. Abd El-Aty, Jin Jang, Jong-Hyouk Park, Soon-Kil Cho and Jae-Han Shim

Food Chemistry, 148: 402-409 (2014) IF: 3.259

Simple extraction and optimised oxidation procedures were developed for the determination of the total residues of imidacloprid and its metabolites (containing the 6-chloropicolyl moiety) in lettuce using a gas chromatography-micro electron capture detector (GC-µECD). Samples were extracted with acetonitrile, and the extract was then evaporated. The remaining residues were dissolved in water and oxidised with potassium permanganate to yield 6-chloronicotinic acid (6-CAN). The acid residues were further dissolved in *n*-hexane: acetone (8:2, v/v) and silvlated with MSTFA (N-methyl-N-(trimethylsilyl) then trifluoroacetamide) to 6-chloronicotinic acid trimethylsilyl ester. Calibration curves were linear over the concentration ranges $(0.025-5 \ \mu g \ mL^{-1})$ with a determination coefficient (r^2) of 0.991. The limits of detection and quantification were 0.015 and 0.05 mg kg⁻¹, respectively. Recoveries at two fortification levels ranged between 72.8% and 108.3% with relative standard deviation (RSD) lower than 8%. The method was effective, and sensitive enough to determine the total residues of imidacloprid and its metabolites in field-incurred lettuce samples. The identity of the analyte was confirmed using gas chromatography-tandem mass spectrometry (GC-MS/MS).

Keywords: Imidacloprid; Metabolites; Oxidation; 6-Chloropicolyl moiety; GC- µECD.

398. Identification of volatile organic compounds Generated from Healthy and Infected powdered Chili Using Solvent-free solid injection coupled with Gc / Ms: Application to Adulteration

Ah-Young Ko, Musfiqur Rahman, A.M. Abd El-Aty Jin Jang, Jeong-Heui Choi, M.I.R. Mamun and Jae-Han Shim

Food Chemistry, 156: 326-332 (2014) IF: 3.259

To investigate adulteration in commercial chili powder, the volatile organic compounds of healthy and infected powdered chili pepper were characterized using a solvent-free solid injector (SFSI) coupled with gas chromatography / mass spectrometry (GC/MS). Except for one compound (capillary compound for blank), 43 compounds were identified in healthy and infected chili powder. Specifically, 31, 36, and 41 compounds were identified in healthy, medium-infected, and severely infected chili powder. Among these compounds, acetic acid (13.77%), propanal (2.477%), N-methylpyrrole (1.986%), and 2-methyl-propanal (1.768%) were leading volatiles in the healthy chili powder. In contrast, infected chili powder contained 9,12-octadecadienoic

acid, ethyl ester (15.984%), acetic acid (11.249%), hexadecanoic acid, methyl ester (3.3%), N-methylpyrrole (3.221%), and 2furanmethanol (2.629%) as major compounds. Trimethylamine and isosorbide were detected in both medium and severely infected chili, but not in healthy chili. This means that these compounds could be used as biomarkers to distinguish between healthy and infected chili. The proposed technique was applied to 12 commercial chili powders , and trimethylamine and isosorbide were detected in six samples. These results suggest that a contaminated chili that was added to a healthy one could be successfully identified by a combination of the SFSI and GC/ MS. **Keywords:** Healthy; Infected; Red pepper powder; Chili; Adulteration; Solid injector.

399. Simultaneous multi-determination and transfer of Eight pesticide residues from Green tea leaves to Infusion Using Gas Chromatography

A. M. Abd El-Aty Soon-Kil Cho, A.M. Abd El-Aty ,Musfiqur Rahman, Jeong-Heui Choi and Jae-Han Shim

Food Chemistry, 165: 532-539 (2014) IF: 3.259

A method for determining eight pesticide (cyhalothrin, flufenoxuron, fenitrothion, EPN, bifenthrin, difenoconazole, triflumizole, and azoxystrobin) residues in made green tea as well as a tea infusion (under various brewing water temperatures; 60, 80, and 100 °C) using gas chromatography (GC) micro-electron capture detector (µECD) was developed and validated. The extraction method adopted the relatively commonly used approach of solid sample hydration, with the green tea hydrated before being extracted through salting out with acetonitrile followed by a cleanup procedure. The analytes were confirmed using GC-coupled to tandem mass spectrometry (GC/MS/MS) with a triple quadrupole. The linearity of the calibration curves yielded determination coefficients (R2) > 0.995. Recoveries were carried out using blank samples spiked with all analytes at two levels. The results demonstrated that all pesticides were recovered within the range of 77-116% with a relative standard deviation (RSD) 14%. The quantification limits of 0.015-0.03 mg/kg were lower than the maximum residue limits (MRLs) set by the Korea Food and Drug Administration (KFDA) for all analytes (0.05-10 mg/kg). The infusion study indicated that cyhalothrin, flufenoxuron, and bifenthrin did not infuse into the tea brew from the made tea. Increases in brewing time resulted in increased transfer of azoxystrobin, fenitrothion, and difenoconazole from the made tea to the brew; however, this was not the case with triflumizole or EPN. We conclude that transfer of pesticides appeared to be dependent on their water solubilities and drinking a cup of tea is recommended to be at a water temperature of 60°C. Keywords: Pesticides; Leaching; Green tea; Infusion; Dried leaves.

400. Determination of kresoxim-methyl and its thermolabile metabolites in pear utilizing pepper Leaf matrix as a Protectant using gas chromatography

Musfiqur Rahman, Jin Jang, Jong-Hyouk Park, A.M. Abd El-Aty, Ah-Young Ko, Jeong-Heui Choi, Angel Yang, Ki Hun Park and Jae-Han Shim

Journal of Advanced Research, 5(3): 329-335 (2014) IF: 3

Kresoxim-methyl and its two thermolabile metabolites. BF 490-2 and BF 490-9, were analyzed in pear using a pepper leaf matrix protection to maintain the metabolites inside the gas chromatography system. Samples were extracted with a mixture of ethyl acetate and *n*-hexane (1:1, v/v) and purified and/or separated using a solid phase extraction procedure. The pepper leaf matrix was added and optimized with cleaned pear extract to enhance metabolite sensitivity. Matrix matched calibration was used for kresoxim-methyl in the pear matrix and for metabolites in the pear mixed with pepper leaf matrix. Good linearity was obtained for all analytes with a coefficient of determination, $r^2 \ge 0.992$. Limits of detection (LOD) and quantification (LOQ) were 0.006 and 0.02 mg kg⁻¹ and 0.02 and 0.065 mg kg⁻¹ for kresoxim-methyl and the metabolites, respectively. Recoveries were carried out at two concentration levels and were 85.6-97.9% with a relative standard deviation <2.5%. The method was successfully applied to field incurred pear samples, and only kresoxim-methyl was detected at a concentration of 0.03 mg kg⁻¹. **Keywords:** Kresoxim-methyl; Metabolites; Pear; Matrix effect; Gas chromatography.

401. Residues and Contaminants in tea and Tea Infusions: A Review

A.M. Abd El-Aty, Jeong-Heui Choi, Musfiqur Rahman, Sung-Woo Kim, Alev Tosunc and Jae-Han Shim

Food Additives & Contaminants: Part A, 31 (11): 1794-1804 (2014) IF: 2.341

Consumers are very aware of contaminants that could pose potential health hazards. Most people drink tea as an infusion (adding hot water); however, in some countries, including India, China and Egypt, tea is drunk as a decoction (tea and water are boiled together). An infusion usually brings the soluble ingredients into solution, whereas a decoction brings all soluble and non-soluble constituents together. Therefore, a cup of tea may contain various kinds of contaminants. This review focuses on green and black tea because they are most commonly consumed. The target was to examine the transfer rate of contaminantspesticides, environmental pollutants, mycotoxins, microorganisms, toxic heavy metals, radioactive isotopes (radionuclides) and plant growth regulators- from tea to infusion/brewing, factors contributing to the transfer potential and contaminants degradation, and residues in or on the spent leaves. It is concluded that most contaminants leaching into tea infusion are not detected or are detected at a level lower than the regulatory limits. However, the traditional practice of overboiling tea leaves should be discouraged as there may be a chance for more transfer of contaminants from the tea to the brew. Keywords: Residues; Contaminants; Black tea; Infusion;

Brewing; Green tea; Consumers.

402. A Simple and Improved HPLC Method for the Analysis of Dithianon in Red Pepper with Tandem Mass Spectrometry Confirmation

Jin Jang , Musfiqur Rahman , A. M. Abd El-Aty , Ah-Young Ko , Jong-Hyouk Park , Ji Mi ChoSoon-Kil Cho ,Young Mi Seo and Jae-Han Shim

Food Analytical Methods, 7 (3): 653-659 (2014) IF: 1.802

A simple and rapid method was developed for the analysis of dithianon in red pepper using HPLC-UV. Sample extraction was

carried out using acidic acetonitrile as a solvent and sodium chloride as a salting out agent. The extract was then purified through solid phase extraction procedure. The method was validated using standard calibration. A linear range of standards were determined with excellent correlation coefficients (r^2) >0.999. Limits of detection and quantification were 0.01 and 0.03 mg/kg, respectively. Recovery was assessed by spiking blank red pepper samples at two different concentrations (0.3 and 1.5 mg/kg) with three replicates. A consistent recovery was determined (72.2 and 79.1 %) according to SANCO guidelines for repeatability, and based on the relative standard deviation which was <4 within 3 days (intra- and inter-days) of experiment. The method was applied to field samples to determine the dissipation and pre-harvest residue interval (PHRL). From the PHRL curve, it can be predicted that if the residual amount of dithianon is below 8.5 mg/kg at 10 days or below 5.51 mg/kg at 7 days before harvest, then the residue of dithianon will be below the MRL during the harvest time. The levels of residues in field samples were confirmed using LC-MS/MS in negative electron spray ionization mode.

Keywords: Dithianon; Liquid chromatography; Pre-harvest residue limit; LC-MS/MS; Field-incurred sample.

403. Analysis of 10 Systemic Pesticide Residues in Various Baby Foods Using Liquid Chromatography-Tandem Mass Spectrometry

Angel Yang, A. M. Abd El-Aty, Jong-Hyouk Park, Ayman Goudah, Musfiqur Rahman, Jung-Ah Do, Ok-Ja Choi and Jae-Han Shim

Biomedical Chromatography, 28: 735-741 (2014) IF: 1.662

Ten systemic pesticides, comprising methomyl, thiamethoxam, acetamiprid, carbofuran, fosthiazate, metalaxyl, azoxystrobin, diethofencarb, propiconazole, and difenoconazole, were detected in 13 baby foods (cereals, boiled potatoes, fruit and milk) using QuEChERS (Quick, Easy, Cheap, Effective, Rugged and Safe) for sample preparation and liquid chromatography tandem mass spectrometry for analysis. The matrix-matched calibration curves showed good linearity with determination coefficients (\mathbb{R}^2) > 0.992. The limits of detection and quantitation were 0.0015-0.003 and 0.005-0.01 mg/kg, respectively. The mean recoveries of three different concentrations ranged from 69.2 to 127.1% with relative standard deviations <20%. The method was successfully applied to 13 actual samples collected from a local market, and none of the samples were found to contain pesticide residues. This method is suitable for the identification and quantification of systemic pesticides with matrix-matched standards in various baby foods. Keywords: QUECHERS; Baby foods; Residue analysis; Systemic pesticides; Tandem mass spectrometry.

404. Analysis of Etoxazole in Red Pepper After Major Modification of QuEChERS for Gas Chromatography–Nitrogen Phosphorus Detection

Jeong-Heui Cho, Marc Lamshöft, Sebastian Zühlke, Jong-Hyouk Park, Musfiqur Rahman, A. M. Abd El-Aty, Michael Spiteller and Jae-Han Shim

Biomedical Chromatography, 28(6): 767-773 (2014) IF: 1.662

A major modification to the QuEChERS (quick, easy, cheap, effective, rugged and safe) method was developed for the analysis of etoxazole in red pepper using gas chromatography coupled with a nitrogen–phosphorus detector. Etoxazole was extracted

with acetonitrile, partitioned with magnesium sulfate and purified with a solid-phase extraction cartridge. The method showed good linearity with a determination coefficient (R2) of 0.998 for the 0.02–2.0?mg/L concentration range. The method was validated using blank red pepper spiked at 0.2 and 1.0?mg/kg, and the average recovery rate was 74.4–79.1% with relative standard deviations <5% for intra- and inter-day precision. The limits of detection and quantification were 0.007 and 0.02?mg/kg, respectively. The developed method was successfully applied to field-incurred samples, and the presence of etoxazole residues was confirmed using gas chromatography/mass spectrometry. **Keywords**: Etoxazole; Red pepper; QuEChERS; Residue analysis; Gas chromatography.

405. Determination of anxiolytic veterinary drugs from biological fertilizer blood meal using liquid chromatography high-resolution mass spectrometry

Jeong-Heui Choi, Marc Lamshöft, Sebastian Zühlke, Jong-Hyouk Park, Musfiqur Rahman, A. M. Abd El-Aty, Michael Spiteller and Jae-Han Shim

Biomedical Chromatography, 28(6): 751-759 (2014) IF: 1.662

A liquid environment-friendly agricultural material originating from animal blood, blood meal, was employed to detect anxiolytic veterinary drugs using a combination of liquid-liquid extraction (LLE) and positive electrospray ionization Orbitrap mass spectrometry. Every positive ion of the analytes was consistent with $[M + H]^{+}$, and the accurate mass analysis and mass spectral filtration with a 2-ppm mass tolerance window were applied to identify and quantitate the analytes and metabolites. The developed LLE method was validated with the lowest calibrated level, linearity (r^2) , recovery, repeatability and the within-laboratory reproducibility, which were in the ranges of 0.3-1 µg/L, 0.9963-0.9995, 48.3-117.5%, 1.1-12.6% and 2.3-15.7%, respectively. The LLE method was compared with a solidphase extraction (SPE) method; however, its recoveries were <70% for most of the analytes despite good repeatability of 1.2-7.4%. The analytes and the ascertained acepromazine, azaperone and xylazine metabolites were monitored in four actual liquid blood meal samples, and none of the targeted compounds were observed.

Keywords: Sedatives; A-, β-blockers; Ltq-Orbitrap Mass Spectrometry; Liquid–Liquid extraction; Solid-Phase Extraction; Environment-Friendly Agricultural Material.

406. Optimization of Supercritical Fluid Extraction Method for Detection of Fluquinconazole and Tetraconazole in Soil Using Gas Chromatography and Confirmation Using Gc-Ms: Application to Dissipation Kinetics

Park SI, Park JH, Ko AY, Abd El-Aty AM, Goudah A, Jang J, Rahman MM, Kim MR and Shim JH.

Biomedical Chromatography, 28: 774-781 (2014) IF: 1.662

The aim of this study was to establish an analytical method to detect fluquinconazole and tetraconazole in soil using supercritical fluid extraction (SFE) and gas chromatography (GC). The optimal extraction conditions for SFE were: temperature, 60 °C; pressure, 280 kg/cm2; extraction time, 50 min; and a 10% modifier ratio. The linearity of the calibration curves was good and yielded a determination coefficient (R2) =

0.995. The soil samples were fortified with known quantities of the analytes at three different concentrations (0.01, 0.02 and 0.1 μ g/g for fluquinconazole; 0.05, 0.1 and 0.5 μ g/g for tetraconazole), and the recoveries ranged between 83.7 and 94.1%. The intra- and inter-day relative standard deviations were 1.3–10.6 and 2.2–11.9% for fluquinconazole and tetraconazole, respectively. The limit of detection and limit of quantitation were 0.002 and 0.01 μ g/g for fluquinconazole and 0.01 and 0.05 for tetraconazole, respectively. The method was successfully applied to the analysis of soil residues collected from an onion field. The results show that a combination of SFE and GC can be used as an environmentally friendly technique to detect fungicides in soil.

Keywords: Fluquinconazole; Tetraconazole; Soil; Supercritical fluid extraction; Gas chromatography.

407. Effect of Tulathromycin on Abomasal Emptying Rate in Healthylactating Goats

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Small Ruminant Research, 121(2-3): 395-399 (2014) IF: 1.099

Tulathromycin is a long-acting semi-synthetic macrolide antibiotic that is synthesized fromerythromycin. Macrolides have pharmacodynamic properties beyond their antimicrobialeffects, including anti-inflammatory and immunomodulatory properties that are perceived to be clinically beneficial. An additional pharmacodynamic property of macrolides is a proki-netic effect, which is marked in adult cattle and calves administered erythromycin andless prominent in calves administered spiramycin, tilmicosin, and tylosin. Based on struc-tural similarities to erythromycin, the hypothesis was that parenteral administration oftulathromycin would increase abomasal emptying rate in healthy adult goats. Accordingly, five adult lactating goats (30-36 months of age) received each of the following 3 treat-ments: IM injection of 2 mL of 0.9% NaCl (control); IM injection of tulathromycin (2.5 mg/kgbody weight); IV injection of tulathromycin (2.5 mg/kg body weight). Abomasal emptyingrate was assessed by acetaminophen absorption, which was injected into the abomasumthrough a surgically placed abomasal cannula at 50 mg/kg BW, 15 min after each treat-ment. Jugular venous blood samples were obtained periodically after injection and plasmaacetaminophen concentrations determined using a colorimetric nitration assay. The max-imum observed plasma acetaminophen concentration (Actual Cmax) and time of actualCmax(Actual Tmax) were determined, and pharmacokinetic modeling was used to calcu-late model Cmaxand model Tmaxand abomasal emptying half-time (T50). Results showedthat tulathromycin (IM and IV) increased abomasal emptying rate, as indicated by a shortertime to actual Tmaxand model Tmax, and shorter T50, than control. The clinical relevance of these findings remains to be determined.

Keywords: Absorption; Testacetaminophen; Macrolide; Paracetamol; Prokinetica.

408. Pharmacokinetics of Difloxacin in healthy and E. Coli-Infected Broiler Chickens

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British Poultry Science, 55 (6): 630-636 (2014) IF: 0.782

1. The pharmacokinetics of difloxacin were investigated in healthy and E. coli-infected broiler chickens following

intravenous and oral administration of a single dose of 10 mg/kg bodyweight. 2. After intravenous injection of difloxacin, the serum concentration-time curves were best described by a twocompartment open model. The distribution and elimination halflives (t0.5a) and (t0.5el), respectively, were 0.10 \pm 0.016 h and 3.7 ± 0.08 h in healthy chickens compared with 0.05 ± 0.005 h and 6.42 ± 0.71 h in E. coli-infected birds. The volumes of distribution Vdss were 3.14 ± 0.11 and 9.25 ± 0.43 l/kg, with total body clearance (Cltot) of 0.65 \pm 0.018 and 1.14 \pm 0.1 ml/kg/h, respectively. 3. Following oral administration, difloxacin was absorbed with t0.5(ab) of 0.57 ± 0.06 and 0.77 ± 0.04 h and was eliminated with t0.5(el) of 4.7 \pm 0.34 and 3.42 \pm 0.19, respectively, in normal and infected chickens. The peak serum concentrations were 1.34 \pm 0.09 and 1.05 \pm 0.06 µg/ml and attained a Tmax of 2.27 \pm 0.07 and 2.43 \pm 0.06 h, respectively. The systemic bioavailability of difloxacin following oral administration was 86.2% in healthy chickens and 90.6% in E. coli-infected birds. The minimum inhibitory concentration (MIC) and the minimum bactericidal concentration (MBC) of difloxacin against the field strain of E. coli O78 in vitro were 0.02 µg and 0.04 µg/ml, respectively. 4. These results show that administration of a therapeutic dose of difloxacin is effective in the treatment of E. coli infection in chickens. The serum concentration of the drug was much higher than the MIC of the E. coli O78 strain in both healthy and infected chickens.

Keywords: Pharmacokinetics; Difloxacin; E Coli. Boiler Chickens.

409. Plasma Disposition and Tissue Residue of Moxifloxacin in Japanese Quails (Coturnix Japonica) Following Different Routes of Administration.

A. Goudah and S. Hasabelnaby

British Poultry Science, 55: 693-698 (2014) IF: 0.782

1. The disposition kinetics and the plasma availability of moxifloxacin were investigated in Japanese quails (Coturnix japonica) following different routes of administration at 5 mg/kg body weight.

2. Tissue residue profiles (liver, kidney, lung and muscle) and plasma were also studied after multiple intramuscular and oral administrations of 5 mg/kg body weight, once daily for 5 consecutive days.

3. Following intravenous injection, plasma concentration-time curves were best described by a twocompartment

open model.

4. After intramuscular and oral administration of moxifloxacin, the peak plasma concentrations (Cmax) were 2.14 and 1.94 μ g/ml and were obtained at 1.40 and 1.87 h (Tmax), post administration, respectively.

5. The systemic bioavailabilities following intramuscular and oral administration, respectively, of moxifloxacin were 92.48 and 87.94%.

6. Tissue concentrations following i.m. and p.o. administration were highest in liver and kidney, respectively, and decreased in the following order: plasma, lung and muscle. No moxifloxacin residues were detected in tissues and plasma after 120 h after i.m. or oral administration.

Keywords: Moxifloxacin; Quails; Pharmacokinetics; Residues; Bioavailability.
410. A Simple HPLC-UVD Method for Detection of Etofenprox in Green Tea Using Sample Hydration

Sung-Woo Kim, A. M. Abd El-Aty, Young-Jun Lee, Su Myeong Hong, Young Mi Seo and Jae-Han Shim

Food Science and Biotechnology, 23 (6): 2097-2101 (2014) IF: 0.656

Residue levels were estimated using HPLC-UV detection. Samples were hydrated and extracted using acetonitrile. Analytical linearity in the range of 0.02 to 2.0 mg/kg was excellent with a determination coefficient (R 2) of 1.0. Recovery at levels of 0.2 and 1.0 mg/kg ranged from 89.9 to 94.6% with a relative standard deviation <5%. Sufficient sensitivity was achieved. The limits of detection and quantification were 0.006 and 0.02 mg/kg, respectively. The method was successfully applied to analysis of field samples. This method was effective and can be used for routine analysis of etofenprox in tea samples at low concentrations.

Keywords: Etofenprox; Green tea; Analysis; Liquid chromatography; Field incurred sample

411. Analysis of Abamectin Residues in Green Tea using quEChERS Method and Liquid chromatography-tandem mass spectrometry

Sung-Woo Kim, A. M. Abd El-Aty, Jeong-Heui Choi, Md. Musfiqur Rahman, Su Myeong Hong, Geon-Jae Im and Jae-Han Shim

Journal of the Korean Society for Applied Biological Chemistry, 57 (6): 783-787 (2014) IF: 0.538

The present study estimated the residue levels of abamectin (B_{1a}) in green tea leaves and tea infusion. Samples were hydrated with water prior to extraction by using the quick, easy, cheap, effective, rugged, safe method and was analyzed with liquid chromatography-tandem mass spectrometry in positive ion mode. The matrix-matched calibration was linear over the concentration range of 0.01-2mg/kg with determination coefficients (R^2) >0.995. Recovery rates at two spiking levels (0.1 and 0.5 mg/kg) ranged between 80.5-99.7% with a relative standard deviation <11%. The compound was stable at 20°C for 174 days with a recovery estimate of 109.9%. Although the maximum residue limit was not established by the Ministry of Food and Drug Safety, Republic of Korea, the limit of quantitation was very low at 0.01 mg/kg. The method was successfully applied to field incurred samples and detected residue of 0.02 mg/kg in green tea samples sprayed twice (7-3 days). Abamectin was not transferred to tea infusion.

Keywords: Abamectin; Analysis; Green tea; Infusion; Sample preparation; Tandem mass spectrometry.

Dept. of Poultry Diseases

412. A Comparative Study on the Use of Real time Polymerase Chain Reaction (RT-PCR) and Standard isolation techniques for the detection of salmonellae in Broiler Chicks

Waleed A. Ibrahim, Wafaa A. Abd El-Ghany, Soad A. Nasef and M.E. Hatem

International Journal of Veterinary Science and Medicine, 2(1): 67-71 (2014) IF: 2

This study was carried out to compare between conventional cultural isolation methods and real time polymerase chain reaction (RT-PCR) technique for the detection of Salmonella in broiler chicks. About 120 livers and intestinal contents samples were collected from 1800 day-old imported and local broiler chicks. The incidence of Salmonellae among imported chicks was 11.67% compared to 21.67% among local chicks using conventional cultural isolation methods.

Salmonella newport (S. newport) showed the highest incidence rate in imported chicks, while Salmonella enteritidis and Salmonella typhimurium were frequently detected in local chicks. The RT-PCR results for detection of invA gene of Salmonella spp. were 58.33% and 66.67% positive samples in imported and local chicks, respectively. Results have confirmed that RT-PCR technique is rapid, robust, effective and reliable method for detection of Salmonella spp. in broiler chicken when compared to conventional cultural methods. However, RT-PCR should be performed parallel with conventional methods for more accurate detection results of different Salmonellae serovars

Keywords: Salmonella; Broiler chicks; Standard isolation; Real time pCR.

413. Tackling Experimental Colisepticaemia in Broiler Chickens using Phytobiotic Essential Oils and Antibiotic Alone or in Combination

El-Ghany, W. A. A.and Ismail, M.

Iranian Journal of Veterinary Research, 15. (2): 110-115 (2014) IF: 0.217

This study was designed to compare the efficacy of a phytobiotic containing a mixture of essential oils of Oreganum aetheroleum and an antibiotic containing ciprofloxacin as an active principle for the treatment of experimental Escherichia coli (E. coli) infection in broiler chickens. Two-hundred-day-old broiler chickens were divided into 5 equal groups.

The 1st group was neither challenged nor treated, but groups 2, 3, 4 and 5 were challenged with E. coli. The 2nd group was challenged with E. coli only, while the 3rd, 4th and 5th group were treated with phytobiotic, ciprofloxacin and phytobiotic and ciprofloxacin combinations, respectively.

Results confirmed significant (P<0.05) improvement of productive performance parameters, reduction in signs, mortalities, post mortem lesions and bacterial re-isolation, enhancement in cell mediated and humoral immune responses, reduction in levels of liver and kidney function tests and increase in the total protein and globulin levels in challenged chickens treated with either essential oils or ciprofloxacin compared to challenged non treated chickens. Moreover, best significant (P<0.05) results in all measured parameters were detected in the group treated with the combination in comparison with those exposed to single treatments. In conclusion, a mixture of essential oils of Oreganum aetheroleum is more effective compared with ciprofloxacin in the treatment of E. coli in broiler chickens. However, a combined treatment of both could be a superior treatment.

Keywords: Poultry; Colibacillosis; Phytobiotics; Ciprofloxacin; Treatment.

Dept. of Surgery Anesthesiology and Radiology

414. Regenerative Potential of immature permanent teeth with necrotic pulps after different regenerative Protocols

Mohamed M. Nagy, Hosam E. Tawfik, Ahmed Abdel Rahman Hashem, and Ashraf M. Abu-Seida

Journal of Endodontics, 40: 192-198 (2014) IF: 2.788

Introduction: Regenerative endodontics is a promising alternative treatment for immature teeth with necrotic pulps. The present study was performed to assess the regenerative potential of young permanent immature teeth with necrotic pulp after the following treatment

protocols: (1) a mineral trioxide aggregate (MTA) apical plug, (2) the regenerative endodontic protocol (blood clot scaffold), and (3) the regenerative endodontic protocol with a blood clot and an injectable scaffold impregnated with basic fibroblast growth factor.

Methods: Immature necrotic permanent maxillary central incisors (n = 36) of patients 9–13 years old were divided into 3 groups according to the treatment protocol: the MTA group (MTA apical plug), the REG group (regenerative endodontic protocol [blood clot]), and the FGF group (regenerative endodontic protocol [blood clot + injectable scaffold]). Follow-up was done up to 18 months. Standardized radiographs were digitally evaluated for an increase in root length and thickness, a decrease in the apical diameter, and a change in periapical bone density.

Results: After a follow-up period of 18 months, most of the cases showed radiographic evidence of periapical healing. Groups 2 and 3 showed a progressive increase in root length and width and a decrease in apical diameter.

Conclusions: The regenerative endodontic procedure allowed the continued development of roots in teeth with necrotic pulps. The use of artificial hydrogel scaffold and basic fibroblast growth factor was not essential for repair.

Keywords: Basic fibroblast growth factor; Hydrogel scaffold; Mineral trioxide aggregate; Regeneration; Revascularization.

415. Structural and Functional Renovation of Urinary Bladders After Amniotic Membrane Implantation in Dogs

Eldessouky Sheta, Sayed Elzomor, Omar Eltookhy, Naglaa A. Abd Elkader and Kawkab A. Ahmed

International Journal of Veterinary Science and Medicine, 2 (1): 57–66 (2014) IF: 2

Amniotic membrane as a biocompatible and permi-selective immune barrier was harvested from full-term pregnant bitches and cryopreserved by using Dulbecco's modified Eagle's medium (DMEM) or Minimal essential medium (MEM) 50% medium in glycerol 50% at temperature below freezing -80 °C. A defined 3 cm × 3 cm patch in the craniodorsal surface of the bladder was excised and then autografted in 15 apparent healthy mongrel dogs. In the place of excised patches of 27 apparent healthy mongrel dogs, double layers of 4 cm × 5 cm cryopreserved amniotic membranes were implanted. The results of plain and contrast radiography, ultrasonography, blood and urine analysis and histopathology confirmed that urinary bladder surgical defect that replaced by amniotic membrane implant, proved successful revival by normal structural, functional and contractile layers without any growth abnormalities throughout three months period. The successful implantation model of amniotic membrane will encourage its use on human beings for renovation in the surgical management of bladder cancers and restoring damaged or diseased urinary bladders.

Keywords: Amniotic membrane; Implantation; Urinary bladder; Autografting; Allografting; Dogs.

416. Amputation of polymelia in a Layer chicken

Ashraf Mohamed Abdel Rahman Abu-Seida

Avian Diseases, 58: 330-332 (2014) IF: 1.107

Polymelia was rarely recorded in birds; therefore, this report records the clinical and radiographic findings in a case of polymelia in a 7-mo-old layer Fayoumi chicken and the outcome of its amputation. The hen had two pericloacal extra limbs located caudal to the normal ones in an inverted position. The extra limbs were immovable and loosely attached to the underlying tissues. The supernumerary limbs had normal skin with ill-developed feathers. The extra limbs were fused proximally and crossed distally. Plain radiographic examination showed unequal numbers of bones and digits in both extra limbs. The right extra limb had a femur and tarsometatarsus while the left extra one had femur, tibiotarsus, and tarsometatarsus bones. The extra limbs appeared smaller than the normal ones and had neither muscles nor tendons. Amputation of the extra limbs under local infiltration analgesia was easy, safe, and curative.

Keywords: Amputation; Polymelia; Layer; Chicken.

417. Recurrent Rumen Tympany Caused by Trichobezoars in Buffaloes (bubalus bubalis): a Series Report

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The Thai J. of Veterinary Medicine, 44: 147-151 (2014) IF: 0.123

This series report was carried out for 3 years on 15 buffaloes suffering from recurrent rumen tympany associated with trichobezoars. Full case history, thorough clinical examination, ferroscopy, and vaginal and trans-rectal examination were carried out in all cases. The affected buffaloes were treated with rumenotomy. All cases were lactating buffaloes and had heavy hair coat. The age of affected buffaloes ranged between 5-10 years. Clinical signs included anorexia, depression, sharp decrease in milk yield, intermittent respiratory distress, recurrent rumen tympany and dehydration. Hematological and biochemical analyses revealed leukocytosis, hypokalemia and hypochloremia. Rumenotomy was curative in all cases and revealed trichobezoars in either rumen (n=14) or rumen and reticulum (n=1). Trichobezoars were black and their number ranged between 2-6 balls/animal. The diameter and weight of the removed hairballs ranged between 10-40 cm and 100-370 g, respectively. All operated animals recovered and gained their normal milk production one day post operative. In conclusion, trichobezoars should be considered in the differential diagnosis of recurrent rumen tympany in buffaloes.

Keywords: Buffaloes; Rumen; Trichobezoar; Tympany.

418. Two-Dimensional Cardiothoracic Ratio for Evaluation of Cardiac Size in German Shepherd Dogs

Faisal A. Torad and Elham A. Hassan

Journal of Veterinary Cardiology, 16: 237-244 (2014) IF: 0

Objectives: To evaluate cardiac size in normal German shepherd dogs(GSD) using the two-dimensional cardiothoracic ratio (CTR) and to use this measure for diagnosing GSD with altered cardiac size.

Animals: One hundred clinically normal GSD as well as 46 GSD with altered cardiac size (microcardia or cardiomegaly).

Methods: The CTR was computed as the percentage area of the cardiac silhouette relative to the area of the dog's thorax. Measurements were performed using a digital software program on lateral and ventro-dorsal radiographs at the points of peak inspiration and expiration. Receiver operating characteristic (ROC) curve analysis was used to determine the diagnostic accuracy of the CTR for diagnosing cardiomegaly or microcardia. Results: The mean (SD) CTR on lateral radiographs of normal dogs was 27.60% 1.10% and 30.13% 1.42% at the points of peak inspiration and expiration, respectively. For ventro-dorsal radiographs, mean CTR was 30.45% 1.39% at peak inspiration and 33.34% 1.46% at peak expiration. The cutoff value of the CTR for diagnosing microcardia on lateral radiographs was 22.98(inspiration) and 25.06%(expiration), compared to 25.03% (inspiration) and 23.97% (expiration) on ventrodorsal radiographs. Cutoff values for diagnosing cardiomegaly were (inspiration)and 33.44% (expiration) on lateral 30.28% radiographs and 36.80% (inspiration) and 37.99% (expiration) on ventro-dorsal radiographs.

Conclusions: CTR may provide a clinically useful tool for evaluating cardiac size in dogs.

Keywords: Radiography; Heart; Cardiomegaly; Microcardia; Canine.

Dept. of Toxicology and Forensic Medicine

419. Royal Jelly Attenuates Azathioprine Induced Toxicity in Rats

Walaa M.S. Ahmed, A.A. Khalaf, Walaa A. Moselhy and Ghada M. Safwat

Environmental Toxicology and Pharmacology, Vol. :37: 431-437 (2014) IF: 1.862

In the present study, we investigated the potential protective effects of royal jelly against azathioprine-induced toxicity in rat. Intraperitoneal administration of azathioprine (50 mg/kg B.W.) induced a significant decrease in RBCs count, Hb concentration, PCV%, WBCs count, differential count and platelet count, hepatic antioxidant enzymes (reduced glutathione and glutathione s-transferase) and increase of serum transaminases (alanine aminotransferase and aspartate aminotransferase enzymes) activities, alkaline phosphatase and malondialdehyde formation. Azathioprine induced hepatotoxicity was reflected by marked pathological changes in the liver. Oral administration of royal jelly (200 mg/kg B.W.) was efficient in counteracting azathioprine toxicity whereas it altered the anemic condition, leucopenia and thrombocytopenia induced by azathioprine. Furthermore, royal jelly exerted significant protection against liver damage induced by azathioprine through reduction of the elevated activities of serum hepatic enzymes. Moreover, royal jelly blocked azathioprine-induced lipid peroxidation through decreasing the malondialdehyde formation. In conclusion, royal jelly possesses a capability to attenuate azathioprineinduced toxicity.

Keywords: Azathioprine; Hepatotoxicity; Royal jelly; Oxidative stress.

Dept. of Veterinary Hygeine and Manament 420. Co-Circulation of Avian Influenza Viruses in Commercial Farms, Backyards and Live Market Birds in Egypt

H.A. Kaoud, H.A. Hussein, A.R. El-Dahshan, H.S. Kaliefa and M.A. Rohaim

International Journal of Veterinary Science and Medicine, 2: 114-121 (2014) IF: 2

Cloacal and tracheal swab-samples were collected from commercial farms, backyards and live market birds (LBM) to identify the potential existence and genetic drifts of avian influenza subtypes (AI) H5 and H9 that are circulating among bird species in Egypt. The results revealed that, one sample out of 50 samples of chicken commercial farms was positive for the isolation of subtype H9N2 [KC699549, Influenza A virus: A/chicken/Egypt/VRLCU-R33/ 2012(H9N2)]; from Sharkeia province. Two samples out of 20 samples of Backyard ducks were positive for the isolation of 2 subtypes H5N1; [KC699547, Influenza A virus: A/duck/Egypt/VRLCU-R11/2012(H5N1), "backyard duck"] from El-Fayoum province and the other from [A/duck/Egypt/VRLCU-R28/2012(H5N1), Giza province "backyard duck"]. Analysis of haemagglutinin (HA) and the phylogenetic tree of the isolated viruses (H5N1) were fallen within the clade 2.2.1.1. Antigenic cartography for the isolated Egyptian H9N2 AI virus can intuitively be of group-B. The number of mutations in the amino acid sites (33, 47, 65, 90, 92, 143, and 150) and the Long Branch observed in the phylogenetic tree may suggest a rather long evolution period. The sequenced H9N2 Egyptian virus in the study was closely related to the previous Egyptian isolates.

Keywords: Avian influenza; H5N1; H9N2; Backyards; Live bird markets; Genetic drifts.

Dept. of Virology

421. Molecular detection and characterization of reticuloendotheliosis virus in broiler breeder chickens with visceral tumors in Egypt

M.M. El-Sebelgy, B.M. Ahmed, N.S. Ata and H.A. Hussein

International Journal of Veterinary Science and Medicine, 2: 21-26 (2014) IF: 2

In the present study, reticuloendotheliosis (REV) provirus DNA was detected by PCR using LTR (long terminal repeat)-specific primers to amplify 200 bp fragment of the REV viral genome in tumor samples collected from broiler breeder flocks with 30-40 weeks of age demonstrating neoplastic lesions. Histopathology examination of the liver tumor tissue showed reticular cells infiltration and proliferation replacing hepatic parenchyma. Sequence analysis of the amplified PCR products revealed genetic similarity to REV-LTR in MDV (Marek Disease Virus) JM-Hi3. SPF (specific-pathogen free) chicks (1-day old) were experimentally inoculated with liver homogenate of the REVpositive sample and the chicks were housed for 8 weeks. Visceral organs and sera were collected from inoculated chicks at 3 and 6 weeks post inoculation. REV was detected by PCR in the organs of the inoculated chicks at 6 weeks post inoculation.REV antibodies were detected in sera of the inoculated chicks at 3 (3 out of 10 samples) and 6 (one of 2 samples) weeks post inoculation. Histopathology examination of liver and spleen

collected from inoculated chicks showed the characteristic reticular cells infiltration in both organs. The study reports the existence of REV associated with visceral tumors in broiler breeder flocks in Egypt. The sequence of the detected virus was submitted in NCBI GenBank with access number KC018475.

Keywords: Reticuloendotheliosis virus; Chickens; Egypt; Reticular cell infiltration; REV-LTR.

422. Molecular Genotyping of the Infectious Bursal Disease Virus (IBDV) Isolated from Broiler Flocks in Egypt

Sara Abdel Mawgod, Abdel Satar Arafa and Hussein A. Hussein

International Journal of Veterinary Science and Medicine, 2: 46-52 (2014) IF: 2

Re-emergence of highly virulent forms of IBDV has been the cause of significant economic losses. In present study, 52 bursa samples were assayed using reverse transcriptase-polymerase chain reaction (RT-PCR) for IBDV targeting VP2 gene. Out of the tested samples 20 were positives. Eleven IBDV-positive samples were selected for further isolation and characterization. Histopathological analysis of the bursa revealed necrosis, presence of depleted follicles and some infiltration of heterophils, characteristic to previously reported in IBDV. The virus was isolated by inoculating bursa suspension into embryonated specific pathogen-free (SPF) eggs. Chorioallantoic membrane(s) (CAMs) were collected and tested by AGPT confirming the presence of IBDV. The virus was detected by RT-PCR and sequence analysis of PCR products of 11 selected samples was carried out. Nine samples were characterized as very virulent (vvIBDV) and 2 samples were classical IBDV similar to vaccine strains. The genotyping of Egyptian vvIBDV indicate progressive evolution of IBDV in Egypt and they were closely related to previous isolated strains from Egypt

Keywords: Infectious bursal disease virus (IBDV); VP2 gene hypervariable region; Molecular characterization of IBDV.

423. Insect Cell Surface Expression of Hemagglutinin (Ha) of Egyptian H5n1 Avian Influenza Virus Under Transcriptional Control of Whispovirus Immediate Early-1 Promoter.

Gadalla MR, El-Deeb AH, Emara MM and Hussein HA

J Microbiol Biotechnol. ., 24(12): 1719-1727 (2014) IF: 1.32

In the present study, whispovirus immediate early 1 promoter (ie-1) was used to initiate surface expression of the hemagglutinin (HA) protein of Egyptian H5N1 avian influenza virus (AIV) by using the baculovirus expression vector system. The HA gene and whispovirus ie-1 promoter sequence were synthesized as a fused expression cassette (ie1-HA) and successfully cloned into the pFastBac-1 transfer vector. The recombinant vector was transformed into DH10Bac competent cells, and the recombinant bacmid was generated via site-specific transposition. The recombinant bacmid was used for transfection of Spodoptera frugiperda (Sf-9) insect cells to construct the recombinant baculovirus and to induce expression of the HA protein of H5N1 AIV. The recombinant glycoprotein expressed in Sf-9 cells showed hemadsorption activity. Hemagglutination activity was also detected in both extra- and intracellular recombinant HAs. Both the HA and hemadsorption activities were inhibited by reference polyclonal anti-H5 sera. Significant expression of the

recombinant protein was observed on the surface of infected insect cells by using immunofluorescence. SDS-PAGE analysis of the expressed protein revealed the presence of a visually distinguishable band of ~63 kDa in size, which was absent in the non-infected cell control. Western blot analysis confirmed that the distinct 63 kDa band corresponded to the recombinant HA glycoprotein of H5N1 AIV. This study reports the successful expression of the HA protein of H5N1 AIV. The expressed protein was displayed on the plasma membrane of infected insect cells under the control of whispovirus ie-1 promoter by using the baculovirus expression vector system.

Keywords: Avian influenza; Hemagglutinin; Baculovirus; Whispovirus immediate early-1; Promoter.

Dept. of Zoonoses

424. Occurrence of extended spectrum β-lactamaseproducing enterobacteriaceae among pet dogs and Cats: an Emerging Public Health Threat Outside Health Care Facilities

Khaled A. Abdel-Moein and Ahmed Samir

American Journal of Infection Control, 42: 796-798 (2014) IF: 2.326

We aimed to investigate the potential role of pet dogs and cats in the epidemiology of extended spectrum β -lactamase-producing Enterobacteriaceae. Twenty bacterial isolates were recovered from rectal swabs obtained from 110 dogs and cats. The occurrence of extended spectrum belactamase-producing Enterobacteriaceae in pets spotlights the emergence of a significant public health threat.

Keywords: $ES\betaL$; Pets; Hazard.

National Institute of Laser Enhanced Sciences

Engineering Applications of Lasers (EAL)

425. Dispersion Characteristics of Asymmetric Channel Plasmon Polariton Waveguide

Hussain, F.F.K., Heikal, A.M., Hameed, M.F.O., El-Azab, J., Abdelaziz, W.S. and Obayya, S.S.A.

IEEE Journal of Quantum Electronics, 50: 474-482 (2014) IF: 2.113

A novel asymmetric channel plasmon polaritons (CPPs) is proposed and analyzed. In this work, the dispersion characteristics of asymmetric two and three-trenched CPPs structures are studied in detail. The suggested asymmetric structures have advantages in terms of propagation length and figure of merit over the symmetric CPP waveguides. In addition, a comparative study of various CPP metals including gold and silver is also presented. It is found that the propagation length and figure of merit of the silver-based structures are better than those of gold-based structures. Moreover, the effect of bending on the asymmetric CPP waveguides is investigated. The simulation results are obtained by full-vectorial finite difference method (FVFDM) with irregular meshing capabilities and perfectly matched layer (PML) boundary conditions.

Keywords: Plasmonic; Asymmetric channel waveguide; Finite difference method.

Dept. of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA)

426. Structure-directing and High-efficiency Photocatalytic Hydrogen Production by Ag Clusters

Yasser A. Attia, David Buceta, Carmen Blanco-Varela, Mona B. Mohamed, Giampaolo Barone and M. Arturo López-Quintela

Journal of American Chemical Society, 136: 1182-1185 (2014) IF: 11.444

H₂ production by water splitting is hindered mainly by the lack of low-cost and efficient photocatalysts. Here we show that subnanometric silver clusters can catalyze the anisotropic growth of gold nanostructures by preferential adsorption at certain crystal planes of Au seeds, with the result that the final nanostructure can be tuned via the cluster/seed ratio. Such semiconducting Ag clusters are extremely stable and retain their electronic structure even after adsorption at the tips of Au nanorods, enabling various photocatalytic experiments, such as oxygen evolution from basic solutions. In the absence of electron scavengers, UV irradiation generates photoelectrons, which are stored within the nanorods, increasing their Au Fermi level up to the redox pinning limit at 0 V (RHE), where hydrogen evolution occurs with an estimated high efficiency of 10%. This illustrates the considerable potential of very small zerovalent, nonmetallic clusters as novel atomiclevel photocatalysts.

Keywords: Ag Clusters; Photocatalytic; H2 Production; Growth Mechanisms; Uv-Irradiation.

427. Photodynamic Ability of Silver Nanoparticles in Inducing Cytotoxic Effects in Breast and Lung Cancer Cell Lines

Ivan Mfouo-Tynga, Ahmed El-Hussein, Mohamed Abdel-Harith and Heidi Abrahamse

International Journal of Nanomedicine, 9: 3771-3780 (2014) IF: 4.195

Cancer is still a major health problem, and the use of nanomedicine for cancer treatment has become a new focus area for research. The multifunctional effects of silver nanoparticles (AgNPs) have made these nanostructures potent compounds for biomedical applications. AgNPs were characterized bv transmission electron microscopy for their size, shape, and cellular localization; ultraviolet-visible spectroscopy for absorption properties; and their zeta potential for determining their surface charge. Cytotoxicity effects on both MCF-7 breast and A549 lung cancer cell lines were assessed using inverted light microscopy, Trypan blue exclusion assay, adenosine triphosphate luminescence, and lactate dehydrogenase membrane integrity assays. The cell death mechanism was determined by Annexin V and propidium iodide flow cytometric analysis. The results showed that AgNPs used during the present study were found to be of spherical shape, with -0.0261 mV surface net charges, with an average size of 27 nm, and they were positively identified in both cell lines. Irradiated AgNPs promoted decreased viability proliferation, increased cytotoxicity, and induced and programmed cell death through apoptosis. AgNPs exhibited photodynamic activity in both cancer cell lines, but MCF-7 cells showed enhanced cytotoxic effects over the A549 cells. The novelty related to the study presented is twofold: while the maximum absorbance of most AgNPs lies in the wavelength region of 370-450 nm, the AgNPs produced and used in this research have a peak absorption at 631 nm that is of great significance, since this wavelength lies within the biological therapeutic window. This work clearly demonstrates that our AgNPs activated at 635 nm contribute significantly to the cytotoxicity induced in cancer cells, but more so in breast cancer cells (MCF-7) than in lung cancer cells (A549).

Keywords: Nanotechnology; Silver nanoparticles; Cell damage; Breast cancer; Lung cancer.

428. Evaluation of Immunoglobulins in Bovine Colostrum Using Laser Induced Fluorescence

Z. Abdel-Salam, Sh. Abdel Ghany and M.A. Harith

Talanta, 129: 15-19 (2014) IF: 3.511

The objective of the present study was to exploit laser induced fluorescence (LIF) as a spectrochemical analytical technique for evaluation of immunoglobulin (IgG) in bovine colostrum. Colostrum samples were collected from different American Holstein cows at different times after calving. Four samples were gathered from each cow; the first three samples were obtained from the first three milkings (colostrum) and the fourth sample (milk) was obtained a week after calving. It has been demonstrated that LIF can be used as a simple, fast, sensitive and less costly spectrochemical analytical technique for qualitative estimation of IgG in colostrum. LIF results have been confirmed via the quantitative evaluation of IgG in the same samples adopting the single radial immunodiffusion conventional technique and a very good agreement has been obtained. Through LIF it was possible to evaluate bovine colostrum after different milking times and to differentiate qualitatively between colostrum from different animals which may reflect their general health status. A fluorescence linear calibration curve for IgG concentrations from 0 up to 120 g L^{-1} has been obtained. In addition, it is feasible to adopt this technique for in situ measurements, i.e. in dairy cattle farms as a simple and fast method for evaluation of IgG in bovine colostrum instead of using lengthy and complicated conventional techniques in laboratories. **Keywords:** Lif; Immunoglobulins; Bvine colostrums.

429. Sodium Channels as Gateable Non-Photonic Sensors for Membrane-Delimited Reactive Species

Navin K. Ojha, Ehsan Nematian-Ardestani, Sophie Neugebauer, Benjamin Borowski, Ahmed El-Hussein, Toshinori Hoshi, Enrico Leipold and Stefan H. Heinemann

Biochimica Et Biophysica Acta (Bba) - Biomembranes, 1838: 1412-1419 (2014) IF: 3.431

Reactive oxygen species (ROS) and reactive oxygen intermediates (ROI) play crucial roles in physiological processes. While excessive ROS damages cells, small fluctuations in ROS levels represent physiological signals important for vital functions. Despite the physiological importance of ROS, many fundamental questions remain unanswered, such as which types of ROS occur in cells, how they distribute inside cells, and how long they remain in an active form. The current study presents a ratiometric sensor of intracellular ROS levels based on genetically engineered voltage-gated sodium channels (roNaV). roNaV can be used for detecting oxidative modification that occurs near the plasma membrane with a sensitivity similar to existing fluorescence-based ROS sensors. Moreover, roNaV has several advantages over traditional sensors because it does not need excitation light for sensing, and thus, can be used to detect phototoxic cellular modifications. In addition, the ROS dynamic range of roNaV is easily manipulated in real time by means of the endogenous channel inactivation mechanism. Measurements on ROS liberated from intracellular Lucifer Yellow and genetically encoded KillerRed have revealed an assessment of ROS lifetime in individual mammalian cells. Flashlight-induced ROS concentration decayed with two major time constants of about 10 and 1000 ms.

Keywords: Ros sensor; Oxidation; Sodium channel; Channel inactivation; Channel gating.

430. Effect of the wavelength on laser induced Breakdown Spectrometric Analysis of Archaeological Bone

M.A. Kasem, J.J. Gonzalez, R.E. Russo and M.A. Harith

Spectrochimica Acta B, 101: 26-31 (2014) IF: 3.15

The analytical exploitation of the laser induced plasma suffers from its transient behavior due to some nonlinear effects. These phenomena are matrix-dependent and limit the use of LIBS to mostly semi-quantitative precision. The plasma parameters have to be kept as constant as possible during LIBS measurements. Studying archaeological bone samples using LIBS technique could be more difficult since these samples are less tough in their texture than many other solid samples. Thus, the ablation process could change the sample morphological features rapidly resulting in poor reproducibility and statistics. Furthermore archaeological bones are subjected to diagenesis effects due to burial environment and postmortem effects. In the present work comparative analytical study of UV (266 nm) and IR (1064 nm) LIBS for archaeological bone samples belonging to four ancient Egyptian dynasties representing the middle kingdom (1980-1630 BC), 2nd intermediate period (1630-1539/23 BC), Roman-Greek period (30 BC-A.D. 395) and the late period (664-332 BC). Measurements have been performed under identical experimental conditions except the laser wavelength to examine its effects. Elemental fluctuations within the same dynasty were studied for reliable information about each dynasty. The analytical results demonstrated that UV-LIBS gives a more realistic picture for bone elemental composition within the same dynasty, and bone ash could be more suitable as a reference material for bone calibration in the case of UV-LIBS Keywords: Libs; Wavelength; Effect archaeology; Bone.

431. Correlation Between Fe–V–C Alloys Surface Hardness and Plasma Temperature Via Libs Technique

S. Messaoud Aberkane, A. Bendib, K. Yahiaoui, S. Boudjemai, S. Abdelli-Messaci, T. Kerdja, S.E. Amara and M.A. Harith

Applied Surface Science, 301: 225-229 (2014) IF: 2.538

Surface hardness is a very important characteristic of metals. Its monitoring plays a key role in industry. In the present paper, using laser induced breakdown spectroscopy (LIBS), Fe-V18%-C1% alloys with different heat treatments have been used for making the correlation between surface hardness and laserinduced plasma temperatures. All investigated samples were characterized by the same ferrite phase with different Vickers surface hardnesses. The differences in hardness values were attributed to the crystallite size changes. A linear relationship has been obtained between the Vickers surface hardness and the laser induced plasma temperature. For comparison the relation between surface hardness and the ratio of the vanadium ionic to atomic spectral lines intensities (VII/VI) provided good linear results too. However, adopting the proposed approach of using the plasma temperature, instead, is more reliable in view of the difficulties that could be encountered in choosing the proper ionic and atomic spectral lines. To validate this approach we have investigated the shock wave speed induced by laser interaction with the used samples. It was found that harder is the material faster is the shock wave. The determination of the surface hardness via measuring Te shows the feasibility of using LIBS as an easy and reliable method for in situ industrial application for production control

Keywords: Libs Fe–V–C metallic alloys; Surface vickers hardness; Plasma temperature.

432. Photoluminescence and Photostability Investigations of Biocompatible Semiconductor Nanocrystals Coated with Glutathione Using Low Laser Power

Salwa Ali Ibrahim, Wafaa Ahmed and Tareq Youssef

Journal of Nanoparticle Research, 16: 2445-2458 (2014) IF: 2.278

Great efforts are currently devoted to fabricate high-quality quantum dots (QDs) in aqueous solutions for biomedical applications. Two biocompatible systems consisting of core (CdSe) and core/shell (CdSe/ZnS) QDs surface modified with glutathione (GSH), named CdSe-GSH and CdSe/ZnS-GSH, respectively, were built. Upon photoirradiation using low laser power, both systems in HEPES buffer (pH 7.2) showed significant photoluminescence (PL) enhancements. CdSe/ZnS-GSH showed much less blue shifts in excitonic absorption and emission peaks without photobleaching compared with CdSe-GSH ODs system. X-ray diffraction showed that there is no change in the crystalline phase structure of the CdSe/ZnS-GSH QDs system after 1 h irradiation. Cell viability assessment, in the dark, demonstrated that no cytotoxic effects were shown upon incubation CdSe/ZnS-GSH QDs with normal human skin cell line for periods up to 72 h and at concentrations up to 100 nM. The present study demonstrates that CdSe/ZnS-GSH QDs system exhibits a high photostability with a relatively high PL efficiency in aqueous medium following low intensity photoexcitation, without dark cytotoxicity, making this system attractive for several important biomedical applications.

Keywords: Nanotechnology; Quantum dots; Glutathione; Laser, Photoluminescence; Photostability; Cytotoxicity.

433. Investigation of the Threshold Intensity Versus Gas Pressure in the breakdown of helium by 248 nm Laser Radiation

Yosr E. E.-D. Gamal and Galila Abdellatif

Applied Physics B, 117/1: 103-111 (2014) IF: 1.634

An investigation of the unexpectedly strong dependence of the threshold intensity on the gas pressure in the experimental study on the breakdown of He by short laser wavelength (Turcu et al., in Opt Commun, 134:66-68, 1997) is presented. A modified electron cascade model is applied (Evans and Gamal, in J Phys D Appl Phys, 13:1447-1458, 1980). Computations revealed reasonable agreement between the calculated thresholds and the measured ones. Moreover, the calculated electron energy distribution function and its parameters proved that multiphoton ionization of ground and excited atoms is the main source for the seed electrons, which contributes to the breakdown of helium. The effect of diffusion losses over pressures\1,000 Torr elucidated the origin of the strong dependence of the threshold intensity on the gas pressure. Collisional ionization dominates only at high pressures. No evidence for recombination losses is observed for pressures up to 3,000 Torr.

Keywords: Multiphoton ionization.

434. Numerical Investigation of the Threshold Intensity Dependence on Gas Pressure in the Breakdown of Xenon by different laser wavelengths

Yosr E. E. -D. Gamal, Mohamed Abd El Hameid Mahmoud and Nagia D. A. Dawood

The European Physical Journal D, 68:206: 1-9 (2014) IF: 1.398

We report a theoretical analysis of the measurements that carried out to study the breakdown of xenon gas over a wide pressure range induced by laser source operating at different wavelengths. The study provided an investigation of the effect of laser wavelength as well as gas pressure on the physical processes associated with this phenomenon. To this aim a modified electron cascade model is applied. The model based on the numerical solution of the time dependent Boltzmann equation for the electron energy distribution function (EEDF) simultaneously with a set of rate equations which describe the rate of change of the formed excited states population. Comparison between the calculated and measured threshold intensities for the experimentally tested laser wavelengths and gas pressure range is obtained. Furthermore computations of the EEDF and its parameters showed the actual correlation between the gain and loss processes which determine the threshold breakdown intensity of xenon and the two experimentally tested parameters; laser wavelength and gas pressure.

Keywords: Breakdown of Xenon Gas.

435. Study of Threshold Intensity Dependence on the Physical Processes in the Breakdown of N2 By Co2 Laser Radiation

Yosr E E-D Gamal, Laila H Jaabour and Kholoud A Hamam

Physica Scripta, 2014: 1-5 (2014) IF: 1.296

A modified numerical electron cascade model of Gamal and Abdel Moneim (1987 J. Phys. D: Appl. Phys. 20 757), previously developed by Evans and Gamal (1980 J. Phys. D: Appl. Phys. 3 1447), is used to calculate the breakdown threshold irradiance as a function of gas pressure when irradiating molecular nitrogen with a CO2 laser source under two different experimental conditions, namely, the presence and the absence of initial electron density in the focal volume before laser ignition (Camacho J J et al 2007 J. Phys. B: At. Mol. Opt. Phys. 40 4573). The model solves numerically the time-dependent Boltzmann equation for the electron energy distribution function (EEDF) and a set of rate equations that describe the rate of change of the population of excited states. The model is incorporated into a computer program to obtain the threshold irradiance, which is then compared with the measured ones given by Camacho et al. The comparison showed a reasonable agreement for the two experimental conditions. In addition, the study of the EEDF and its parameters revealed different influences on the physical processes in determining the threshold irradiance for nitrogen breakdown in the two selected gas pressure regimes.

Keywords: Laser-induced plasma; Tea co2 laser; N2 breakdown; Collisional processes; Electron energy distribution function; Ionization rate.

436. Studying the Effect of Zeolite inclusion in Aluminum alloy on Measurement of Its Surface Hardness Using Laser-Induced Breakdown Spectroscopy technique

Osama Mostafa Khalil, Ilya Mingareev, Tobias Bonhoff, Ashraf F. El-Sherif, Martin C. Richardson and Mohamed Abdel Harith

Optical Engineering, 53: 14106-14106 (2014) IF: 0.958

Laser-induced breakdown spectroscopy (LIBS) has been used to study the surface hardness of special aluminum alloys containing zeolite. The aluminum alloy has acquired pronounced changes in its metallurgical properties due to the zeolite inclusion. The surface hardness of the samples under investigation is determined by measuring the spectral intensity ratios of the ionic to atomic spectral lines in the LIBS spectra of samples having different surface hardness values that have been conventionally measured before for comparison. The presence of aluminum silicate mineral in the studied alloys enabled material volume to expand under compression. This feature gave new results in the measurement of hardness via LIBS. It has been proven that the trend of the alloy density change complies with the increase of ionic to atomic spectral line intensity ratio.

Keywords: Aluminum alloys; Zeolite; Laser-induced breakdown spectroscopy; Surface hardness.

Dept. of Laser Sciences and Interactions (LSI)

437. Energy-Transfer Efficiency in Eu-Doped Zno thin films: the Effects of oxidative Annealing on the Dynamics and the Intermediate Defect States

Samah M. Ahmed, Paul Szymanski, Lotfia M. El-Nadi, and Mostafa A. El-Sayed

American Chemical Society: Applied Materials & Interfaces, 6: 1765-1772 (2014) IF: 5.9

We have studied ultrafast dynamics in thin films of Eu-doped zinc oxide (ZnO), prepared by radio-frequency sputtering onto sapphire substrates. Following UV excitation of ZnO, a red emission is observed. Postdeposition annealing in an oxygen atmosphere improves the crystallinity and emission intensity of the films, which are highly sensitive to the dopant concentration. Transient-absorption spectroscopy shows that the excited semiconductor host transfers energy to rare-earth ions on a time scale of only a few picoseconds. The dynamics as a function of the probe wavelength change dramatically after annealing, with annealed films showing the fastest dynamics at much lower wavelengths. Our results show that annealing greatly affects the defect energy levels of the films and the dynamics of the trapped carriers. Unannealed films show dynamics consistent with energy transfer from O vacancies to the dopant, while energy transfer in annealed samples involves acceptor-type defects such as Zn vacancies as intermediates.

Keywords: Dynamics; Emission; Energy transfer; Europium; Transient absorption; Zinc oxide.

438. Enhanced Stimulated Emission in Zno thin films Using Microdisk Top-Down Structuring

K. Nomenyo, A.-S. Gadallah, S. Kostcheev and D. J. Rogers and G. Lérondel

Applied Physics Letters, 104: (2014) IF: 3.515

Microdisks were fabricated in zinc oxide (ZnO) thin films using a top-down approach combining electron beam lithography and reactive ion etching.

These microdisk structured thin films exhibit a stimulated surface emission between 3 and 7 times higher than that from a reference film depending on the excitation power density. Emission peak narrowing, reduction in lasing threshold and blue-shifting of the emission wavelength were observed along with enhancement in the emitted intensity. Results indicate that this enhancement is due to an increase in the internal quantum efficiency combined with an amplification of the stimulated emission. An analysis in terms of waveguiding is presented in order to explain these effects. These results demonstrate that very significant gains in emission can be obtained through conventional microstructuration without the need for more onerous top-down nanostructuration techniques.

Keywords: Zno thin films; Stimulated emission; Pulsed laser deposition.

439. Fabrication and Characterization of Solution Processed Vertically Aligned Zno Microrods

Abdelsattar Mohamed Abdelsattar Gadallah

Applied Surface Science, 311: 172–176 (2014) IF: 2.538

Simple and effective cost high quality vertically aligned densely packed ZnO microrods have been prepared using solution processed two-step deposition process, specifically sol-gel spin coating combined with chemical bath deposition. X-ray diffraction pattern and scanning electron microscope show that there has been preferential crystal orientation along c-axis and the growth of the microrods has occurred normal to the glass substrate and the facets of the these microrods are hexagons. Photoluminescence measurements showed an emission band in the UV region and another weak band in the visible region with the emission intensity of UV band grows superlinearly with the excitation intensity. The film shows an electrical resistivity of 136 O cm as evaluated from four-point probe method. The fabricated film has been used as UV detector through Au/SiO2/ZnO structure on glass substrate as the structure shows higher current under illumination compared to without illumination.

Keywords: Zno microdiscs; Chemical bath deposition; Metal insulator semiconductor detector.

440. Fluorescence Enhancement Monitoring of Pyrromethene Laser Dyes by Metallic Ag Nanoparticles

Sakr ME, Abou Kana MT and Abdel Fattah G.

Luminescence, 29 (7): 938-944 (2014) IF: 1.675

Fluorescence enhancement monitoring of pyrromethene laser dyes using their complexation with Ag nanoparticles (Ag NPs) was studied. The size of the prepared Ag NPs was determined by transmission electron spectroscopy and UV/Vis absorption spectroscopy. Mie theory was also used to confirm the size of NPs theoretically. The effect of different nanoparticle concentrations on the optical properties of 1×10 -4MPMdyes shows that 40% of Ag NPs concentration (40%C Ag NPs) in complex is the optimum concentration. Also, the effects of different concentrations of PM dyes in a complex was measured. Emission enhancement factorswere calculated for all samples. Fluorescence enhancement efficiencies depended on the input pumping energy of a Nd-YAG laser (wavelength 532nm and 8 ns pulse duration) were reported and showed the lowest energy (28 and 32mJ) in the case of PM567 and PM597, respectively.

Keywords: Ag nanoparticles; Optical properties; Pyrromethene laser dye; Surface plasmon resonance; Fluorescence enhancement.

441. Photoluminescence and Upconversion on Ag/Cdte Quantum Dots

AE Ragab, AS Gadallah, MB Mohamed and IM Azzouz

Optics & Laser Technology, 46: 8-12 (2014) IF: 1.649

Different sizes of aqueous CdTe QDs have been prepared by microwave via controlling the temperature and time of irradiation. To study the plasmonic effect on CdTe QDs, Silver NPs were prepared by using chemical reduction method. Structure characterization of the nanocrystals (Ag NPs and CdTe QDs) was determined by transmission electron microscopy "TEM". For optical characterization, the absorption and photolumincence (PL) spectra were measured. It has been found that there are two opposite behaviors (quenching and enhancement) in the fluorescence spectra based on the spectral coupling strength between Ag NPs and CdTe QDs. When there is strong overlapping, PL enhancement of CdTe QDs has been observed. On the other hand, when the overlapping is weak, the PL quenching was predominant at all Ag NPS concentrations. Input-output PL intensity dependence was also studied. Upconversion photoluminescence with low excitation intensity was observed in our CdTe QDs with a standard spectro-fluorometer at excitation wavelength of 800 nm. Thermally assisted surface state mechanism has been proposed to be responsible for the upconverion process.

Keywords: CdTe QDs; Upconversion in cdte; Plasmon enhance emission.

442. Ag Surface Plasmon Enhances Luminescence of CdTe QDs

AE Ragab, AS Gadallah, TDa Ros, MB Mohamed and IM Azzouz

Optics Communications, 314: 86-89 (2014) IF: 1.524

This paper studies the effect of plasmon Ag NPs on the spectral properties of semiconductor CdTe QDs. The size and shape of the prepared nano-materials have been characterized using transmission electron microscope. CdTe luminescence enhancement has been reported to be 11 fold. Red shift and decrease in the emission threshold have been reported. F?rster resonance energy transfer (FRET) between CdTe QDs at nanoscale proximity to Ag NPs was calculated. The effect of Ag NPs on fluorescence lifetime of CdTe QDs was also measured. These nanocomposites are promising candidates for LED and laser devices.

Keywords: Plasmonics; Luminescence; CdTe QDs, Silver NPs.

Dept. of Medical Applications of Lasers (MAL)

443. Subcellular toxicity of gold nanoparticles Irradiated with 532Nm Pulsed Laser

Saleh Hazem M., Abdelhamid Shimaa, Abdelhamid Mahmoud, Youssef Tareq, Gohar Adel K.. Photomedicine and Laser Surgery

Photomedicine And Laser Surgery, 32: 360-367 (2014) IF: 1.58

Objective: Prior to plasmonic photothermal therapy, involving heating of gold nanoparticles (GNPs) by laser, we explored some subcellular events that may threaten the viability of rat kidney cells (RKCs) incubated with GNPs irradiated with pulsed laser. Background data: We have previously shown a decrease in the viability of RKCs, on incubation with GNPs irradiated with pulsed laser. This decrease in viability was concomitant to a reduction in GNP diameter size, and reflected the occurrence of subcellular toxic events. Methods: After incubation of RKCs with GNPs irradiated with 532 nm pulsed laser (50 mJ/pulse energy, 5 ns duration, and 10 Hz repetition rate for 1, 3, and 5 min), we studied the cell membrane integrity, the induction of apoptosis, and the occurrence of oxidative stress. We reported the changes induced on RKCs by GNPs irradiated with pulsed laser and those induced on the same cells and after the same time intervals by unirradiated GNPs; both were related to a negative control. Results: The decrease in viability of RKCs on incubation with GNPs irradiated with pulsed laser was shown to be mostly

secondary to a cell membrane disruption, most probably related to the reduction in GNP diameter sizes. The oxidative stress exerted by smaller GNPs on RKCs, as well as the induction of apoptosis, seem to be tolerated by the RKCs.

Conclusions: Irradiation of GNPs with pulsed laser, to elicit a plasmonic photothermal effect, reduces the GNPs' diameter. The smaller-sized GNPs may lead

to lethal cell membrane disruption in healthy RKCs.

Keywords: Toxicity; Subcellular; Gold; Nanoparticles; Invivo.



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Publicatin in Journals

Faculty of Engineering

Dept. of Aeronautics and Aerospace Engineering 444. Domain Decomposition Technique for Solution of Acoustic Wave Scattering

Ahmed A. Hemeda and Basman Elhadidi

Aiaa Journal, 52: 408-418 (2014) IF: 1.165

A novel domain decomposition technique is applied that couples nonlinear and linear Euler solvers to model acoustic scattering of waves in the vicinity of high-velocity gradients and large amplitude waves to reduce numerical resources. The linear solver is applied in domains in which the wave amplitude is small and linearization is applicable, whereas the nonlinear solver is used in the vicinity of high wave amplitudes and stagnation points. Three numerical models are compared in this paper: 1) a linear Euler, 2) a nonlinear Euler, and 3) the domain decomposition technique. For all three models, the finite difference dispersion relation preserving scheme is applied to all spatial derivatives and the low-dissipation-dispersion Runge-Kutta scheme is applied for the temporal integration. A perfectly matched layer is applied at the edges of the computational domain to absorb outgoing waves and minimize reflections. To include complex bodies and geometries, an overset mesh is applied. After model validation, the technique is applied to the acoustic scattering of a pulse and a periodic source from a circular cylinder in flow. The results conclude that a thin zone around a complex body is sufficient to accurately account for nonlinear effects in the vicinity of stagnation points and that the domain decomposition technique accurately predicts both the unsteady field and integral unsteady forces about bluff bodies compared with full nonlinear simulations. The results suggest that there is a 40% reduction in computational time using the domain decomposition technique compared with full nonlinear calculations.

Keywords: Domain decomposition; Linear; Non linear acoustics.

Dept. of Chemical Engineering

445. Guide RNA Functional Modules Direct Cas9 Activity and Orthogonality

Alexandra E. Briner, Paul D. Donohoue, Ahmed A. Gomaa, Kurt Selle, Euan M. Slorach, Christopher H. Nye and Rachel E. Haurwitz

Molecular Cell, 56: 333-339 (2014) IF: 14.464

The RNA-guided Cas9 endonuclease specifically targets and cleaves DNA in a sequence-dependent manner and has been widely used for programmable genome editing. Cas9 activity is dependent on interactions with guide RNAs, and evolutionarily divergent Cas9 nucleases have been shown to work orthogonally. However, the molecular basis of selective Cas9:guide-RNA interactions is poorly understood. Here, we identify and characterize six conserved modules within native crRNA: tracrRNA duplexes and single guide RNAs (sgRNAs) that direct Cas9 endonuclease activity. We show the bulge and nexus are necessary for DNA cleavage and demonstrate that the nexus and hairpins are instrumental in defining orthogonality between systems. In contrast, the crRNA:tracrRNA complementary region can be modified or partially removed. Collectively, our results establish guide RNA features that drive DNA targeting by Cas9 and open new design and engineering avenues for CRISPR technologies.

Keywords: Crispr-cas; Cas9; Type Ii crispr-cas; Crispr guide rnas; Genome editting.

446. A Crispr Design for Next-Generation Antimicrobials

Chase L Beise, Ahmed A Gomaa and Rodolphe Barrangou

Genome Biology, 15 (16): (2014) IF: 10.5

Two recent publications have demonstrated how delivering CRISPR nucleases provides a promising solution to the growing problem of bacterial antibiotic resistance.

Keywords: Crispr-cas; Novel antimicrobials; Precise antibiotics; Antibiotic resistance.

447. Power Generation Using Waste Heat Recovery by Organic Rankine Cycle in Oil and Gas Sector in Egypt: A Case Study

Mohammed A. Khatita, Tamer S. Ahmed, Fatma. H. Ashour and Ibrahim M. Ismail

Energy, 64: 462-472 (2014) IF: 4.159

ORC (organic Rankine cycle) is a promising technology for conversion of heat into useful work. This study utilizes the ORC in an existing gas treatment plant in Egypt, as a case study, to recover the waste heat and convert it into electricity. A simulation model using Aspen HYSYS v7.1 has been built up for the case study. Two different cycles, the basic and the regenerative cycles, have been studied. Various working fluids have been investigated using different parameters such as net work produced, efficiency, volumetric flow rate and the irreversibility. To be more confident about the best working fluid, a capital cost and profitability analysis has been performed for the most two promising working fluids. The simulation has shown that regenerative cycle using either benzene or cyclohexane is the most promising choice. However, the capital cost and profitability study has shown that benzene is more suitable as working fluid than cyclohexane. Finally, an optimization study on the parameters indicates that the turbo expander inlet pressure of 4.1 MPa and temperature of 290 °C-300 °C are the most appropriate working conditions.

Keywords: Organic rankine cycle; Waste heat recovery; Working fluids; Power generation.

448. Predictive Modeling and Optimization for an Industrial Penex Isomerization Unit: A Case Study

Mohanad M. Said, Tamer S. Ahmed and Tarek M. Moustafa

Energy and Fuels, 28 (12): 7726-7741 (2014) IF: 2.733

This work presents a model for the UOP hydrogen once through (HOT) Penex process using the Aspen HYSYS petroleum refining module. The model relies on industrial data of process streams that are taken routinely during normal operating hours. Acquired data sets have been tested and screened to ensure data validity for building the model and avoiding erroneous results. A reaction network with 20 reactions and 19 components has been used for the reactors model. The reactors model has been validated using 4 months of industrial plant data. In addition, rigorous tray-to-tray simulation of the isomerate stabilizer has been utilized to match the performance of the plant stabilizer. The model validated has been used for studying the effects of each process variable on plant performance. In addition, the model has

been used in optimizing the operating conditions of the process. This optimization showed a potential for notable fuel savings in the process.

Keywords: Penex; Isomerization; Optimization; Predictive modeling.

449. The Use of Cullet in the Manufacture of Vitrified Clay Pipes

Y.N. El-Shimy, Sh.K. Amin, S.A. EL-Sherbiny and M.F. Abadir

Construction and Building Material, 73: 452-45 (2014) IF: 2.265

Vitrified clay sewer pipes are used for sanitary drainage for their corrosion and abrasion resistance. They are manufactured by mixing clay, grog and feldspar as fluxing agent. Ground glass waste (cullet) was added to clay and grog mixture to substitute expensive feldspar. Samples with different percent glass addition were fired for 3 h at 1050, 1150 and 1250C. Porosity, bulk density, water absorption and modulus of rupture values were recorded for each sample. The micro-structural morphology of some samples was observed under Scanning Electron Microscope (SEM). The micrographs showed the presence of liquid phase and reduced porosity on cullet addition. It was found that 10% glass addition to samples yielded samples that meet standard requirements when fired at 1050C for 3 h corresponding to a reduction of about 200C in firing temperature. This in turns leads to savings in fuel and reduction in CO_2 emissions.

Keywords: Vitrified clay pipes cullet; Porosity; MOR.

450. A Note on Effective Phase Stability Calculations Using A Gradient-Based Cuckoo Search Algorithm

Seif-Eddeen K. Fateen and Adrián Bonilla-Petriciolet

Fluid Phase Equilibria, 375: 360-366 (2014) IF: 2.241

Stochastic global optimization methods have been successfully used to perform phase stability calculations. However, these methods may show some drawbacks in challenging phase stability problems. In this study, we made use of the gradient of the tangent plane distance function to improve the performance of Cuckoo Search (CS) algorithm, which is a promising natureinspired stochastic global optimization method, for the calculation of phase stability analysis.

The new modified algorithm, Gradient-Based Cuckoo Search (GBCS), was evaluated for solving several challenging phase stability problems. Its performance at different numerical effort levels and the effect of stopping criterion have been analyzed. GBCS was found to perform better than the original CS algorithm. In comparison with other stochastic optimization methods using an improvement objective function-based stopping criterion, GBCS proved to be the most reliable without any reduction in efficiency.

Keywords: Cuckoo search; Stochastic global optimization; Nature-inspired methods; Phase stability analysis.

451. Phase Stability Analysis and Phase Equilibrium Calculations in Reactive and Nonreactive Systems Using Charged System Search Algorithms

Ahmed O. Elnabawy, Seif-Eddeen K. Fateen and Adrian Bonilla-Petriciolet

Industrial and Engineering Chemistry Research, 53: 2382-2395 (2014) IF: 2.235

Stochastic global optimization algorithms have shown promise in providing reliable and efficient solutions for phase stability and phase equilibrium problems in reactive and nonreactive systems. A special class of stochastic methods is Swarm Intelligence, in which search agents are allowed to interact with each other and with their environment and benefit from their peers in their collective pursuit for the global minimum, resulting in an intelligent behavior unknown to the individual agents. Of special interest are swarm intelligence methods with less tunable algorithm parameters, which allow for easy and userfriendly implementation.

In particular, this study introduces the Charged System Search, a novel swarm intelligence method, as a global optimization tool to the Chemical Engineering literature via implementing it, for the first time, in solving phase stability and equilibrium problems. Two Charged System Search variants have been employed, namely, the Magnetic Charged System Search and the hybrid version with Particle Swarm Optimization.

This hybrid method is coupled with chaotic maps to overcome the local optimum entrapment and to aid its exploration capability. Results indicate that these two variants generally outperformed the Charged System Search, especially the hybrid chaotic algorithm. Results of this study were also compared to those reported for other swarm intelligence methods applied in phase equilibrium calculations. In summary, this study introduces novel swarm intelligence methods for performing phase stability and equilibrium calculations in both reactive and nonreactive systems. **Keywords**: Phase stability; Phase equilibrium; Swarm intelligence.

452. Unconstrained Gibbs free Energy Minimization for Phase Equilibrium Calculations in Nonreactive Systems, Using an Improved Cuckoo Search Algorithm

Seif-Eddeen K. Fateen and Adrián Bonilla-Petriciolet

Industrial and Engineering Chemistry Research, 53: 10826-10834 (2014) IF: 2.235

This study introduces a strategy to improve the effectiveness of Cuckoo Search (CS) algorithm for the unconstrained Gibbs free energy minimization in phase equilibrium calculations of nonreactive systems. Specifically, the gradient information of the unconstrained Gibbs free energy function, which is readily available, is used to enhance the balance between diversification and intensification stages of the CS algorithm for phase-split calculations in multicomponent systems.

The results showed that it is feasible to improve the numerical performance of the CS algorithm using the gradient information of the Gibbs free energy function; this improved method provides better results for phase equilibrium calculations in nonreactive systems with insignificant additional computational effort. This gradient-based Cuckoo Search (GBCS) algorithm outperformed the conventional CS algorithm, in terms of its reliability and efficiency in solving phase equilibrium problems, especially for multicomponent systems.

Keywords: Phase stability; Phase equilibrium; Swarm intelligence.

453. Kinetics of Isothermal Oxidation of WC–20Co Hot-Pressed Compacts in Air

S. T. Aly, Sh. K. Amin, S. A. El Sherbiny and M. F. Abadir

Journal of Thermal Analysis and Calorimetry, 118/3: 1543-1549 (2014) IF: 2.206

The present paper presents an isothermal analysis of the oxidation behavior in which hot-pressed compacts rather than powders are used over the temperature range 700-850°C. This was done to better simulate the extent of oxidation occurring on use. WC-Co powders were first subjected to non-isothermal kinetic analysis to follow the oxidation mechanism. In the isothermal runs, a thermobalance was used to follow up the mass with time at different constant temperatures. The diameter of compacts was measured as function of time at these temperatures, and a simple model was proposed to relate the diameters to extent of oxidation. Two reactions were found to take place that are controlled by chemical reaction at interface: Oxidation of cobalt and oxidation of WC with the formation of WO₃ and CoWO⁴. The activation energies for the two steps of oxidation were calculated and found to equal157 kJ mol⁻¹ and 205 kJ mol⁻¹, respectively. These values are in reasonable agreement with published data for WC-Co powders.

Keywords: Tungsten carbide; 20 % Cobalt; Oxidation; Isothermal; Compacts.

454. On the Effectiveness of Nature-inspired Metaheuristic Algorithms for Performing Phase Equilibrium Thermodynamic Calculations

Seif-Eddeen K. Fateen and Adrián Bonilla-Petriciolet

The Scientific World Journal, (2014) IF: 1.219

The search for reliable and efficient global optimization algorithms for solving phase stability and phase equilibrium problems in applied thermodynamics is an ongoing area of research. In this study, we evaluated and compared the reliability and efficiency of eight selected nature-inspired metaheuristic algorithms for solving difficult phase stability and phase equilibrium problems. These algorithms are the cuckoo search (CS), intelligent firefly (IFA), bat (BA), artificial bee colony (ABC), MAKHA, a hybrid between monkey algorithm and krill herd algorithm, covariance matrix adaptation evolution strategy (CMAES), magnetic charged system search (MCSS), and bare bones particle swarm optimization (BBPSO). The results clearly showed that CS is the most reliable of all methods as it successfully solved all thermodynamic problems tested in this study. CS proved to be a promising nature-inspired optimization method to perform applied thermodynamic calculations for process design.

Keywords: Phase stability; Phase equilibrium; Swarm intelligence.

455. Gradient-Based Cuckoo Search for Global Optimization

Seif-Eddeen K. Fateen and Adrián Bonilla-Petriciolet

Mathematical Problems in Engineering, (2014) IF: 1.082

One of the major advantages of stochastic global optimization methods is the lack of the need of the gradient of the objective function. However, in some cases, this gradient is readily available and can be used to improve the numerical performance of stochastic optimization methods specially the quality and precision of global optimal solution. In this study, we proposed a gradient-based modification to the cuckoo search algorithm, which is a nature-inspired swarm-based stochastic global optimization method. We introduced the gradient-based cuckoo search (GBCS) and evaluated its performance vis-`a-vis the original algorithm in solving twenty-four benchmark functions. The use of GBCS improved reliability and effectiveness of the algorithm in all but four of the tested benchmark problems. GBCS proved to be a strong candidate for solving difficult optimization problems, for which the gradient of the objective function is readily available. **Keywords**: Global optimization; Nature-inspired; Methods.

456. Characterization of Rheological and Molecular Properties of Whey Protein Thickeners

Ahmed S. Eissa, Dania M. Mohamed, Kawther S. Uoness, Mohammed M. Azab, Noha S. Abed and Duha Abu El-Aish

International Journal of Food Properties, 17: 570-586 (2014) IF: 0.91

The production of whey protein thickeners by drying protein gels to produce instant thickening powders has been previously investigated. The use of native whey proteins as a food thickener, however, has not been studied earlier. In this work, we characterized thermally treated whey protein solutions with improved thickening properties. Viscosity contour maps were constructed to outline the viscosity values at different protein and salt concentrations.

Huggins-Kraemer constants revealed that at low ionic strengths, polymerized protein molecules behave as flexible coils, while at higher ionic strengths, molecules appear to be aggregated in a spherical like shape.

Keywords: Thickener; Whey protein isolate; Viscosity; Gel point; Intrinsic viscosity; SDS-PAGE; Huggins and Kraemer.

Dept. of Computer Engineering

457. Area-Efficient Digit Serial–Serial Two''s Complement Multiplier

Essam Elsayed and Hatem El-Boghdadi

Journal of Circuits, Systems and Computers, 23: 1450099-1450099 (2014) IF: 0.33

Although parallel multipliers are optimal for speed, they occupy considerable chip area. For applications with lengthy operands as cryptography, the required area grows further. On the other hand, digit multipliers reduce chip area at the expense of the number of cycles required to complete the multiplication. In such multipliers, one-or-both inputs are received serially one digit per cycle. Digit multiplier designs are °exible with respect to the digit width enabling designers to select the most suitable compromise between area and cycle count for the application under consideration. This paper proposes a new digit serial-serial multiplier that is more areae±cient compared to other functionally-similar multipliers. First, we propose a new unsigned digit serial-serial multiplier that is area efficient. The multiplier has the ability to handle unequal-width operands. That is, one operand can be of dynamic width (unlimited digit count) and the other operand is of fixed width. Moreover, with a small modification, the multiplier can operate on two's complement operands. Then, the design is extended to support bit-level

pipelining: the critical path of the multiplier pipeline stage is independent of the operand width and the digit width. Simulation results show that the proposed multiplier reduces the area over similar multipliers by up to 28% and reduces power by up to 31%.

Keywords: Multipliers; Digit serial–serial; Area e±Cient; Dynamic; Width operand; Bit-Level pipelining.

Dept. of Electric Power and Machines

458. A Differential Sequence Component Protection Scheme for Microgrids with Inverter-Based Distributed Generators

Casagrande, E. Woon, W.L., Zeineldin, H.H. and Svetinovic, D.

IEEE Transactions on Smart Grid, 5: 29-37 (2014) IF: 4.334

The protection of a microgrid containing inverterbased distributed generators (IBDGs) presents several problems if traditional techniques which rely on the current (fuses and overcurrent relays) are used. A possible solution to these problems is the use of a new type of the relay which takes advantage of the enhanced processing techniques and communication infrastructure, both of which are recently becoming available for power networks application. This paper proposes a new communication-based protection scheme for isolated microgrids where a data mining approach is used to identify the relay settings and parameters. A feature selection technique is implemented to help identify the most relevant electrical features required for the fault detection and to establish the best communication strategy to use between relays.

The proposed approach is tested using a MATLAB simulation of a facility scale isolated microgrid embedded with IBDGs. The results show that a differential protection scheme that relies on symmetrical components is the most effective strategy for protecting microgrids with IBDGs.

Keywords: Microgrid; Inverter; Fault analysis; Feature selection; Data mining.

459. A Universal Islanding Detection Technique for Distributed Generation Using Pattern Recognition

Faqhruldin, O.N. El-Saadany, E.F. and Zeineldin, H.H.

IEEE Transactions on Smart Grid, 5: 1985-1992 (2014) IF: 4.334

Anti-islanding protection methods, proposed in the literature, are distributed generation (DG) type dependent or in other words work efficiently for a specific DG type (synchronous or inverter based). In this paper, we investigate the possibility of developing an efficient universal islanding detection method that can be applied to both inverter and synchronous-based DG.

The proposed method relies on extracting a group of features, from measured data simulated for both types of DGs, from which the best features are selected for islanding detection. A random forest (RF) classification technique is used to detect islanding and non-islanding situations with an objective of minimizing the nondetection zone as well as avoiding nuisance DG tripping during non-islanding conditions. Islanding and non-islanding cases were generated for the IEEE 34-bus system and used to train and test the proposed technique. In the paper, -fold cross-validation was used in order to test the accuracy of the proposed algorithm for detecting islanding. The results show that the proposed methodology has zero non-detection zone, high accuracy, and fast response when applied to both types of DGs independently of the size of the island. Among the various classification approaches investigated, the RF technique proved to be the most efficient approach for the proposed islanding detection method.

Keywords: Decision tree; Inverter-based distributed generator; Islanding detection; Naïve bayes; Neural network; Random forest (Rf); Support vector machine (Svm); Synchronous-based distributed generator.

460. Maximum Power Tracking in WECS (Wind Energy Conversion Systems) Via Numerical and Stochastic Approaches

M. Elnaggar, H.A. Abdel Fattah and A.L. Elshafei

Energy, 74: 651-661 (2014) IF: 4.159

This paper presents a complete design of a two-level control system to capture maximum power in wind energy conversion systems. The upper level of the proposed control system adopts a modified line search optimization algorithm to determine a setpoint for the wind turbine speed. The calculated speed setpoint corresponds to the maximum power point at given operating conditions. The speed setpoint is fed to a generalized predictive controller at the lower level of the control system. A different formulation, that treats the aerodynamic torque as a disturbance, is postulated to derive the control law. The objective is to accurately track the setpoint while keeping the control action free from unacceptably fast or frequent variations. Simulation results based on a realistic model of a 1.5 MW wind turbine confirm the superiority of the propose control scheme to the conventional ones.

Keywords: Wind energy; Maximum power point yracking; Line search optimization; Predictive control.

461. Planning Active Distribution Networks Considering Multi-Dg Configurations

Al Kaabi S.S., Zeineldin, H.H. and Khadkikar, V.

Ieee Transactions on Power Systems, 29: 785-793 (2014) IF: 3.53

Planning distribution systems without considering the operation status of multiple distributed generation (DG) units could result in constraining the network, lowering the utilization of its assets and minimizing the total DG capacity that can be accommodated. In this paper, the impact of multiple DG configurations on the potential of active network management (ANM) schemes is firstly investigated. Secondly, the paper proposes a multi-configuration multi-period optimal power flow (OPF)-based technique (MMOPF) for assessing the maximum DG capacity under ANM schemes considering 1) variability of demand and generation profiles (multi-period scenarios), and 2) different operational status of DG units (multi-configurations). The results show that the availability of DGs at certain locations could critically impact the amount of DG capacity at other locations. If DGs are properly allocated and sized at certain locations up to the optimal limits, even with a "fit-and-forget" approach, the total connected DG capacity can be maximized, with minimum utilization of ANM schemes. However, exceeding these optimal limits may lead to minimizing the total DG penetration in the long term, impacting the system reliability due to the operational status of multiple DG units, and consequently, imposing more investments on ANM schemes to increase the amount of connected DG capacity.

Keywords: Active network management; Distributed generation; Optimal power flow; Power Distribution planning.

462. Risk Assessment of Desert Pollution on Composite High Voltage Insulators

Mohammed El-Shahat and Hussein Anis

Journal of Advanced Research, 5: 569-576 (2014) IF: 3

Transmission lines located in the desert are subjected to desert climate, one of whose features is sandstorms. With long accumulation of sand and with the advent of moisture from rain, ambient humidity and dew, a conductive layer forms and the subsequent leakage current may lead to surface discharge, which may shorten the insulator life or lead to flashover thus interrupting the power supply. Strategically erected power lines in the Egyptian Sinai desert are typically subject to such a risk, where sandstorms are known to be common especially in the spring. In view of the very high cost of insulator cleaning operation, composite (silicon rubber) insulators are nominated to replace ceramic insulators on transmission lines in Sinai. This paper examines the flow of leakage current on sand-polluted composite insulators, which in turn enables a risk assessment of insulator failure. The study uses realistic data compiled and reported in an earlier research project about Sinai, which primarily included grain sizes of polluting sand as well as their salinity content. The paper also uses as a case study an ABBdesigned composite insulator. A three-dimensional finite element technique is used to simulate the insulator and seek the potential and electric field distribution as well as the resulting leakage current flow on its polluted surface. A novel method is used to derive the probabilistic features of the insulator's leakage current, which in turn enables a risk assessment of insulator failure. This study is expected to help in critically assessing - and thus justifying - the use of this type of insulators in Sinai and similar critical areas.

Keywords: Composite insulators; Desert pollution; Power lines insulator leakage current.

463. Load Parameter Waveforms Improvement of A Standalone Wind-Based Energy Storage System and Takagi– Sugeno Fuzzy Logic Algorithm

Ahmed M. Kassem and S.A. Zaid

IET Renewable Power Generation, 8: 775-785 (2014) IF: 2.28

The application of the Takagi-Sugeno (TS) fuzzy approach for voltage and frequency control of an isolated wind turbine (WT) system with variable-speed permanent magnet synchronous generator (PMSG) and a system for storing energy during wind speed and load variations is investigated. Energy storage systems are needed for power balance and power quality in autonomous wind energy systems. Initially, the holistic model of the entire system is achieved, including the PMSG, the uncontrolled rectifier, the buck converter and the storage system. The power absorbed by the connected loads can be effectively delivered and supplied by the proposed WT and energy storage systems, subject to TS-fuzzy control. The main purpose is to supply 230-V/50-Hz through a three-phase inverter. The performance of the proposed system is compared with the system without storage system. Moreover, the proposed system performance with the TS-fuzzy control is compared with the conventional proportional-integralderivative (PID) controller. The simulation results show that the

proposed system with the TS-fuzzy controller has good prediction of the electrical parameter waveforms compared with the case of absence of the storage system and the conventional PID controller.

Keywords: Fuzzy logic; Takagi; Sugeno; Standalone wind; Energy.

464. A Dynamic master/slave reactive power-Management scheme for smart Grids with distributed generation

El Moursi M.S., Zeineldin H.H., Kirtley J.L. and Alobeidli, K.

IEEE Transactions on Power Delivery, 29: 1157-1167 (2014) IF: 1.657

This paper introduces a novel coordinated voltage-control (CVC) scheme for distributed generations (DGs) that relies on adaptively changing the roles (master or slave) of the devices [inverter-based DG, diesel generator, and online tap changer (OLTC)] within the smart grid, depending on system conditions. In addition, the proposed scheme imposes different control response and bandwidth on the devices to coordinate the reactive power among distributed generations (DGs) and OLTC steps.

The main objective of the proposed method is twofold: 1) to maximize the reactive power reserve of DGs and, hence, facilitate reaction during contingency situations and 2) to provide voltage regulation during normal operating conditions. The simulated distribution system includes inverter-based DGs (photovoltaic and wind turbine), diesel generator, and OLTC and the potential of the CVC scheme is evaluated and analyzed in view of improving voltage profile, maximizing the reactive power reserve, enhancing fault ride through and improving the transient stability margin. The control algorithm is examined under steady state, load excursion, and three-phase-to-ground fault conditions. The results demonstrate the ability of the proposed CVC scheme to satisfy the targeted objectives with significant improvement in the maximum critical clearing time. The proposed scheme is independent of real-time measurements and is widely adaptive to the dynamics of power systems, thus making it quite suitable for utility implementation.

Keywords: Coordinated voltage control; Distributed generation; Online tap changer; Reactive power; management; Voltage control; Transient stability margin.

465. Laboratory Simulation of Naturally Polluted Highvoltage Transmission Line Insulators

Gouda, O.E. and El Dein, A.Z.

IET Generation, Transmission and Distribution, 8, (2): 321-327 (2014) IF: 1.307

This study represents experimental techniques for testing the high-voltage polluted insulators under conditions simulating the natural environment. International Electrotechnical Commission (IEC) fog method is used for testing the insulators of type p-f-E4.5, but it does not simulate the desert pollution environments. For that reason, other two suggested techniques are added to explain the performance of the polluted insulators under dew and under simultaneous fog and dew, respectively.

The leakage current bursts are recorded in each test type. Also the effect of the wetting method of the insulators under testing on the flashover voltage is investigated. The results of the three types of tests are compared with each other, under different surface layer conductivities. It is concluded that the analysis of leakage current bursts can be used to monitor the severity of pollution on the electrical network.

Keywords: Polluted insulators; Leakage current; Conductivity; Flashover voltage.

466. Hybrid Micro-Grid Operation Characterisation Based on Stability and Adherence to Grid Codes

Syed M.H., Zeineldin H.H. and El Moursi M.S.

IET Generation, Transmission and Distribution, 8: 563-572 (2014) IF: 1.307

Hybrid micro-grids are one of the most viable solutions to the present day problem of integration of renewable energy into existing power systems. With various options available for implementation of hybrid micro-grids, the stability of such systems has to be ensured before they can be implemented. Further, conventional micro-grid operational studies do not take into consideration the constraints set by the grid codes.

This study analyses three types of interconnections, possible for implementation of hybrid micro-grids, taking into consideration the transient stability and grid code constraints. The hybrid microgrid considered comprises a synchronous diesel generator and an inverter-based distributed generation. The results and analysis are conducted by time-domain simulations using MATLAB/Simulink software. The results provide the actual operational limits of possible micro-grid interconnections under the set of given constraints.

Keywords: Micro-Grids.

467. Experimental Techniques to Simulate Naturally Polluted High Voltage Transmission Line Insulators

Gouda, O.E. and El Dein, A.Z.

IEEE Transactions on Dielectrics and Electrical Insulation, 21, (5): 2199-2055 (2014) IF: 1.238

This paper represents experimental techniques to simulate the naturally polluted high voltage insulators, under conditions that simulate the desert environment. Usually, the IEC fog method is used for testing the polluted insulators of high voltage transmission lines, but it does not simulate them under the desert pollution environments. For that reason, in this paper two other suggested techniques are added to the IEC one. The first one is to explain the performance of the polluted insulators under the dew and the second one is to explain their performance under the simultaneous fog and dew. The results of these three tests are compared with each other under different surface polluted layer conductivities.

The aim of this paper is to record the leakage current and the warning voltage under different simulation weather conditions that to monitor the insulator strings before the occurrence of the flashover that of course is useful for the efficient maintenance. Also, in this paper, an attempt to simulate the flashover of the insulator in the field condition (actual outdoor condition) is presented. Where, the surface of the insulator is polluted naturally over a relatively long period, while it is permanently under high voltage.

Keywords: Flashover; Fog; Dew; Insulators; Leakage current; Pollution.

Dept. of Electronics and Communication Engineering

468. Boost Converter with Dynamic Input Impedance Matching for Energy Harvesting with Multi-Array Thermoelectric Generators

Carreon-Bautista, S., Eladawy A., Mohieldin, A.N. and Sanchez-Sinencio E.

IEEE Transactions on Industrial Electronics, 61(10): 5345-5353 (2014) IF: 6.5

This paper presents a built-in input matching technique capable of handling a wide variation of multi-array thermoelectric generator (TEG) impedances ranging two decades, from 10 s to 1000 s of ohms. Maximum power point tracking (MPPT) control for a boost converter (BC) is introduced. The analytical expressions derived offer insight on the manner in which MPPT interacts with a BC to achieve best performance.

The BC operates in a discontinuous conduction mode under pulse frequency modulation to minimize power consumption and maximize efficiency for light loads. Losses are minimized by implementing a pseudo-zero current switching control via the PMOS switch on/off time, and the output voltage is set using a global clocked comparator. A prototype was fabricated in 0.5 μ m CMOS where efficiency measurements showed a maximum value of 61.15% for an RTEG = 33.33 O, and quiescent power consumption was 1 μ W.

Keywords: Boost converter (BC); Dc-Dc converter; Energy harvesting; Thermoelectric generator (TEG); Maximum power point tracking (MPPT); Power management; Pulse frequency modulation (PFM); Thermal harvesting; Thermoelectric.

469. Efficient Multi-Feature Pso for fast Gray Level Object-Tracking

Ahmed M. Abdel Tawab, M.B. Abdelhalim and S.E.-D. Habib

Applied Soft Computing, 14: 317-337 (2014) IF: 2.679

Robust and real-time moving object tracking is a tricky job in computer vision systems. The development of an efficient yet robust object tracker faces several obstacles, namely: dynamic appearance of deformable or articulated targets, dynamic backgrounds, variation in image intensity, and camera (ego) motion. In this paper, a novel tracking algorithm based on particle swarm optimization (PSO) method is proposed. PSO is a population-based stochastic optimization algorithm modeled after the simulation of the social behavior of bird flocks and animal hordes. In this algorithm, a multi-feature model is proposed for object detection to enhance the tracking accuracy and efficiency. The object's model is based on the gray level intensity.

This model combines the effects of different object cases including zooming, scaling, rotating, etc. into a single cost function. The proposed algorithm is independent of object type and shape and can be used for many object tracking applications. Over 30 video sequences and having over 20,000 frames are used to test the developed PSO-based object tracking algorithm and compare it to classical object tracking algorithms. Our results demonstrate the efficiency and robustness of our developed algorithm relative to all other tested algorithms.

Keywords: Object tracking; Particle swarm optimization; Multiple-feature model; Swarm intelligence.

470. Novel Closed-Form Exact Expressions and Asymptotic Analysis for the Symbol Error Rate of Single- and Multiple-Branch MRC and EGC Receivers Over α – μ Mu Fading

Moataz M. H. El Ayadi and Mahmoud H. Ismail

IEEE Transactions on Vehicular Technology, 63: 4277-4291 (2014) IF: 2.642

In this paper, we present a novel framework for deriving closedform exact expressions for the symbol error rate (SER) of a-µ fading channels, assuming single-branch and equal gain combining and maximal-ratio combining receivers and considering most of the commonly used modulation schemes. The proposed framework is based on Mellin transform, and the SER expressions are given in terms of the univariate and multivariate Fox H-functions, which have recently been extensively used in the literature. The proposed framework has the following advantages over previous frameworks: First, it is straightforward and general; therefore, it allows the derivation of the exact SER expressions for cases untreated before in the literature. Second, it enables direct derivation for the asymptotic expressions of the SER for high average signal-to-noise ratios (SNRs). To validate the obtained expressions, we compare the results of the special case of the Nakagami-m fading channel with those reported in the literature. Furthermore, Monte Carlo simulations are conducted, and their results are shown to perfectly match the analytic expressions. Finally, the obtained asymptotic expressions for all the studied modulation schemes and diversity receivers are shown to match the behavior of their corresponding exact values for a wide range of SNR values that are of practical interest. Keywords: Alpha-mu fading; Asymptotic analysis; Fox H-

function; Diversity systems; Symbol error rate.

471. Electromagnetic Scattering from A Buried Cylinder Using A Multiple Reflection Approach: Tm Case

Mohamed A. Nasr, Islam A. Eshrah and Essam A. Hashish

IEEE Transactions on Antennas and Propagation, 62: 2702-2707 (2014) *IF: 2.459*

A simple, fast, and accurate analytical method is introduced to obtain the EM scattered fields due to an infinite circular cylinder buried in a homogeneous dielectric half-space, illuminated by a normally incident transverse magnetic (TM) plane wave. The method is applied to perfect electric conducting (PEC) and dielectric cylinders of complex permittivity with the host dielectric medium being lossy or lossless. The accuracy of this method is verified using a finite-difference time-domain code (FDTD) on a wide frequency range and the results are presented discussing the range of validity of this approach.

Keywords: Electromagnetic scattering; Buried cylinder; Inverse scattering; Multiple reflections.

472. Electromagnetic Scattering from Dielectric Objects Using the Eigenmode Projection Technique

Mamdouh H. Nasr, Islam A. Eshrah and Tamer M. Abuelfadl

IEEE Transactions on Antennas and Propagation, 62: 3222-3231 (2014) IF: 2.459

Electromagnetic scattering by dielectric objects is analyzed using an eigenmode projection technique. A fictitious canonical cavity is chosen to enclose the illuminated scatterer, and the fields are expanded in terms of the cavity solenoidal and irrotationaleigenmodes. The surface of fictitious cavity is regarded as a port excited by the incident wave, and the cavity fields and the port fields are then matched on the surface resulting in the cavity mode and port field coefficients. The frequency independent feature of the generated matrices is exploited to provide an efficient solution over a wide range of frequencies without the need of filling and inverting all the system of matrices and the numerical integrations are only evaluated once, with their values used at all frequencies. The technique also lends itself to problems, where variations of the same structure are to be analyzed, with the perturbations not necessarily small as long as they are bound by the same canonical cavity. Results are presented to validate the method and illustrate the speed up of the technique in wideband and perturbation analysis.

Keywords: Eigenmode; Electromagnetic scattering; Numerical methods; Perturbation.

473. Two Extended Programmable BCH Soft Decoders Using Least Reliable Bits Reprocessing

Mohamed T. A. Osman, Hossam A. H. Fahmy, Yasmine A. H. Fahmy, Maha M. Elsabrouty and Ahmed Shalash

Circuits Systems and Signal Processing, 33: 1369-1391 (2014) IF: 1.264

This paper proposes two Bose–Chaudhuri–Hocquenghem (BCH) soft decoders suitable for high-rate codes with medium to large word length. The proposed decoders extend the correcting capability by providing a programmable performance gain according to the choice of the extra compensated bits p, with a theoretical maximum likelihood decoding when 2t+p approaches the codeword size n, where t is the correcting capability of the code under algebraic decoding. Our proposed architectures for the proposed algorithms use pipelined arithmetic units, leading to a reduction in the critical paths. This allows for an increase in the operating frequency by up to m/2 times compared to algebraic decoders, where m is the Galois field size. Our proposed decoders operate only on the least reliable bits, which leads to a reduction in the decoder complexity by removing the Chien search procedure.

Keywords: Bch codes; soft decoding; Maximum likelihood decoding; Programmable architecture; Vlsi.

474. Performance Evaluation of Energy Detection Over Extended Generalised- K Composite Fading Channels

Alhennawi H.R., Ismail M.H. and Mourad, H.-A.M.

Electronics Letters, 50: 1643-1645 (2014) IF: 1.068

A novel expression for the probability of detection in spectrumsensing cognitive radio systems is derived over the extended generalised-K composite fading channel assuming energy detection is employed. The new tractable expression subsumes several fading and shadowing environments as special cases. It can also be easily evaluated using commercial software packages such as MATHEMATICA© and MATLAB©.

Keywords: Probability; Fading channels; Cognitive radio; Signal detection; Radio spectrum management.

475. The Error Cross-Section Method for Quantifying the Error in Electromagnetic Scattering Problems

Ahmed M. Kord and Islam A. Eshrah

Applied Computational Electromagnetics Society Journal, 29: 272-278 (2014) IF: 1.024

The Error Cross-Section (ECS) is introduced to quantify the error associated with the numerical solution of electromagnetic scattering problems. The ECS accounts for different approximations and inaccuracies in the object discretization and numerical computations. The ECS definition is based on the power conservation principle and is visualized by comparing it to the radar cross-section of a thin wire for twodimensional (2-D) problems or a small sphere for three-dimensional (3-D) problems. The proposed ECS method is independent of the adopted numerical technique and therefore can be used to give confidence in the obtained solution using several methods, such as the Method of Moments (MoM) and the Finite-Difference Frequency-Domain (FDFD) method. Application of the ECS to the optimization of certain parameters for some numerical formulations, such as the Combined-Field Integral Equation (CFIE) is also presented.

Keywords: Cfie; Numerical error; Radar crosssection.

476. Joint Scheduling and Resource Allocation with Fairness Based on the Signal-to-Leakage-Plus-Noise Ratio in the Downlink of CoMP Systems

Rana A. Abdelaal, Khaled M. F. Elsayed and Mahmoud H. Ismail

Wireless Personal Communications, 75: 1891-1913 (2014) IF: 0.979

Recent research has shown that coordinated multi point (CoMP) transmission can provide significant gains in terms of the overall cell capacity and cell-edge user throughput [1]. The main purpose of this paper is to enhance the overall cell throughput, the celledge user's throughput, and the fairness among user equipment terminals (UEs) in LTE-Advanced (LTE-A) systems using CoMP. Towards that end, we propose two novel resource allocation (RA) strategies based on the Signal-to-Leakage-plus-Noise-Ratio (SLNR) for the downlink of CoMP transmission in LTE-A systems. The proposed RA strategies select the UEs that can efficiently share the same resource block (RB) without degrading the overall throughput by using the SLNR metric. Moreover, a fairness algorithm is proposed to achieve certain level of fairness among the UEs and to improve the cell-edge UEs throughput. In addition, we compare the proposed strategies to the RA based on the more common Signal-to-Interference-plus-Noise-Ratio (SINR) strategy. The SLNR-based RA is shown to provide significant gains in throughput reaching up to 80 % in the overall system and is shown to have even less complexity than the typical SINR-based RA. Moreover, by evaluating the proposed strategies in terms of the average cell throughput, cell-edge user throughput, and fairness among UEs, simulations show that the proposed strategies present superior performance compared to the more common SINR strategy. With such advantages as enhanced throughput and lower complexity, the proposed schemes are suitable for application in practical cellular systems.

Keywords: Coordination; Coordinated multi point transmission; Cellular networks; Lte interference mitigation; Resource allocation; Fairness.

477. Novel Tight Closed-Form Bounds for the Symbol Error Rate of EGC and MRC Diversity Receivers Employing Linear Modulations Over α-μ Fading

Moataz M. El Ayadi and Mahmoud H. Ismail

Wireless Personal Communications, 77: 571-587 (2014) IF: 0.979

In this paper, we propose novel lower and upper bounds on the average symbol error rate (SER) of the dual-branch maximal-ratio combining and equal-gain combining diversity receivers assuming independent branches. M-ary pulse amplitude modulation and M-ary phase shift keying schemes are employed and operation over the a-µ fading channel is assumed. The proposed bounds are given in closed form and are very simple to calculate as they are composed of a double finite summation of basic functions that are readily available in the commercial software packages. Furthermore, the proposed bounds are valid for any combination of the parameters a and μ as well as M. Numerical results presented show that the proposed bounds are very tight when compared to the exact SER obtained via performing the exact integrations numerically making them an attractive much simpler alternative for SER evaluation studies. Keywords: A - M fading; Maximal-ratio combining; Equal-gain combining; Symbol error rate; Approximation; Bounds

478. An Innovative Cooperative Spectrum Sensing Algorithm with Non-Ideal Feedback Channels and Delay Considerations

Muhammed Fahim, Mahmoud H. Ismail and Hazim Tawfik

Wireless Personal Communications, 78: 313-332 (2014) IF: 0.979

Cognitive radio (CR) is used to overcome the spectrum scarcity problem, which results from fixed allocation of wireless bands. CR allows the unlicensed secondary users to exploit the idle spectrum, which is not occupied by any licensed primary user (PU), thus increasing the overall spectrum utilization. In this paper, we first propose a simple cooperative sensing algorithm, which combines the local decision at each CR along with a group decision received from a fusion center to produce a collective decision on the existence of the PU. The performance of the algorithm is investigated over ideal and non-ideal reporting channels, from the fusion center to the CR devices, both analytically and via simulations. Furthermore, the effect of cooperation delay, which causes the decisions received by the CR device from the fusion center to be outdated, is extensively studied, both analytically and via simulations. To overcome the significant performance degradation due to the effect of delay, an extra local sensing cycle is performed at the CR side upon reception of the group decision. Results show that the proposed algorithm outperforms the conventional hard decisions technique and exhibits a comparable performance to the soft decisions approach at a considerably lower complexity. Moreover, the algorithm is shown to enjoy more robustness against reporting channel errors than the conventional hard decisions-based algorithm. Finally, the extra sensing cycle is shown to dramatically improve the performance for different delay scenarios.

Keywords: Cognitive radios; Energy detection; Cooperative spectrum sensing; Delay; Non-Ideal feedback channels; Rayleigh fading.

479. Generalised Asymptotic Boundary Conditions and their Application to Composite Right/Left-Handed Rectangular Waveguide with Double-Ridge Corrugations

Ahmed M. Kord and Islam A. Eshrah

IET Microwaves, Antennas and Propagation, 8: 1014-1020 (2014) IF: 0.969

A generalised form of the asymptotic corrugation boundary conditions (ACBCs) is presented and employed to analyse a composite right/left-handed rectangular waveguide loaded with double-ridge stubs. Enforcing the ACBCs yields the dispersion relation as well as the field distribution in the main waveguide without the need for any sophisticated modal analysis. The asymptotic solution proves to provide accurate results within a wide frequency band. The effect of the various geometrical parameters and the aspect ratios is investigated to determine the range of validity of the ACBCs. The results compared with the full-wave simulations exhibit very good agreement.

Keywords: Modal analysis; Double-ridge corrugations; Generalised asymptotic boundary conditions; Asymptotic corrugation boundary conditions; Composite right/left-handed rectangular waveguide.

480. A Process-Tolerant out-of-Band Blocker Rejection Technique for SAW-Less Receivers

Mohamed Abouzied, Hatem Osman, Ahmed Emira and Ahmed N. Mohieldin

Microelectronics Journal, 45(3): 297-310 (2014) IF: 0.924

In this paper, an active filtering technique is presented which is capable of filtering the out-of-band blockers in wireless receivers. The concept is based on the feedforward cancellation technique where a blocker replica is subtracted at the output of the low-noise amplifier (LNA).

In contrast to the previously reported feedforward cancellation methods, exact gain and phase matching are easily obtained in the proposed architecture to produce a highly selective narrowband frequency response at the output of the LNA with wide rejection bandwidth. For the proof of concept, the system is implemented in a 65 nm CMOS technology.

It occupies a total area of 0.8 mm2 and the current consumption is 24 mA from a 1.2 V supply.

The system post-layout simulations showed a blocker rejection of more than 33 dB for blocker signals 100 MHz away from the desired signal when the feedforward path is activated. The noise figure (NF) of the entire system is 3.8 dB that degrades to 5.8 dB when the feedforward path is activated.

Keywords: Receiver; Low noise amplifier (LNA); Mixers; Blocker rejection; Saw-less; Tunable filtering; Frequency translational loop; Feedforward cancellation; Tunable input impedance matching; Temperature; Process variation; Narrowband filtering; Linearity; Noise.

481. Cooperative Multicasting based on Superposition and Layered Coding

Elgendi M., Nasr, O.A. and Khairy, M.M.

IET Communications, 8: 267-277 (2014) IF: 0.72

Cooperative diversity plays an important role in combating channel fading and increasing reliability of wireless communication links. The main purpose of cooperative diversity is to transmit the same data from multiple sources. Hence, there is no inherent capability in the cooperative diversity schemes to deal with scalable types of data, for example, scalable video coded signals. The authors introduce a two-phase cooperative multicast scheme based on superposition coding to transmit scalable video signals. The new scheme mixes the superposition with cooperative diversity, and chooses the right parameters in both schemes to enhance the system's multicast capability. This study also derives an exact closed-form expression of the average multicast group throughput in case of Rayleigh flat fading channel. The closed-form expression allows system designers to choose the correct cooperation and superposition parameters to satisfy the network operator needs. Simulations show that, in addition to the additional degrees of freedom resulting from using cooperation with superposition, the proposed scheme outperforms the conservative scheme and schemes solely exploiting cooperative relaying or superposition. Simulations show that the new scheme can increase the average network throughput more than four times compared to the conservative scheme.

Keywords: Multicasting; Layered coding.

482. Variability-Tolerant Routing Algorithms for Networks-on-Chip

Eman Kamel Gawish, M. Watheq El-Kharashi and M.F. Abu-Elyazeed

Microprocessors and Microsystems, 38: 1037-1045 (2014) IF: 0.598

This paper proposes variability-tolerant routing algorithms for mesh-based Networks-on-Chip (NoC). Different NoC routing algorithms are modified, from variability perspective, to route flits through links with lower failure probability. The algorithms considered in this study are XY, West-First, Negative-First, and Odd–Even routing algorithms. To evaluate our variability-tolerant routing algorithms, a cycle-accurate simulator, NoCTweak, is used to measure how tolerant the resultant NoCs are against process variations. Results reflect the efficiency of our routing algorithms to overcome the process variation problems in modern fabrication technologies. For example, variability-tolerant West-First routing algorithm achieves up to 56% reduction in NoC overall failure rate.

Keywords: Networks-on-chip (NoC); Process variations; Routing algorithms.

483. A new Current Mode Implementation of a Balanced-Output-Signal Generator

Yehya H. Ghallab, Hassan Mostafa and Yehea Ismail

Analog Integrated Circuits and Signal Processing, 81: 751-762 (2014) IF: 0.401

This paper presents a new current mode implementation of a balanced-output-signal generator that utilizes an operational

floating current conveyor (OFCC) as a basic building block. The OFCC, as a current-mode device, shows flexible properties with respect to other current or voltage-mode circuits.

The advantages of the proposed current mode balanced-outputsignal generator (CMBG) are threefold. Firstly, it offers an accurate phase and amplitude performance over a wide bandwidth without requiring matched resistors. Secondly, it has a differential input and it can provide either current or voltage outputs. Finally, the proposed CMBG circuit offers a significant improvement in accuracy compared to other CMBGs based on the current conveyor. The proposed CMBG has been analyzed, simulated and experimentally tested. The experimental results verify that the proposed CMBG outperforms existing CMBGs in terms of the number of basic building blocks used and accuracy.

Keywords: Current mode circuits; Operational floating current conveyor; Current conveyor; Instrumentation; Operational amplifier; Balanced amplifiers.

Dept. of Engineering Mathematics and Physics

484. Control and Switching Synchronization of Fractional Order Chaotic Systems Using Active Control Technique

A.G. Radwan, K. Moaddy, K.N. Salama, S. Momani and I. Hashim

Journal of Advanced Research, 5: 125-132 (2014) IF: 3

This paper discusses the continuous effect of the fractional order parameter of the Lu system where the system response starts stable, passing by chaotic behavior then reaching periodic response as the fractional-order increases. In addition, this paper presents the concept of synchronization of different fractional order chaotic systems using active control technique.

Four different synchronization cases are introduced based on the switching parameters. Also, the static and dynamic synchronizations can be obtained when the switching parameters are functions of time.

The nonstandard finite difference method is used for the numerical solution of the fractional order master and slave systems. Many numeric simulations are presented to validate the concept for different fractional order parameters.

Keywords: Control; Switching control; Fractional order synchronization; Chaotic systems; Non-standard finite difference schemes; Fractional clculus.

485. CCII Based Fractional Flters of Diferent Orders

Ahmed Soltan, Ahmed G. Radwan and Ahmed M. Soliman

Journal of Advanced Research, 5: 157-164 (2014) IF: 3

This paper aims to generalize the design of continuous-time filters to the fractional domain with different orders and validates the theoretical results with two different CCII based filters. In particular, the proposed study introduces the generalized formulas for the previous fractional-order analysis of equal orders.

The fractional-order filters enhance the design flexibility and prove that the integer-order performance is a very narrow subset from the fractional-order behavior due to the extra degrees of freedom.

The general fundamentals of these filters are presented by calculating the maximum and minimum frequencies, the half power frequency and the right phase frequency which are considered a critical issue for the filter design. Different numerical solutions for the generalized fractional order low pass filters with two different fractional order elements are introduced and verified by the circuit simulations of two fractional-order filters: Kerwin-Huelsman-Newcomb (KHN) and Tow-Tomas CCII-based filters, showing great matching.

Keywords: Fractance; Fractional-order filter; KHN filter; Tow-tomas filter.

486. Utilizing Neural Networks in Magnetic Media Modeling and Field Computation: A Review

Adly AA and Abd-El-Hafiz SK

Journal of Advanced Research (JAR), 5: 615-627 (2014) IF: 3

Magnetic materials are considered as crucial components for a wide range of products and devices. Usually, complexity of such materials is defined by their permeability classification and coupling extent to non-magnetic properties. Hence, development of models that could accurately simulate the complex nature of these materials becomes crucial to the multi-dimensional fieldmedia interactions and computations.

In the past few decades, artificial neural networks (ANNs) have been utilized in many applications to perform miscellaneous tasks such as identification, approximation, optimization, classification and forecasting. The purpose of this review article is to give an account of the utilization of ANNs in modeling as well as field computation involving complex magnetic materials. Mostly used ANN types in magnetics, advantages of this usage, detailed implementation methodologies as well as numerical examples are given in the paper.

Keywords: Artificial neural networks; Magnetic material modeling; Coupled properties; Field computation.

487. Preparation and physicochemical characterization of new Nanocomposites Based on βtype Chitosan and Nano-Hydroxyapatite as potential bone Substitute Materials

Ibrahim M. El-Sherbiny, Sara Yahia, Medhat A. Messiery and Fikry M. Reicha

International Journal of Polymeric Materials and Polymeric Biomaterials, 63: 213–220, 63/4: 213-220 (2014) IF: 2.784

In the present study, β -type chitosan [β (1–4) N-acetyl D-glucosamine] was obtained through a modified procedure from squid pens (*Loligo Vulgaris*) and characterized to determine its average molecular weight and degree of N-deacetylation. Then, the β -chitosan was used for the first time, in a combination with different proportions of nano-hydroxyapatite (n-HA), to develop new series of nanocomposites as potential bone substitute materials that are able to overcome the poor physicochemical and mechanical properties of pure artificial hydroxyapatit.

The β -chitosan/n-HA nanocomposites were prepared through in situ coprecipitation technique and characterized with the aid of FTIR, XRD, and EDS. Surface morphology of the nanocomposites was examined using SEM and TEM. The mechanical properties were also studied through measuring the compressive strength of the developed composites.

Keywords: β-Chitosan; Bone implant; Hydroxyapatite; Nanocomposite.

488. A Surface Integral Equation Formulation for Electromagnetic Scattering from A Conducting Cylinder Coated with Multilayers of Homogeneous Materials

Ahmed A. Sakr, Ezzeldin A. Soliman and Alaa K. Abdelmageed

Journal of Applied Physics, 116: 54902-54902 (2014) IF: 2.185

A surface integral equation formulation is presented for electromagnetic scattering by a conducting cylinder coated with multilayers of homogeneous materials. Each layer may have a nonunity relative permittivity and permeability. Both the TM and TE polarizations are considered. The surface equivalence principle is utilized to model the problem where each layer is replaced by equivalent surface currents residing on the enclosing boundaries.

A systematic procedure is developed to generate a set of coupled integral equations for an arbitrary number of layers. The method of moments is invoked to convert these equations into a sparse matrix equation which can be solved using sparse matrix routines. Numerical results are presented to demonstrate the accuracy and efficiency of the proposed method. The performance of the method is compared with that of the volume-surface integral equation formulation where a great saving in memory storage and computation time is achieved.

Keywords: Scattering; Surface Integral Equations; Multilayered.

489. Analytical Modeling of the Radial Pn Junction Nanowire Solar Cells

Nouran M. Ali, Nageh K. Allam, Ashraf M. Abdel Haleem and Nadia H. Rafat

Journal of Applied Physics, 116: 24308-24308 (2014) IF: 2.185

In photovoltaic solar cells, radial p-n junctions have been considered a very promising structure to improve the carrier collection efficiency and accordingly the conversion efficiency. In the present study, the semiconductor equations, namely Poisson's and continuity equations for a cylindrical p-n junction solar cell, have been solved analytically. The analytical model is based on Green's function theory to calculate the current density, open circuit voltage, fill factor, and conversion efficiency. The model has been used to simulate p-n and p-i-n silicon radial solar cells. The validity and accuracy of the present simulator were confirmed through a comparison with previously published experimental and numerical reports.

Keywords: Solar cells; Photovoltaic; Nano wire; Radial; Model.

490. Modeling of the Quantum Dot Filling and the Dark Current of Quantum Dot Infrared Photodetectors

Tarek A. Ameen, Yasser M. El-Batawy and A. A. Abouelsaood

Journal of Applied Physics (AIP), 115: (2014) IF: 2.185

A generalized drift-diffusion model for the calculation of both the quantum dot filling profile and the dark current of quantum dot infrared photodetectors is proposed. The confined electrons inside the quantum dots produce a space-charge potential barrier between the two contacts, which controls the quantum dot filling and limits the dark current in the device.

The results of the model reasonably agree with a published experimental work. It is found that increasing either the doping

level or the temperature results in an exponential increase of the dark current. The quantum dot filling turns out to be nonuniform, with a dot near the contacts containing more electrons than one in the middle of the device where the dot occupation approximately equals the number of doping atoms per dot, which means that quantum dots away from contacts will be nearly unoccupied if the active region is undoped.

Keywords: Quantum dots; Dark current; Photodetectors; Bound states.

491. Simulation of Acoustic Properties of Some Tellurite Glasses

R. El-Mallawany, M.S. Gaafar, Mostafa A.M. Abdeen and S.Y. Marzouk

Ceramics International, 40: 7389-7394 (2014) IF: 2.086

The Artificial Neural Network(ANN) technique is introduced in the current study to simulate and predict density,longitudinal and shear ultrasonic velocities and elastic moduli for some tellurite glasses.The compositions of the 26 tellurite glasses were in the form of TeO2–V2O5, TeO2–WO3, TeO2–WO3–PbO, TeO2– V2O5–Bi2O3 and TeO2–WO3–K2O. The ANN results were found to be in successful good agreement with those of experimentally measured parameters. It is evident that the slopes, intercepts and correlation factors are very sensitive to the type of the modifier.

Keywords: Acoustic properties; Computer modeling; Simulation; Glasses.

492. Spectral Lineshapes of Collision-Induced Absorption (CIA) and Collision-Induced Light Scattering (CILS) for Molecular Nitrogen Using Isotropic Intermolecular Potential. New Insights and Perspectives

M.S.A. El-Kader, S.I. Mostafa, T. Bancewicz and G. Maroulis

Chemical Physics, 440: 127-134 (2014) IF: 2.028

The rototranslational collision-induced absorption (CIA) at different temperatures and collision-induced light scattering (CILS) at room temperature of nitrogen gas are analyzed in terms of new isotropic intermolecular potential, multipole-induced dipole functions and interaction-induced pair polarizability models, using quantum spectral lineshape computations.

The irreducible spherical form for the induced operator of light scattering mechanisms was determined.

The high frequency wings are discussed in terms of the collisioninduced rotational Rayleigh effect and estimates for the dipole octopolepolarizability E4, is obtained and checked with the ab initio theoretical value.

The quality of the present potential has been checked by comparing between calculated and experimental thermo-physical and transport properties over a wide temperature range, which are found to be in good agreement.

Keywords: Induced dipole moment; Pair polarizability trace; Potential; Nitrogen.

493. A Simple Solution of the Bratu Problem

A. Mohsen

Computers And Mathematics With Applications, 67: 26-33 (2014) IF: 1.996

A brief survey of the properties and different treatments of the one-dimensional (1D) and (2D) Bratu problems is presented. Different iterative treatments of the resulting nonlinear system of equations are discussed. The finite-difference treatment of the problem is considered. Nonstandard finite-difference methods with a simple sinusoidal starting function having an appropriate amplitude are recommended. Bounds on the amplitude for yielding both lower and upper solutions are given.

Keywords: Bratu'S problem; Nonlinear partial differential equations; Standard finite difference; Nonstandard finite difference.

494. Fundamentals of Designing Cylindrical High-Order Transformation Optics Invisibility Cloaks Using Silver–Silica Metamaterials

Kareem S. Elassy, Nadia H. Rafat, Mohamed E. Khedr and Moustafa H. Aly

Applied Physics A: Materials Science and Processing, 115: 531-539 (2014) IF: 1.694

Metamaterials have effective properties that are distinct from their composites as they consist of engineereddesigned properties that are not in nature. In order to be able to design a metamaterial, we should establish sufficient understanding of the properties of the constituents. This will enable us to engineer new effective parameters of the metamaterial. We shall perform a detailed analytical study for the effective parameters and the constituents' parameters of silver–silica metamaterial. This will define the optical response of the mixture at different sizes of the inclusions' and different volume fractions of the silver and silica. Also an optimum value of the volume fraction is proposed to achieve a broadened resonance optical response. Finally, we propose the design technique and constraints of a non-magnetic optical cloaking device, based on high-order transformation optics with different volume fractions of silver and silica.

Keywords: Cloak; Metamaterials; Cylindrical.

495. Dipole Nantennas Terminated by traveling wave Rectifiers for Ambient Thermal Energy Harvesting

Islam E. Hashem, Nadia H. Rafat and Ezzeldin A. Soliman

IEEE Transaction on Nanotechnology, 13: 767-778 (2014) IF: 1.619

In this paper, rectennas formed from nanodipole antennas terminated by plasmonic metal-insulator-metal (MIM) travelling wave transmission line rectifiers are developed for ambient thermal energy harvesting at 30 THz. The transmission lines are formed from two strips coupled either vertically or laterally. A systematic design approach is presented, that shows how different components can be integrated with each other with maximum radiation receiving nantenna efficiency, maximum coupling efficiency between nantenna and rectifier, and maximum MIM diode rectifier efficiency. The tunneling current of the rectifier is calculated using the transfer matrix method and the nonequilibrium Green's function.

Keywords: Mim; Nantennas; Plasmonics; Rectennas; Transmission lines;Tunneling.

496. Sinc-Galerkin Method for Solving Biharmonic Problems

Mohamed El-Gamel, Adel Mohsen and Amgad Abd El-Mohsen

Applied Mathematics and Computation, 247: 386-396 (2014) IF: 1.6

There are many techniques available to numerically solve the biharmonic equation. In this paper we show that the sinc-Galerkin method is a very effective tool in numerically solving this equation. Hermite interpolation is used to treat the nonhomogeneous boundary conditions. Our method is tested on examples and comparisons with other methods are made. It is shown that the sinc-Galerkin method yields good results even when singularities occur at the boundaries.

Keywords: Sinc functions; Sinc-galerkin;Biharmonic problems; Numerical solutions; Hermite interpolation.

497. Analysis of Composite Plates Using Moving Least Squares Differential Quadrature Method

Ola Ragb, M.S. Matbuly and M. Nassar

Applied Mathematics and Computation, 238: 225-236 (2014) IF: 1.6

In this work, the moving least squares differential quadrature method (MLSDQM) is employed to analyze bending problems of composite plates. Based on a transverse shear theory, the governing equations of the problem are derived. The transverse deflection and two rotations of the plate are independently approximated with MLS approximations. The weighting coefficients used in the MLSDQ approximation are obtained through the fast computation of the MLS shape functions and their partial derivatives. The obtained results are compared with the previous analytical and numerical ones. Further a parametric study is introduced to investigate the effects of elastic and geometric characteristics on the values of transverse deflection of the plate.

Keywords: Composite plates; Differential quadrature; Moving least squares differential quadrature method; Transverse shear theory.

498. Oscillatory Behavior of Integro-Dynamic and Integral Equations on Time Scales

Said Grace and A. Zafer

Applied Mathematics Letters, 28: 47-52 (2014) IF: 1.48

By making use of asymptotic properties of nonoscillatory solutions, the oscillation behavior of solutions for the integrodynamic equation

$$x\Delta(t)=e(t)-\int 0tk(t,s)f(s,x(s))\Delta s,t\geq 0$$

and the integral equation

 $x(t)=e(t)-\int 0tk(t,s)f(s,x(s))\Delta s,t\geq 0$

on time scales is investigated. Easily verifiable sufficient conditions are established for the oscillation of all solutions. The results are new for both continuous and discrete cases. The paper is concluded by an open problem. **Keywords**: Integro-dynamic equation; Integral equation; Oscillation time scale; Volterra equation.

499. Self-Similar flow Due to the Stretching of A Deformable Fiber

Tiegang Fang and Tarek M.A. El-Mistikawy

The European Physical Journal Plus, 129(252): (2014) IF: 1.475

The boundary layer flow over a stretching fiber in a stationary fluid is investigated by including the coupling of the flow and fiber dynamics. This approach is quite different from the literature on flows over a stretching fiber, which has prescribed fiber kinematics. The flow problem is formulated by using a curvilinear coordinate system, and self-similarity is invoked. The similarity transformations convert the governing partial differential equations of the flow into ordinary differential equations, involving parameters determined by considering the fiber dynamics. The similarity equations are solved numerically using a shooting method. Two kinds of fibers are considered including an elastic one and a viscous one. It is found that the fluid velocity over both kinds decays algebraically to the ambient, though with different rates. Self-similarity imposes restrictions on the parameters of the problem. Nonetheless, practically feasible parameters can be chosen and solutions thereof are presented. The solution can offer more accurate estimations of fiber dynamics and fluid flow for practical applications in fiber stretching. Keywords: Deformable fiber; Boundary layer; Self similar;

Shooting method; Fiber dynamics.

500. An Evaluation of the Integral of the Product of the Error Function and the Normal Probability Density with Application to the Bivariate Normal Integral

Hatem A. Fayed and Amir F. Atiya

Mathematics of Computation, 83: 235-250 (2014) IF: 1.41

This paper derives the value of the integral of the product of the error function and the normal probability density as a series of the Hermite polynomial and the normalized incomplete Gamma function. This expression is beneficial, and can be used for evaluating the bivariate normal integral as a series expansion. This expansion is a good alternative to the well-known tetrachoric series, when the correlation coefficient, ρ , is large in absolute value.

Keywords: Error function; Normal probability; Gamma function Hermite polynomial; Hypergeometric function; Bivariate normal integral; Tetrachoric series.

501. A Novel Series Expansion for the Multivariate Normal Probability Integrals Based on Fourier Series

Hatem A. Fayed and Amir F. Atiya

Mathematics of Computation, 83: 2385-2402 (2014) IF: 1.41

In this article, we derive a series expansion of the multivariate normal probability integrals based on Fourier series. The basic idea is to transform the limits of each integral from \$h_i\$ to \$\infty\$ to be from \$-\infty\$ to \$\infty\$ by multiplying the integrand by a periodic square wave that approximates the domain of the integral. This square wave is expressed by its

Fourier series expansion. Then a Cholesky decomposition of the covariance matrix is applied to transform the integrand to a simple one that can be easily evaluated. The resultant formula has a simple pattern that is expressed as multiple series expansion of trigonometric and exponential functions.

Keywords: Multivariate normal probability integral; Fourier series; Tetrachoric series.

502. Electromagnetic te Scattering by A Conducting cylinder coated with an Inhomogeneous dielectric/ magnetic material

Ahmed A. Sakr, Ezzeldin A. Soliman and Alaa K. Abdelmageed

Journal of Electromagnetic Waves and Applications, 28: 1376-1387 (2014) IF: 1.395

The problem of electromagnetic TE scattering by an infinitely long conducting cylinder coated with an inhomogeneous dielectric/magnetic material is analyzed.

A volume surface integral equation (VSIE) approach is utilized to model the problem. By imposing the boundary conditions on the conducting surface, a surface magnetic field integral equation (MFIE) is developed. Inside the volume of the coating region, volume MFIEs are applied.

The resultant integral equations are solved using the moment method. Numerical results for the bistatic radar cross section for different structures are presented. The results are validated using the exact series solution for a conducting circular cylinder coated with multilayers of homogeneous materials. Two types of coating materials are studied: the conventional or double positive (DPS) materials and the double negative (DNG) materials.

Keywords: Scattering; Coated cylinder; Inhomogeneous; Integral equations.

503. Oscillatory Behavior of Solutions of Certain Integrodynamic Equations of Second Order on Time Scales

Said R. Grace and Mohamed A. El-Beltagy

Abstract and Applied Analysis, 259467: 1-12 (2014) IF: 1.274

This paper deals with the oscillatory behavior of forced secondorder integrodynamic equations on time scales. The results are new for the continuous and discrete cases and can be applied to Volterra integral equation on time scale. We also provide a numerical example in the continuous case to illustrate the results. **Keywords**: Integrodynamic equation; Integral equation oscillation; Time scale.

504. Meminductor Response Under Periodic Current Excitations

Mohamed E. Fouda and Ahmed G. Radwan

Circuits Syst Signal Processing, 33: 1573-1583 (2014) IF: 1.264

Recently, the mem-elements-based circuits have been addressed frequently in the nonlinear circuit theory due to their unique behavior. Thus, the modeling and characterizing of the memelements has become essential, especially studying their response under any excitation signal.

This paper investigates the response of the meminductor under DC, sinusoidal, and periodic current signals for the first time. Furthermore, a meminductor emulator is developed to fit the

obtained formulas which are built using commercial off the shelf components.

The proposed analysis offers closed form expressions for the meminductance for each case. Moreover, many fundamentals and properties are derived to understand the responses such as the maximum saturation time in case of the DC response. A general closed form expression for the meminductance is derived under any periodic waveform, and this formula has been validated by applying a square wave as an example.

Keywords: Mem-element; Meminductor; Nonlinear circuits; Modeling; Mem-circuits.

505. A Family of Memristor-Based Reactance-Less Oscillators

Mohammed Affan Zidan, Hesham Omran, Casey Smith, Ahad Syed, Ahmed Gomaa Radwan and Khaled Nabil Salama

International Journal of Circuit Theory and Applications, 42: 1103-1122 (2014) IF: 1.21

In this paper, we present for the first time a family of memristorbased reactance-less oscillators (MRLOs). The proposed oscillators require no reactive components, that is, inductors or capacitors, rather, the 'resistance storage' property of memristor is exploited to generate the oscillation. Different types of MRLO family are presented, and for each type, closed form expressions are derived for the oscillation condition, oscillation frequency, and range of oscillation. Derived equations are further verified using transient circuit simulations. A comparison between different MRLO types is also discussed. In addition, detailed fabrication steps of a memristor device and experimental results for the first MRLO physical realization are presented.

Keywords: Memristors; Reactance-less oscillator; Voltagecontrolled oscillator.

506. Memristor-Based Voltage-Controlled **Relaxation Oscillators**

M. E. Fouda and A.G. Radwan

International Journal of Circuit Theory and Applications, 42: 1092-1102 (2014) IF: 1.21

This paper introduces two voltage-controlled memristor-based reactance-less oscillators with analytical and circuit simulations. Two different topologies which are R-M and M-R are discussed as a function of the reference voltage where the generalized formulas of the oscillation frequency and conditions for oscillation for each topology are derived. The effect of the reference voltage on the circuit performance is studied and validated through different examples using PSpice simulations. A memristor-based voltage-controlled oscillator (VCO) is introduced as an application for the proposed circuits which is nano-size and more efficient compared to the conventional VCOs. Keywords: Memristor; Memristor-based oscillator; Relaxation oscillator; Memristive circuits; VCO.

507. Thermal Properties and two-Dimensional **Photonic Band Gaps**

Hussein A. Elsayed, Sahar A. El-Naggar and Arafa H. Aly

Journal of Modern Optics, 21 (5): 385-389 (2014) IF: 1.166

The effect of temperature on a two-dimensional square lattice photonic crystal composed of Si rods arranged in an air background was investigated theoretically using the plane-wave expansion method. Both the thermal expansion effect and thermooptical effect are considered simultaneously. We have discussed the role of temperature in creating the complete photonic band gap as a function of temperature. Two different shapes of rods, i.e. square and circular, are considered in the presence of the two polarization states, i.e. TE and TM waves. The numerical results show that the photonic band gap can be significantly enlarged compared to the photonic band gap at room temperature. The effect of temperature on the complete photonic band width in the cylindrical rods case is more significant. Cylindrical and square Si rods may work as a temperature sensor or filter, among many other potential applications.

Keywords: Plane-wave Expansion method; Two-dimensional Photonic crystal; Thermal properties; Omnidirectional band; Photonic band Gap.

508. The Properties of Cutoff Frequency in two-**Dimensional Superconductor Photonic Crystals**

Arafa H. Alya, Hussein A. Elsayed and Sahar A. El-Naggar

Journal of Modern Optics, 61 (13): 1064-1068 (2014) IF: 1.166

In this paper, by means of frequency-dependent plane wave expansion method we investigate the properties of photonic band structures in two-dimensional superconductor photonic crystals. Effects of cut-off frequency are investigated by various parameters such as filling factor, the lattice constant alteration, threshold frequency of the superconductor, and shape of the rods as well. We show that the cut-off frequency can be efficiently tuned by the operating temperature. Moreover, it can be tailored by changing the dielectric constant of the background and the threshold frequency of the superconductor material.

Keywords: Cut-off frequency; 2DSPCS; PWM; PBG; Filling factor.

509. Effect of Core Configuration on the Burnup **Calculations of MTR Research Reactors**

H .M. Hussein , E.H. Amin and A.M. Sakr

Annals of Nuclear Energy, 63: 285-294 (2014) IF: 1.02

In the present paper, three-dimensional burn-up calculations were performed using different patterns of control rods, in order to examine their effect on power density and neutron flux distributions through out the entire core and hence on the local burn-up distribution.

These different cores burn-up calculations are carried out for an operating cycle equivalent to 15 Full Power Days (FPDs), with a power rating of 22 MW. Calculations were performed using an example of a typical research reactor of MTR-type using the internationally known computer codes' package "MTR_PC system", using the cell calculation transport code WIMS-D4 with 12 energy groups and the core calculation diffusion code CITVAP with 5 energy groups.

A depletion study was done and the effects on the research reactor fuel (U-235) were performed. The burn-up percentage (B.U.%) curves for every fuel element type were drawn versus irradiation (MWD/TE).

Then an empirical formula was generated for every fuel element type, to correlate irradiation to burn-up percentage.

Charts of power density and neutron flux distribution for each core were plotted at different sections of each fuel element of the reactor core. Then a complete discussion and analysis of these curves are performed with comparison between the different core configurations, illustrating the effect of insertion or extraction of either of the four control rods directly on the neutron flux and consequently on the power distribution and burn-up. A detailed study of fuel burn-up gives detailed insight on the different B.U.% calculations options which gives great help to reactor operators and reactor utilization.

Keywords: Neutronic calculations; Burn-up; MTR-type research reactors; MTR-PC package; Empirical formula for fuel burn-up.

510. Benchmarking of the WIMSD/CITATION Deterministic Code System for the Neutronic Calculations of TRIGA Mark-III Research Reactors

E. Amin, A. Shama and H. Hussein

Annals of Nuclear Energy, 66: 113-123 (2014) IF: 1.02

The objective of this paper is to assess the suitability and accuracy of the deterministic diffusion method for the neutronic calculations of the TRIGA Mark-III research reactors using the WIMSD/CITATION code system in proposed condensed energy spectra of five and seven energy groups with one and three thermal groups respectively.

The utilized cell transport calculations code and core diffusion calculations code are the WIMSD-5B and the CITVAP v3.1 codes respectively, along with the WIMSD-IAEA-69 nuclear data library. Firstly, the assessment goes through analyzing the integral parameters k_{eff} , ρ^{238} , δ^{235} , δ^{238} , and C° – of the TRX and BAPL benchmark lattices and comparison with experimental and previous reference results using other ENDLs at the full energy spectra which show good agreement with the references at both spectra. Secondly, evaluation of the 3D nuclear characteristics of three different cores of the TRR-1/M1 TRIGA Mark-III Thai research reactor at the condensed energy spectra. The results include the excess reactivities of the cores and the worth of selected control rods which were compared with reference Monte Carlo results and experimental values.

The results show good agreement with the references at both energy spectra and the better accuracy are attainable in the five energy groups spectrum.

The results also include neutron flux distributions which are evaluated for future comparisons with other calculational techniques even they are comparable to reactors and fuels of the same type.

The normalized power distributions were evaluated and compared with reference Monte Carlo results. Also, the fuel temperature coefficient of reactivity was calculated at both spectra and the results are compared against reference calculations and the SAR results.

The study reflects the adequacy and accuracy of using the prestated code system for the evaluation of the neutronic parameters of the TRIGA Mark-III reactors at the five and seven groups condensation spectra and future comparisons of the unbenchmarked results could assure this result for wider range of neutronic parameters.

Keywords: Neutronic calculations; Reactor physics; TRIGA; WIMSD-5B; WIMSD-IAEA; TRX; BAPL benchmark lattices.

511. Scalable Approach to Failure Analysis of High-Performance Computing Systems

Doaa Mohammed Shawky

Electronics and Telecommunications Research Institute(Etri), 36: 1023-1031 (2014) IF: 0.945

Failure analysis is necessary to clarify the root cause of a failure, predict the next time a failure may occur, and improve the performance and reliability of a system. However, it is not an easy task to analyze and interpret failure data, especially for complex systems. Usually, these data are represented using many attributes, and sometimes they are inconsistent and ambiguous. In this paper, we present a scalable approach for the analysis and interpretation of failure data of high-performance computing systems. The approach employs rough sets theory (RST) for this task. The application of RST to a large publicly available set of failure data highlights the main attributes responsible for the root cause of a failure. In addition, it is used to analyze other failure characteristics, such as time between failures, repair times, workload running on a failed node, and failure category. Experimental results show the scalability of the presented approach and its ability to reveal dependencies among different failure characteristics.

Keywords: Failure analysis; High-performance computing; Rough sets theory.

512. Maximization of Photonic Bandgaps in two-Dimensional Superconductor Photonic Crystals

Sahar A. El-Naggar, Hussein A. Elsayed and Arafa H. Aly

Journal of Superconductivity and Novel Magnetism, 27 (7): 1615-1621 (2014) IF: 0.93

In this paper, we investigate the properties of photonic band structures in two-dimensional superconductor photonic crystals (2D-SCPCs) using the frequency dependent plane wave expansion method. We consider two types of 2D-SCPCs, which are composed of superconductor (dielectric) rods embedded into a dielectric (superconductor) background, named type I (type II) SCPCs. We target maximization of the gap-to-mid-gap ratio by varying many parameters, namely, shape of the rods, the operating temperature, the permittivity of the dielectric material, and the threshold frequency of the superconductor. We show that the type II SCPCs have a higher gap-to-mid-gap ratio than the type I SCPCs. In addition, the PBGs can be tuned efficiently by the operating temperature. Moreover, the photonic band structures can be tailored by changing the dielectric constant of the background (rods) in the type I (type II) SCPCs.

Keywords: Two-dimensional photonic crystals; Superconductor photonic crystals; Tunable pcs.

513. Memcapacitor Response Under Step and Sinusoidal Voltage Excitations

Ahmed Gomaa Ahmed Radwan and Mohamed E. Fouda

Microelectronics Journal, 45: 1372-1379 (2014) IF: 0.924

Recently, mem-elements have become fundamental in the circuit theory through promising potential applications based on the built-in memory-properties of these elements. In this paper, the mathematical analysis of the memcapacitor model is derived and the effect of different voltage excitation signals is studied for the linear dopant model. General closed form expressions and analyses are presented to describe the memcapacitor behavior under DC step and sinusoidal voltage excitations. Furthermore, the step and sinusoidal responses are used to analyze the memcapacitor response under any periodic signal using Fourier series expansion where the effect of the DC component on the output response is investigated. In addition, the stored energy in the memcapacitor under step, sinusoidal and square wave excitations is discussed. Moreover, the analysis of series and parallel connection of N non-matched memcapacitors in general is introduced and special cases of matched memcapacitors are discussed. The derived equations are verified using SPICE simulations showing great matching.

Keywords: Memcapacitor; Mem-element; Circuit theory; Step response; Sinusoidal response; Stored energy; Series; Parallel connections.

514. Dynamic Snap-Through of A Negative Shallow Arch Resting on A Fluid Layer

Ahmed Anwara, Mohamed Taha and Mohamed Nassar

Ships and offshore Structures, 9, 3: 266-271 (2014) IF: 0.817

In this paper, we study the snap-through stability of a negative shallow arch resting on a fluid layer foundation under a point load moving at a constant speed. The deformation of the arch is expressed in the Fourier series. By studying the fluid layer separately, it is noted that the back pressure of the fluid is directly proportional to the density of the fluid and depth of the fluid layer. We are interested only when the point load is downward. In quasi-static manner, it is so obvious that the arch will not snap. When the point load moves with a significant speed, we used the first four modes in the Fourier series to predict the response of the arch.

Keywords: Snap-through buckling; Shallow arch; Fluid layer.

515. Simple Floating Voltage-Controlled Memductor **Emulator for Analog Applications**

Mohamed E. Fouda and Ahmed G. Radwan

Radioengineering, 23: 944-948 (2014) IF: 0.796

The topic of memristive circuits is a novel topic in circuit theory that has become of great importance due to its unique behavior which is useful in different applications. But since there is a lack of memristor samples, a memristor emulator is used instead of a solid state memristor.

In this paper, a new simple floating voltage-controlled memductor emulator is introduced which is implemented using commercial off the shelf (COTS) realization. The mathematical modeling of the proposed circuit is derived to match the theoretical model. The proposed circuit is tested experimentally using different excitation signals such as sinusoidal, square, and triangular waves showing an excellent matching with previously reported simulations.

Keywords: Memristor; Memductor; Mem-element; Memristive circuits; Emulator; Mutator.

516. Hardware Stream Cipher with Controllable **Chaos Generator for Colour Image Encryption**

Ahmed Gomaa Ahmed Radwan

IET Image Processing, 8: 33-43 (2014) IF: 0.676

This study presents hardware realisation of chaos-based stream cipher utilised for image encryption applications. A third-order chaotic system with signum non-linearity is implemented and a new post processing technique is proposed to eliminate the bias from the original chaotic sequence.

The proposed stream cipher utilises the processed chaotic output to mask and diffuse input pixels through several stages of XORing and bit permutations. The performance of the cipher is tested with several input images and compared with previously reported systems showing superior security and higher hardware efficiency. The system is experimentally verified on XilinxVirtex 4 field programmable gate array (FPGA) achieving small area utilisation and a throughput of 3.62 Gb/s.

Keywords: Hardware encryption; Stream cipher; Controllable chaos generator; Image encryption.

517. A Fractal-Based Image Encryption System

Salwa Kamal Abd-El-Hafiz

IET Image Processing, 8: 742-752 (2014) IF: 0.676

This study introduces a novel image encryption system based on diffusion and confusion processes in which the image information is hidden inside the complex details of fractal images. A simplified encryption technique is, first, presented using a singlefractal image and statistical analysis is performed. A general encryption system utilising multiple fractal images is, then, introduced to improve the performance and increase the encryption key up to hundreds of bits. This improvement is achieved through several parameters: feedback delay. multiplexing and independent horizontal or vertical shifts. The effect of each parameter is studied separately and, then, they are combined to illustrate their influence on the encryption quality. The encryption quality is evaluated using different analysis techniques such as correlation coefficients, differential attack measures, histogram distributions, key sensitivity analysis and the National Institute of Standards and Technology (NIST) statistical test suite. The obtained results show great potential compared to other techniques.

Keywords: Fractals; Cryptography; Image processing.

518. Oscillation Criteria for Higher Order Nonlinear **Dynamic Equations**

Said R. Grace and Taher S. Hassan

Mathematische Nachrichten, 287 (14-15): 1659–1673 (2014) IF: 0.66

In this paper, we will consider the higher-order functional dynamic equations of the form

$$x^{[n]}(t) + p(t)\phi_{\gamma} (x^{\sigma} (g(t))) = 0,$$

on an above-unbounded time scale, \mathbb{T} where $n \ge 2$ and $\phi_{\beta}(u) := |u|^{\beta-1} u, \beta > 0$. The function $g: \mathbb{T} \to \mathbb{T}$ is a rdcontinuous function such that $\lim_{t\to\infty} g(t) = \infty$. The results extend and improve some known results in the literature on higher order nonlinear dynamic equations.

Keywords: Asymptotic behavior; Oscillation criteria; Higher order; Dynamic equations; Time scales.

519. Analysis of Axially Loaded Tapered Beams with General End Restraints on two-Parameter Foundation

Mohamed Taha Mohamed Hassan and Mohamed Nassar

Journal of Theoretical and Applied Mechanics, Poland, 52, 1: 215-225 (2014) IF: 0.62

The stability and free vibration of axially-loaded tapered beams with elastic end restraints resting on two-parameter foundations are studied using the differential quadrature method (DQM). The governing differential equation is discretized at sampling points, and then the boundary conditions due to elastic end restraints are implemented and substituted into the governing differential equation yielding a system of homogeneous algebraic equations. The equivalent two-parameter eigenvalue problem is obtained and solved for critical loads in the static case and for natural frequencies in the dynamic case. The obtained solutions are found compatible with those obtained from other techniques. The influences of different parameters on the critical loads and natural frequencies are investigated.

Keywords: Tapered beams; Elastic; Restraints; Two-parameter foundation; Differential quadrature method.

520. Effect of Porosity on the flow of A Dusty Fluid Between Parallel Plates with Heat Transfer and Uniform Suction and Injection

Hazem Ali Attia, W. Abbas, Mostafa A. M. Abdeen and M.S. Emam

European Journal of Environmental and Civil Engineering, 18: 241-251 (2014) IF: 0.437

In the present study, the unsteady flow with heat transfer of a viscous incompressible dusty fluid through a porous medium is studied. The parallel plates are assumed to be porous and Subjected to a uniform suction from above and injection from below while the fluid is flowing through a porous medium that is assumed to obey Darcy's law. The equations of motion are solved analytically to obtain the velocity distributions for both the fluid and dust particles. The energy equations for both the fluid and dust particles including the viscous dissipations are solved numerically using finite differences to get the temperature distributions for both phases. The influence of the porosity of the medium and the suction and injection velocity on both the fluid and particle phases is investigated.

Keywords: Two phase flow; Dusty fluid; Parallel channel flow; Heat transfer; Finite differences.

521. Unsteady Couette Flow of A Thermally Conducting Viscoelastic Fluid Under Constant Pressure Gradient in A Porous Medium

Hazem Ali Attia, Ahmed Lotfy Aboul-Hassan, Mostafa A. M. Abdeen, Alaa El-Din Abdin and W. Abd El-Meged

Chinese Journal of Physics, 52: 1015-1027 (2014) IF: 0.431

Unsteady Couette flow through a porous medium of an incompressible non-Newtonian viscoelastic fluid between two parallel horizontal porous plates is studied. A constant pressure gradient in the axial direction and a uniform suction and injection normal to the surface of the plates are applied. The two plates are kept at different but constant temperatures, heat transfer through the conducting fluid is considered, and viscous dissipation is not neglected. Numerical solutions for the governing momentum and energy equations are obtained using the finite difference method. The results show that the porosity of the medium and the departure from the Newtonian characteristics of the fluid to viscoelasticity result in a drop in the velocity of flow and a drop in temperature and change the transient duration. The suction and injection reduce both the velocity and temperature at the middle plane.

Keywords: Couette flow; Heat transfer; Viscous dissipation; Viscoelastic fluid; Porous medium; Numerical solution.

522. Analog Fault Diagnosis Using Conic Optimization and Ellipsoidal Classifiers

Mohamed A. El-Gamal, Abdel-Karim S. Hassan and Ahmad A. Ibrahim

Journal of Electronic Testing, 30: 443-455 (2014) IF: 0.429

This paper introduces a new fault diagnosis strategy for analog circuits based on conic optimization and ellipsoidal classifiers. Ellipsoidal classifiers are trained for efficient and accurate fault classification of the circuit under test (CUT). In the testing phase, the output of the ellipsoidal classifiers is used to isolate the actual CUT fault. The constructed classifiers exhibit high classification rate with competitive computational complexity even if the CUT has overlapping faults. Experimental results demonstrate the superior performance of the ellipsoidal classifiers in analog fault diagnosis.

Keywords: Analog circuits; Conic optimization; Ellipsoidal classifier; Fault classification; Fault simulation.

523. Oscillatory and Asymptotic Behavior of Solutions for Second-Order Nonlinear Integro-Dynamic Equations on Timescales

Ravi P. Agarwal, Said R. Grace, Donal O'regan and Ağacik Zafer

Electronic Journal of Differential Equations, (105): 1-12 (2014) IF: 0.419

In this article, we study the asymptotic behavior of nonoscillatory solutions of second-order integro-dynamic equations as well as the oscillatory behavior of forced second order integrodynamic equations on time scales. The results are new for the continuous and discrete cases. Examples are provided to illustrate the relevance of the results.

Keywords: Oscillation; Dynamic equation; Positive; Negative coefficients; Time scale.

524. Unsteady Flow in A Porous Medium Between Parallel Plates in the Presence of Uniform Suction And Injection with Heat Transfer

M. Abdeen and H. Attia

International Journal of Civil Engineering, 12: 277-281 (2014) IF: 0.397

The unsteady flow in porous medium of a viscous incompressible fluid bounded by two parallel porous plates is studied with heat transfer. A uniform and constant pressure gradient is applied in the axial direction whereas a uniform suction and injection are applied in the direction normal to the plates. The two plates are kept at constant and different temperatures and the viscous dissipation is not ignored in the energy equation. The effect of the porosity of the medium and the uniform suction and injection velocity on both the velocity and temperature distributions are investigated.

Keywords: Unsteady flow; Viscous incompressible fluid; Heat transfer; Porous medium; Numerical solution.

525. On the Oscillation of Second Order Nonlinear Neutral Dynamic Equations with Distributed Deviating Arguments on Time-Scales

Said Grace

Dynamic Systems and Applications, 32: 735-748 (2014) IF: 0.375

In this paper, we investigate some new oscillation criteria and give sufficient conditions to ensure that all solutions of second order nonlinear neutral dynamic equations with distributed deviating arguments are oscillatory on a time-scale T, via comparison with second order nonlinear dynamic equations whose oscillatory character are known and extensively studied in the literature.

Keywords: Oscillation; Dynamic equations; Time-scales.

526. MHD flow of A Dusty fluid Between two Infinite parallel Plates with Temperature Dependent physical properties Under Exponentially Decaying Pressure Gradient

Attia, H. A., A. L. Aboul-Hassan, M. A. M. Abdeen and E. - D. A. Abdin

Bulgarian Chemical Communications, 46: 320-329 (2014) IF: 0.349

In this study, the unsteady magnetohydrodynamic (MHD) flow and heat transfer of a dusty electrically conducting fluid between two infinite horizontal plates with temperature dependent physical properties are investigated. The fluid is acted upon by an exponentially decaying pressure gradient in the axial direction and an external uniform magnetic field perpendicular to the plates. The governing coupled momentum and energy equations are solved numerically by using the method of finite differences. The effects of the variable physical properties and the applied magnetic field on the velocity and temperature fields for both the fluid and dust particles are studied.

Keywords: Two-phase flow; Heat transfer; Parallel plates; Variable properties; Numerical solution.

527. Effect of Porosity on the flow and Heat Transfer Between two Parallel Porous Plates with the Hall Effect and Variable Properties Under Constant Pressure Gradient

Abdeen, M. A. M., H. A. Attia, W. Abbas and A. E. - D. Abdin

Bulgarian Chemical Communications, 46: 535-544 (2014) IF: 0.349

The transient hydromagnetic flow through a porous medium between two infinite parallel porous plates is studied with heat transfer considering the Hall effect and the temperature dependent physical properties under constant pressure gradient. An external uniform magnetic field and a uniform suction and injection are applied perpendicular to the horizontal plates. A numerical solution for the governing non-linear coupled set of the momentum equations and the energy equation including the viscous and Joule dissipations is adopted. The effect of the porosity of the medium, the Hall current and the temperature-dependent viscosity and thermal conductivity on both the velocity and temperature distributions is reported.

Keywords: Flow between two parallel plates; Temperaturedependent properties; Hydromagnetics; Porous medium; Heat transfer; Finite differences.

528. Ion Slip Effect on A Steady flow Through A Circular Pipe of A Dusty Conducting Oldroyd 8-Constant Fluid

H. A. Attia, M. A. M. Abdeen and M. T. M. M. Elbarawy

Journal of Applied Mechanics and Technical Physics, 55: 793-799 (2014) IF: 0.268

In this paper, a steady magnetohydrodynamic (MHD) flow of a dusty incompressible electrically conducting Oldroyd 8-constant fluid through a circular pipe is examined with considering the ion slip effect. A constant pressure gradient in the axial direction and an external uniform magnetic field in the perpendicular direction are applied. A numerical solution is obtained for the governing nonlinear momentum equations by using finite differences. The effect of the ion slip, the non-Newtonian fluid characteristics, and the particle-phase viscosity on the velocity, volumetric flow rates, and skin friction coefficients of both the fluid and particle phases is reported.

Keywords: Circular pipe flow; Non-newtonian fluid; Unsteady state; Conducting fluid; Ion slip; Hall current.

Dept. of Mechanical Design and Production

529. Thinning and Residual Stresses of Sheet Metal in the Deep Drawing Process

M. El Sherbiny, H. Zein, M. Abd-Rabou and M. El shazly

Materials and Design, 55: 869-879 (2014) IF: 3.171

This paper presents a Finite Element (FE) model developed for the 3-D numerical simulation of sheet metal deep drawing process (Parametric Analysis) by using ABAQUS/EXPLICIT Finite Element Analysis (FEA) program with anistropic material properties and simplified boundary conditions.

The FE results are compared with experimental results for validation.

The developed model can predict the thickness distribution, thinning, and the maximum residual stresses of the blank at different die design parameters, including both geometrical and physical parameters. Furthermore, it is used for predicting reliable working parameters without expensive shop trials.

Predictions of the thickness distribution, thinning, and the maximum residual stresses of the sheet metal blank with different design parameters are reported. Frictional limitations and requirements at the different interfaces are also investigated.

Keywords: Metal forming; Sheet metal; Thinning; thickness distribution; Residual stresses.

530. Thinning and Spring Back Prediction of Sheet Metal in the Deep Drawing Process

H. Zein, M. El Sherbiny, M. Abd-Rabou and M. El shazly

Materials and Design, 53: 797-808 (2014) IF: 3.171

The spring back simulation helps to get the required tolerance of the punch travel distance. This tolerance is needed in getting the required height of the final drawn part. Prediction of the forming results as spring back, determination of thickness distribution and of the thinning of the sheet metal blank reduces the production cost of the material and time. In this paper, A Finite Element (FE) model is developed for the 3-D numerical simulation of sheet metal deep drawing process (Parametric Analysis) by using ABAQUS/ EXPLICIT FEA program with the proper material properties(anistropic material)and simplified boundary conditions. The FE results are compared with experimental results for validation. The developed model predicts the spring back, the thickness distribution and thinning of the blank as affected by the die design parameters (geometrical parameters and physical parameters). Furthermore, with numerical simulation, working parameters such as punch force, the blank holder force, and the lubrication requirements can be determined without expensive shop trials.

Keywords: Deep drawing; Sheet metal; Thinning; Thickness distribution; Spring back.

531. A Tabu Search Approach for Proportionate Multiprocessor open Shop Scheduling

Tamer F. Abdelmaguid, Mohamed A. Shalaby and Mohamed A. Awwad

Computational Optimization and Applications, 58: 187-203 (2014) IF: 0.977

In the multiprocessor open shop scheduling problem, jobs are to be processed on a set of processing centers-each having one or more parallel identical machines, while jobs do not have a prespecified obligatory route. A special case is the proportionate multiprocessor open shop scheduling problem (PMOSP) in which the processing time on a given center is not job-dependent. Applications of the PMOSP are evident in health care systems, maintenance and repair shops, and quality auditing and final inspection operations in industry. In this paper, a tabu search (TS) approach is presented for solving the PMOSP with the objective of minimizing the makespan. The TS approach utilizes a neighborhood search function that is defined over a network representation of feasible solutions. A set of 100 benchmark problems from the literature is used to evaluate the performance of the developed approach. Experimentations show that the developed approach outperforms a previously developed genetic algorithm as it produces solutions with an average of less than 5 % deviation from a lower bound, and 40 % of its solutions are provably optimal.

Keywords: Scheduling; Multiprocessor open shop; Tabu search; Makespan..

Dept. of Mechanical Power Engineering

532. Development and Validation of a Lead Emission Inventory for the Greater Cairo Area

Zeinab Saleh Safar

Journal of Advanced Research, 5: 551-562 (2014) IF: 3

Studies that investigate the environmental health risks to Cairo residents invariably conclude that lead is one of the area's major health hazards. The Cairo Air Improvement Project (CAIP), which was implemented by a team led by Chemonics International, funded by USAID in partnership with the Egyptian Environmental Affairs Agency (EEAA), started developing a lead emission inventory for the greater Cairo (GC) area in 1998. The inventory contains a list by major source of the annual lead emissions in the GC area. Uses of the inventory and associated database include developing effective regulatory and control strategies, assessing emissions trends, and conducting modeling exercises. This paper describes the development of the current lead emissions inventory (1999-2010), along with an approach to develop site specific emission factors and measurements to validate the inventory. This paper discusses the major sources of lead in the GC area, which include lead smelters, Mazout (heavy fuel oil) combustion, lead manufacturing batteries factories, copper foundries, and cement factories. Included will be the trend in the lead emissions inventory with regard to the production capacity of each source category. In addition, the lead ambient measurements from 1999 through 2010 are described and compared with the results of Source Attribution Studies (SAS) conducted in 1999, 2002, and 2010. Due to EEAA/CAIP efforts, a remarkable decrease in more than 90% in lead emissions was attained for 2007.

Keywords: Lead; Emission; Atmospheric air; Particulate matter; Greater cairo.

533. Characteristic-Based Non-Linear Simulation of Large-Scale Standing-wave Thermoacoustic Engine

Ahmed I. Abd El-Rahman and Ehab Abdel-Rahman

Journal of The Acoustical Society of America, 136: 649-658 (2014) IF: 1.555

A few linear theories [Swift, J. Acoust.Soc. Am. 84(4), 1145-1180 (1988); Swift, J. Acoust.Soc. Am. 92(3), 1551-1563 (1992); Olson and Swift, J. Acoust. Soc. Am. 95(3), 1405-1412 (1994)] and numerical models, based on low-Mach number analysis [Worlikar and Knio, J. Comput. Phys. 127(2), 424-451 (1996); Worlikar et al., J. Comput. Phys. 144(2), 199-324 (1996); Hireche et al., Canadian Acoust. 36(3), 164-165 (2008)], describe the flow dynamics of standing-wave thermoacoustic engines, but almost no simulation results are available that enable the prediction of the behavior of practical engines experiencing significant temperature gradient between the stack ends and thus producing large-amplitude oscillations. Here, a one-dimensional non-linear numerical simulation based on the method of characteristics to solve the unsteady compressible Euler equations is reported. Formulation of the governing equations, implementation of the numerical method, and application of the appropriate boundary conditions are presented. The calculation uses explicit time integration along with deduced relationships, expressing the friction coefficient and the Stanton number for oscillating flow inside circular ducts. Helium, a mixture of Helium and Argon, and Neon are used for system operation at mean pressures of 13.8, 9.9, and 7.0 bars, respectively. The selfinduced pressure oscillations are accurately captured in the time domain, and then transferred into the frequency domain, distinguishing the pressure signals into fundamental and harmonic responses. The results obtained are compared with reported experimental works [Swift, J. Acoust. Soc. Am. 92(3), 1551-1563 (1992); Olson and Swift, J. Acoust.Soc. Am. 95(3), 1405-1412

(1994)] and the linear theory, showing better agreement with the measured values, particularly in the non-linear regime of the dynamic pressure response.

Keywords: Characteristics method; Standing-wave; Thermoacoustics.

534. Flame Kernel Generation and Propagation in Turbulent Partially Premixed Hydrocarbon Jet

Mohy Saad AbdelHameed Mansour

Combustion Science and Technology, 186: 698-711 (2014) IF: 0.976

stability, Flame development, propagation, combustion efficiency, pollution formation, and overall system efficiency are affected by the early stage of flame generation defined as flame kernel. Studying the effects of turbulence and chemistry on the flame kernel propagation is the main aim of this work for natural gas (NG) and liquid petroleum gas (LPG). In addition the minimum ignition laser energy (MILE) has been investigated for both fuels. Moreover, the flame stability maps for both fuels are also investigated and analyzed. The flame kernels are generated using Nd:YAG pulsed laser and propagated in a partially premixed turbulent jet. The flow field is measured using 2-D PIV technique. Five cases have been selected for each fuel covering different values of Reynolds number within a range of 6100-14400, at a mean equivalence ratio of 2 and a certain level of partial premixing. The MILE increases by increasing the equivalence ratio. Near stoichiometric the energy density is independent on the jet velocity while in rich conditions it increases by increasing the jet velocity. The stability curves show four distinct regions as lifted, attached, blowout, and a fourth region either an attached flame if ignition occurs near the nozzle or lifted if ignition occurs downstream. LPG flames are more stable than NG flames. This is consistent with the higher values of the laminar flame speed of LPG. The flame kernel propagation speed is affected by both turbulence and chemistry. However, at low turbulence level chemistry effects are more pronounced while at high turbulence level the turbulence becomes dominant. LPG flame kernels propagate faster than those for NG flame. In addition, flame kernel extinguished faster in LPG fuel as compared to NG fuel. The propagation speed is likely to be consistent with the local mean equivalence ratio and its corresponding laminar flame speed.

Keywords: Flame kernel; Ignition energy; Laser ignition; Partial premixed flame; Piv measurements.

535. Computational Fluid Dynamics Simulation of A Thermoacoustic Refrigerator

Ahmed I. Abd El-Rahman and Ehab Abdel-Rahman

Journal of Thermophysics and Heat Transfer, 28: 78-86 (2014) IF: 0.871

The thermal interactions between the stack plates and their neighboring gas particles within the thermal penetration depth in a thermoacoustic resonator convert acoustic energy into heat energy in the process of standing thermoacoustic refrigeration systems. Few numerical approximations describe the flow behavior and energy flux density in standing devices, but almost no simulation results are available for the fully coupled continuity of Navier–Stokes and energy equations. Here, we report a twodimensional computational fluid dynamics simulation of the nonlinear oscillating flow behavior in a helium-filled halfwavelength thermoacoustic refrigerator. The finite volume method is used, and the solid and gas domains are represented by large numbers of quadrilateral and triangular elements. The calculations assume a periodic structure to reduce the computational cost and apply the dynamic mesh technique to account for the adiabatically oscillating wall boundaries. The simulation uses an implicit time integration of the full unsteady compressible flow equations with a conjugate heat transfer algorithm (ANSYS FLUENT). A typical run involves 12,000 elements and a total simulation time of 5 s. Simulation results for drive ratios range Dr=0.28%-2% are compared to both linear theory and a low Mach number model, and show good agreement with the experimental values. A maximum cooling effect of 3° is predicted at a nondimensional wave number kx=p/4, measured from the resonator rigid end. This simulation provides an interesting tool for understanding the bulk and microstructural flow behavior and the associated nonlinear acoustic streaming in thermoacoustic refrigerators, by characterizing and optimizing their performance and building computational fluid dynamics models of thermoacoustic devices.

Keywords: Thermoacoustic refrigerator; Cfd simulation.

Dept. of Mining, Petroleum and Metallurgy 536. Reducing Sulfur and Ash from Coal Using Bacillus Subtilis and Paenibacillus

A.A. El-Midany and M.A. Abdel-Khalek

Fuel, 115: 589-595 (2014) IF: 3.4

The release of harmful gases during the combustion of coal due to the presence of ash and sulfur, as a coal associated impurities, has negative effects on the environment as well as on the efficiency of power plants.

Removal of ash and sulfur from coal is one of the crucial issues that attract researchers' attention. Several separation techniques were tested for ash and sulfur removal from coal. Bioseparation is one of recently tested methods for removal of sulfur from coal. Therefore, in the current study, bioflotation was used for reducing coal ashes and sulfur using Bacillus subtilis and Paenibacillus polymyxa. Coal–bacteria interaction was investigated using adsorption kinetics, adsorption isotherm, Fourier Transform Infra-Red (FTIR) and zeta potential.

Bioflotation results indicated that B. subtilis is better than P. polymyxa for reducing both sulfur and ash content. B. subtilis produces a coal concentrate with a 0.92% total sulfur and 1.95% ash, in comparison to 1.12% total sulfur and 2.65% ash for P. Polymyxa, with a yield exceeds 72%, from feed sample with 3.3% total sulfur and 6.65% ash.

Keywords: Coal; Bacteria; Adsorption; Bioflotation; Bacillus subtilis; Paenibacillus polymyxa.

537. Investigating Sodium Sulphate as A Phosphate Depressant in Acidic Media

T.F. Al-Fariss, Y. Arafat , F.A. Abd El-Aleem and A.A. El-Midany

Separation and Purification Technology, 124: 163-169 (2014) IF: 3.065

Reverse flotation is a commonly used technique for separating carbonate impurities from sedimentary phosphate ores using fatty acids collectors. Although, oleic acid represents one of the famous fatty acids that have been used as a collector in phosphate flotation circuits, it is a non-selective collector.

Therefore, the selection of depressing agent is the most controlling factor. In this study, sodium sulphate was used as a phosphate depressant. The role of sodium sulphate in separating phosphate from its impurities and producing an acceptable concentrate grade for phosphoric acid production (equals or more than 30% P2O5) was evaluated using augmented factorial design. The collector dose, depressant dose, solid %, flotation time and pH were chosen as main affecting variables.

The results showed that the addition of sodium sulphate improves the phosphate grade and recovery especially at highly acidic pH. They showed also that the solid % and the pH represent additional key factors in achieving a good grade concentrate due to their role in controlling the amount of ionic species in the flotation pulp. A concentrate contains >32% P2O5 was obtained with a recovery ranges from 84% to 87%.

Keywords: Sedimentary phosphate; Calcareous phosphate; Reverse flotation; Sodium sulphate; Depressant.

538. Influence of Bacteria–Coal Electrostatic Interaction on Coal Cleaning

A.A. El-Midany and M.A. Abdel-Khalek

International Journal of Mineral Processing, 126: 30-34 (2014) IF: 1.46

Bacteria have been studied in bioflotation and bioflocculation processes for impurity removal. Electrostatic forces are important for adsorption of bacteria onto mineral surfaces. In the present study, three strains of bacteria: Bacillus subtilis, Paenibacillus polymyxa and Mycobacterium phlei, are used to emphasize the importance of bacteria–coal electrostatic interaction on coal cleaning. They differ in their point of zero-charge (PZC). Flotation experiments were conducted using each bacterium individually to reduce coal impurities. Although promising results were observed for all studied bacteria, B. subtilis was the best. By correlating the PZC of coal particles as well as the bacteria, it was found that the superiority of B. subtilis is related to wider PZC difference between the coal and B. subtilis.

Keywords: Electrostatic interaction; Coal; Bacteria; Bioseparation; Flotation.

539. Development of Artificial neural network models for supercritical fluid Solvency in Presence of Co-Solvents

Eissa Mohamed El-Moghawry Shokir, Emad Souliman Al-Homadhi, Osama Al-Mahdy and Ayman Abdel-Hamid El-Midany

Korean Journal of Chemical Engineering, 31: 1496-1504 (2014) IF: 1.24

This paper presents the application of artificial neural networks (ANN) to develop new models of liquid solvent dissolution of supercritical fluids with solutes in the presence of cosolvents. The neural network model of the liquid solvent dissolution of CO_2 was built as a function of pressure, temperature, and concentrations of the solutes and cosolvents. Different experimental measurements of liquid solvent dissolution of supercritical fluids (CO₂) with solutes in the presence of cosolvents were collected. The collected data are divided into two parts. The first part was used in building

the models, and the second part was used to test and validate the developed models against the Peng-Robinson equation of state. The developed ANN models showed high accuracy, within the studied variables range, in predicting the solubility of the 2-naphthol, anthracene, and aspirin in the supercritical fluid in the presence and absence of co-solvents compared to (EoS). Therefore, the developed ANN models could be considered as a good tool in predicting the solubility of tested solutes in supercritical fluid.

Keywords: Supercritical; Fluid; Solvents; Cosolvents; Artificial neural networks.

540. Microseismic Monitoring of the Hydraulic-Fracture Growth and Geometry in the Upper Bahariya Member, Khalda Concession, Western Desert, Egypt

Abdulaziz Mohamed Abdulaziz Ali

Journal of Geophysics and Engineering, 11/4: 1-10 (2014) IF: 0.895

Three-component, downhole geophones are installed in production wells at the Khalda and Kahraman sites to monitor hydraulic fracturing treatment in a nearby well. Locatable microseismic events were distributed in space around the treatment well using the hypocenter-velocity inversion method. The E–W oriented microseismic pattern aligns with the proposed specifications of fracture model design at both the Khalda and Kahraman sites.

Due to the small magnitude and long separation distance between the treatment well and the recording string, microseismicity was dominantly observed during the main fracturing operation at both the Khalda and Kahraman sites, with calculated magnitudes less than $-0.3 M_w$. In addition, the calculated confidence for locatable events was generally average or low.

The seismic zone through the mainfrac treatment was estimated to spread over 58 m height and 320 m length at the Khalda site, while the zone of the Kahraman site was enclosed within 25 m height and 250 m length.

The stimulated reservoir volume (SRV) at the Khalda site was estimated to be 433 200 m³, with asymmetrical wings around the stimulation well, but at the Kahraman site the stimulation imaging was marginally successful and the stimulated SRV was only 247 000 m³. In general, the two microseismic experiments at Khalda and Kahraman were relatively successful in locating the microseismic events and calculating the SRV within the producing horizon, elucidating the importance of the microseismic technique in monitoring reservoir stimulation.

Keywords: Upper bahareya; Microseismic; Khalda concession.

541. Low Solubility of Calcined Phosphate: Surface Area Reduction or Chemical Composition Change?

T. F. Al-Fariss, F. A. Abd El-Aleem, Y. Arafat, K. A. El-Nagdy and A. A. El-Midany

Particulate Science and Technology, 32: 80-85 (2014) IF: 0.48

Calcination process is one of several methods used for upgrading the calcareous phosphate ores. However, the ore characteristics change after exposure to high temperatures. Therefore, in this study, calcination experiments for beneficiation of this ores are conducted in a laboratory scale by using muffle furnace. In addition, the physical and chemical changes on calcareous phosphate from Al-Jalamid locality, Saudi Arabia, were investigated.

The results indicated that there are physical and chemical changes in the calcined product. The first observation was the change in color of the calcined products. Also, the surface area change of the calcined products was reported. The surface area measurements, XRD, FTIR, and SEM of calcareous phosphate before and after calcination indicated that although, the emission of CO2 gas, as a calcination product, creates some pores at the particle surface, the sintering of phosphate at high temperature leads to surface area reduction.

Therefore, it was revealed that the surface area reduction and the formation of new phases such as tri-calcium phosphate and calcium silicate are the main reasons for low phosphate solubility. **Keywords**: Beneficiation; Calcareous phosphate; Calcination; Phosphate ores.

542. Effect of Heat Input on the Microstructure and Properties of Dissimilar weld Joint Between incoloy 28 and Superaustenitic Stainless Steel

M. S. Abdel Rahman, N. A. Abdel Raheem and M. R. El Koussy

Acta Metallurgica Sinica (English Letters), 27: 259-266 (2014) IF: 0.426

This work focuses on studying the effect of welding heat input within the range from 1 to 5 kJ/mm on the microstructure and the corresponding mechanical and corrosion properties of dissimilar joint between superaustenitic stainless steel (UNS S31254) and Incoloy 28 (UNS N08028). The two materials were butt-welded with ER NiCrMo3. The metallurgical changes associated with welding of SASS and Incoloy 28 were studied using optical microscope, SEM, and EDX. The mechanical and corrosion properties were investigated using tensile test, Vickers hardness test, and pitting and crevice corrosion tests. The weld metal microstructure showed precipitates with needle-like shape at 3 and 5 kJ/mm. Also, the microstructure showed unmixed zone (UMZ) at the fusion line of both SASS and Incoloy 28 sides at all the investigated heat inputs. The Mo microsegregation within UMZ at Incoloy 28 side increased as the heat input increased from 1 to 5 kJ/mm but that in SASS increased with increasing heat input from 1 to 3 kJ/mm and then decreased with increasing from 3 to 5 kJ/mm. The ultimate tensile strengths for all specimens at all the investigated heat inputs are acceptable. The average hardness noticeably changed in weld metal as the heat input increased from 1 to 5 kJ/mm. Other zones such as HAZ or UMZ did not demonstrate marked changes in the average hardness. The pitting and crevice corrosion rates of the weld joint were found significant at 1 and 3 kJ/mm but insignificant at 5 kJ/mm according to ASTM G48.

Keywords: Superaustenitic; Incoloy 28; Welding; Heat Input; Unmixed zone; Microsegregation; Corrosion.

543. Hardness And Wear Behaviour Of Semi-Solid Cast A390 Alloy Reinforced With Al2o3 And Tio2 Nanoparticles

Iman Salah Eldin El-Mahallawi

Arabian Journal for Science and Engineering, 39: 5171-5184 (2014) IF: 0.367

In this work, a series of castings of hypereutectic aluminiumsilicon samples (A390) were prepared by rheocasting in a specially designed and built furnace unit allowing for the addition of the Al2O3/TiO2 nanoparticles to the Al-Si slurry, with mechanical stirring. The microstructure features and the hardness of the cast samples were investigated, as well as the resistance to wear in laboratory tests. The results obtained in this work show enhancement in the micro-hardness and hardness of the Al2O3/TiO2nanodispersed hypereutectic A390 alloys, combined with improved wear resistance. The obtained results revealed that the introduction of Al2O3/TiO2 nanodispersions together with the stirring effect induces a refining role, as significant refining was observed in the microstructure of the alloy. The results have also shown that modified intermetallic precipitates have appeared after adding the Al2O3/TiO2 nanoparticles. Evidence for the formation of a combined (TiAlMgSi)oxide has been also presented in this work and its contribution in enhancement of wear resistance cannot be ruled out.

Keywords: Nanodispersion; Semi-solid processing; Hypereutectic al–si cast alloys; Hardness; Wear.

544. Statistical Evaluation of Phenol Degradation by Ozone Oxidation

Ayman A. El-Midany, Reda M. Mohamed and Ibrahim A. Ybrahim

Mp Materials Testing, 56: 251-254 (2014) IF: 0.273

Phenol is a major environment contaminant produced by various industries. In this study, phenol degradation was achieved using ozone treatment. The main factors affecting the phenol degradation, i.e., ozone concentration, H2O2/phenol molar ratio and reaction time, were studied using statistical design of experiments to optimize the phenol degradation in terms of studied factors. The results of the statistical design indicated that the ozone oxidation can be used for phenol degradation at high efficiency reaches 100%. It was indicated that not only one condition at which the complete degradation can be achieved but also there are several design points lead to the same results. For instance, the complete degradation can be achieved at 6 hours reaction time, 0.03 H2O2/phenol molar ratio, and 10 gm/m3 ozone concentration.

Keywords: Phenol; Oxidation; Ozone; Statistical design.

545. Desert Project Illustrates Selecting Acid-Gas Removal Technology

Mahmoud Abu El Ela

Oil and Gas Journal, 112: 80-85 (2014)

This article presents criteria that should be considered in preparing a short list of acid-gas removal processes that seem to be appropriate to meet treated-gas specifications. Final selection is done on the basis of technical and economic criteria. The article presents a case study for development of gas producing fields of 200 MMscfd. A CO₂-removal system is required in the designed facilities to reduce the CO₂ content in the produced gas to 3% from 7.2%. The amine system and the membrane technology are initially selected. The technical and economic evaluations show that the two-stage membrane system is the most appropriate technology for the project. Such work is an original contribution to developing a methodology to select the best technology for the acid-gas removal from natural gas.

Keywords: Acid-gas removal; Natural gas treatment.

Dept. of Structural Engineering

546. Behavior of Concentrically Loaded CFT Braces Connections

Maha M. Hassan, Hazem M. Ramadan, Mohammed N. Abdel-Mooty and Sherif A. Mourad

Journal of Advanced Research, 5: 243-252 (2014) IF: 3.00

Concrete filled tubes (CFTs) composite columns have many economical and esthetic advantages, but the behavior of their connections is complicated. Through this study, it is aimed to investigate the performance and behavior of different connection configurations between concrete filled steel tube columns and bracing diagonals through an experimental program. The study included 12 connection subassemblies consisting of a fixed length steel tube and gusset plate connected to the tube end with different details tested under half cyclic loading. A notable effect was observed on the behavior of the connections due to its detailing changes with respect to capacity, failure mode, ductility, and stress distribution.

Keywords: Concrete filled tube (CFT) columns; Connections; Ductility; Strength; Detailing.

547. Analyzing Delay Causes in Egyptian Construction Projects

Mohamed Mahmoud Mahdy Marzouk

Journal of Advanced Research, 5: 49-55 (2014) IF: 3

Construction delays are common problems in civil engineering projects in Egypt. These problems occur frequently during project life-time leading to disputes and litigation. Therefore, it is essential to study and analyze causes of construction delays. This research presents a list of construction delay causes retrieved from literature. The feedback of construction experts was obtained through interviews. Subsequently, a questionnaire survey was prepared. The questionnaire survey was distributed to thirty-three construction experts who represent owners, consultants, and contractor's organizations. Frequency Index, Severity Index, and Importance Index are calculated and according to the highest values of them the top ten delay causes of construction projects in Egypt are determined. A case study is analyzed and compared to the most important delay causes in the research. Statistical analysis is carried out using analysis of variance ANOVA method to test delay causes, obtained from the survey. The test results reveal good correlation between groups while there is significant difference between them for some delay causes and finally roadmap for prioritizing delay causes groups is presented.

Keywords: Construction management; Construction delays; Disputes; Litigation; Statistical analysis.

548. Environmental and Economic Impact Assessment of Construction and Demolition Waste Disposal Using System Dynamics

Mohamed Mahmoud Mahdy Marzouk

Resources, Conservation and Recycling, 82: 41-49 (2014) IF: 2.692

Construction and demolition wastes (CDW) have increasingly serious problems in environmental, social, and economic realms. There is no coherent framework for utilization of these wastes which are disposed both legally and illegally. This harms the environment, contributes to the increase of energy consumption, and depletes finite landfills resources. The aim of this paper is to evaluate the impacts of two alternatives for the management of CDW, recycling and disposing. The evaluation is carried out through developing a dynamic model with aid STELLA software by conducting the following steps: (1) quantifying the total cost incurred to mitigate the impacts of CDW landfills and uncollected waste on the environment and human health; (2) quantifying the total avoided emissions and saved energy by recycling waste; (3) estimating total external cost saved by recycling waste and; (4) providing a decision support tool that helps in re-thinking about waste disposal. The proposed evaluation methodology allows activating the stringent regulations that restrict waste disposal and developing incentives to encourage constructors to recycle their wastes. The research findings show that recycling CDW leads to significant reductions in emissions, energy use, global warming potential (GWP), and conserves landfills space when compared to disposal of wastes in landfills. Furthermore, the cost of mitigating the impact of disposal is extremely high. Therefore, it is necessary to recycle construction and demolition wastes.

Keywords: Construction; Demolition wastes (CDW); Environmental; Economic impact assessment; Pollutant emissions; Waste recycling; Global warming potential (GWP); System dynamics modeling.

549. Monitoring Thermal Comfort in Subways Using Building Information Modeling

Mohamed Mahmoud Mahdy Marzouk and Ahmed Abdelaty

Energy and Buildings, 84: 252-257 (2014) IF: 2.465

Metro transit systems have gained a lot of importance because of the large number of passengers depending on that vital mode of transportation. Most of metro transit systems contain subways which need to be efficiently ventilated in order to maintain health and comfort of passengers. Therefore, it is necessary to monitor the thermal comfort inside subways. Subways are large facilities that require an efficient and huge ventilation system. Monitoring thermal condition for the subway is an important issue because of the variations that may occur in different spaces within the subway. These variations may affect energy consumption and the level of thermal comfort for the passengers as well. This research presents an application that utilizes wireless sensor network (WSN) and building information modeling (BIM) in order to monitor thermal conditions within a subway. BIM-based model is used to visualize the readings of air temperature and humidity levels in the subway spaces. Whereas, WSN is used to measure air temperature and humidity at different spaces within the subway via a group of transmitter nodes attached with different sensors. A case study is presented in order to illustrate the capabilities of the system developed. Finally, conclusion and future recommendations to expand this research is presented.

Keywords: Wireless sensor networks; Building information Modeling; Indoor environmental quality; Subways; Facility management.

550. Bim-Based Framework for Managing Performance of Subway Stations

Mohamed Mahmoud Mahdy Marzouk

Automation in Construction, 41: 70-77 (2014) IF: 1.822

Rapid transit systems are considered a sustainable mode of transportation compared to other modes of transportation taking into consideration number of passengers, energy consumed and amount of pollution emitted. Building Information Modeling (BIM) is utilized in this research along with a global ranking system to monitor Indoor Environmental Quality (IEQ) in subway stations. The research is concerned with developing global rating system for subway stations' networks. The developed framework is capable of monitoring indoor temperature and Particulate Matter (PM) concentration levels in subway stations. A rating system is developed using Simos' ranking method in order to determine the weights of different components contributing to the whole level of service of a subway station as well as maintenance priority indices. A case study is presented to illustrate the use of the proposed system. The developed ranking system showed its effectiveness in ranking maintenance actions globally.

Keywords: Building information modeling; Wireless sensor network; Thermal comfort; Pm concentration levels; Subway stations.

551. Assessment of Bridge Vulnerability Due to Seismic Excitations Considering wave Passage Effects

S.S.F. Mehanny, O.M.O. Ramadan and H.A. El Howary

Engineering Structures, 70 (1 July 2014): 197-207 (2014) IF: 1.767

Uniform ground motion excitation at different supports is typically assumed in practice while performing seismic response analysis of structures with somehow limited footprints. In essence, design of bridges is customarily performed assuming identical signal at all bridge supports. In fact, ground motions may vary at the different supports, especially, for long extended structures, such as long bridges, dams and pipelines. This paper illustrates the impact of the difference in the arrival time of the ground motions on the seismic performance of continuous box girder bridges in both bridge orthogonal directions (longitudinal and transverse). For illustration purposes, a nine-span case-study bridge with a total length of 430 m is considered. Non-linear time history analyses are carried out using opensees software and the "out-of-phase ground motions at different supports" phenomenon is examined using a set of 20 real records originally extracted from the peer (Pacific Earthquake Engineering Center) Strong Motion Database. The analyses are repeated for different apparent wave propagation velocities (namely, 100, 200, 400 m/s, and 8 designating synchronized arrival time of the signal at all supports) along the bridge longitudinal direction. Results of the non-linear time history analyses performed in an incremental dynamic analysis context are hence manipulated through a probabilistic analysis framework to generate fragility curves associated with various performance levels for the case study bridge. Fragility curves giving the conditional probability of exceeding various performance levels are then integrated with generated hazard curves defining the expected seismic hazard in a specific zone. The outcome of this integration process results in values of mean annual frequency of exceeding pre-defined performance levels.

Keywords: Out-of-phase ground motions; Incremental dynamic analyses; Seismic fragility;Continuous bridges.

552. Numerical Investigation of Collapse of the Minnesota I-35W Bridge

Hamed Mohamed Mahmoud Salem and H.M. Helmyb

Engineering Structures, 59: 635-645 (2014) IF: 1.767

The I-35 Bridge over the Mississippi River in Minneapolis, Minnesota catastrophically failed during the evening rush hour on August 1, 2007, collapsing to the river and riverbanks beneath. In the years prior to the collapse, several reports cited problems with the bridge structure. This research analytically investigated the cause of the collapse using the Applied Element Method, which recently presented its capability to study the behavior of collapsing structures. The bridge was modeled using the original construction drawings, where all the structural details were taken into consideration (steel truss, gusset plates, concrete slabs, concrete piers, etc.). All the loads at the time of collapse were taken into consideration including traffic and construction loads. It was proven that AEM was capable of analyzing and investigating the cause of collapse of the I35-W bridge. The cause of collapse was found to be the failure of the gusset plates at connections L11 and U10, which well agreed with the field investigations of the collapsed bridge. The under-designed thickness of the plates, their corrosion, and the over loading due to traffic and construction loads at time of collapse were the reasons for the bridge collapse.

Keywords: Progressive collapse; Aem; Corrosion; Minnesota I-35.

553. Imperfection Modeling Using Finite Element Approach with Particular Discretization

Ahmed M. El-Kholy, Usama A. Morsy and Sherif A. Mourad

Journal of Structural Engineering, 140: 1-11 (2014) IF: 1.488

The research reported in this paper presents an attempt to improve the modeling of imperfections in steel structures using a finiteelement approach with particular discretization. This approach, termed the modified finite-element beta method (**MFEM**- β), is an improvement of a finite-element scheme that can handle displacement discontinuity.

In **MFEM**- β , a multilinear isotropic hardening model is implemented, a random imperfection procedure is proposed, and a modified failure treatment is adopted. The paper reviews the progression of the original scheme, presents the proposed imperfection procedure, and uses the results of two experimental tests to demonstrate the imperfection effect on the failure of a uniaxailly elongated steel plate and to validate **MFEM**- β .

The proposed method simulates the boundary and internal imperfections, and controls the intensity and distribution of the imperfections using six input parameters to randomly assign the imperfections to the numerical model. Showing an advance over the original scheme, the predicted stress and strain distributions of an imperfect cylinder under pressure are realistic. The predicted crack-path and failure load for an elongated imperfect steel plate match well with the experimental results.

Keywords: Finite element; Failure analysis; Imperfection modeling; Random imperfection; Crack propagation; Numerical simulation; Mfem- β ; Analysis; Computation.

554. Boundary Element Analysis of Multi-Thickness Shear-Deformable Slabs Without Sub-Regions

Mina Wagdy and Youssef F. Rashed

Engineering Analysis with Boundary Elements, 43: 86-94 (2014) IF: 1.43

In this paper, a new boundary element formulation is developed for the analysis of multi-thickness slabs. The shear deformable plate bending theory is employed. The additional thickness is added to the plate using additional stiffness matrix. A new systematic methodology for deriving stiffness matrix of additional thicknesses or drops is presented. The formulation is implemented into a computer code and several examples are considered to demonstrate the validity of the presented formulation.

Keywords: Boundary Element method; Multi-thickness slab; Stiffness matrix; Stiffness-like domain integrals.

555. Applications of Bridge Information Modeling in Bridges Life Cycle

Mohamed Mahmoud Mahdy Marzouk

Smart Structures and Systems, 13: 407-418 (2014) IF: 1.16

The purpose of this paper is to present an Integrated Life Cycle Bridge Information Modeling that can be used throughout different phases of the bridge life cycle including: design, construction, and operation and maintenance phases. Bridge Information Modeling (BrIM) has become an effective tool in bridge engineering and construction.

It has been used in obtaining accurate shop drawings, cost estimation, and visualization. In this paper, BrIM is used as an integrated tool for bridges life cycle information modeling. In the design phase, BrIM model can be used in obtaining optimum construction methods and performing structural advanced analysis. During construction phase, the model selects the appropriate locations for mobile cranes, monitors the status of precast components, and controls documents.

Whereas, it acts as a tool for bridge management system in operation and maintenance phase. The paper provides a detailed description for each use of BrIM model in design, construction, and operation and maintenance phases of bridges. It is proven that BrIM is an effective tool for bridge management systems throughout their life phases.

Keywords: Project management; Bridges construction; Building information modeling; Bridge life cycle phases.

556. Seismic force Reduction Factor for Steel Moment Resisting Frames with Supplemental Viscous Dampers

mohammed Hassanien Serror, R. Adel diab and S. Ahmed Mourad

Earthquakes and Structures, 7: 1171-1186 (2014) IF: 1.138

Damping is one of the parameters that control the performance of structures when they are subjected to seismic, wind, blast or other transient shock and vibration disturbances. By adding supplemental viscous dampers, the energy input from a transient deformation is absorbed, not only by the structure itself, but also by the supplemental dampers.

The aim of this study is to evaluate the values of both damping and ductility reduction factors for steel moment resisting frames with supplemental linear viscous dampers. Twodimensional finite element models have been established for a range of low to mid rise buildings with different parameters: number of floors; number of bays; and number of dampers with different supplemental damping ratios (from 5% to 30%). A parametric study has been performed using time history analyses and a welldocumented research method (N2-method).

In addition, an equation has been proposed for each reduction factor based on regression analysis for the obtained results. The results of the Time history analyses are compared with those of a modified N2-method. Moreover, a comparison with values specified in the European code EC8 and the Egyptian code ECP-201 has been performed.

Keywords: Seismic force reduction factor; Steel frame; Viscous damper; Damping; Ductility.

557. Simulation-based model for optimizing highways resurfacing operations

Mohamed Mahmoud Mahdy Marzouk and Marwa Fouad

Baltic Journal of Road and Bride Engineering, 9: 58-65 (2014) IF: 1.053

Work zone length in the highways' resurfacing is an important factor that should be determined before the start of work. This factor influences the time and cost of the project. This paper presents a framework that is dedicated for determining the optimum length of highway resurfacing work zone.

The framework estimates the total duration and total cost of resurfacing by conducting simulation analysis to model the resurfacing operations of highways to account associated uncertainties. The framework analyzes resurfacing of highways and divides them into zones.

The lengths of these zones depend on minimum total cost and minimum duration. The framework consists of two modules; simulation and optimization. Simulation module is responsible for estimating total duration for each work zone.

Whereas, optimization module optimizes the total cost including direct resurfacing operation, indirect/overhead costs, and the impact of work on road users' costs. The latter costs include queuing delay cost, moving delay cost, accident cost. A numerical example is presented to illustrate the practical use of the framework.

Keywords: Planning; Computer simulation; Genetic algorithms; Highways resurfacing; Road users' cost.

558. Integrated Urban-Construction Planning Framework for Slum Upgrading Projects

Omar El-Anwar and Tamer Abdel Aziz

Journal of Construction Engineering and Management, 140(4): 1-12 (2014) IF: 0.867

Slums are areas of population concentrations developed in the absence of physical planning and lack access to life essentials. Slums represent major national challenges in countries where they exist, especially developing countries. Various intervention strategies can be adopted to upgrade and/or replace slums, but are often faced with serious construction challenges, such as lack of access to sites and poor terrain conditions.

Moreover, during the execution of slum upgrading projects, resident families can experience significant social and economic disruptions. The objective of this paper is present an integrated
urban-construction planning framework for slum upgrading projects.

This framework incorporates participatory upgrading and is designed to achieve three important objectives, including (1) maximizing the benefits of slum upgrading projects by identifying and accelerating the delivery of urgent projects; (2) providing more accurate and practical estimates of upgrading projects costs and timelines, which enables controlling and minimizing the total projects costs and durations; and (3) minimizing the social and economic disruptions for resident families during construction. An illustrative example is presented to demonstrate the potential of the proposed framework and its core multiobjective optimization process.

Keywords: Logistics; Constructability; Optimization; Design/Build; Urban Areas; Planning.

559. A Simulation Optimization tool for low-Income **Housing Planning**

Mohamed Marzouk, Osama Omar, Manal Abdel Hamid and Moheeb El-Said

Journal of Civil Engineering and Environmental Systems, 31: 51-63 (2014) IF: 0.725

Construction of low-income housing projects is a recurring process and is associated with uncertainties that arise from the unavailability of resources.

This paper presents a case study that discusses how computer simulation and optimisation are used to aid government agencies and/or contractors in planning of such projects. It illustrates the optimisation of project objectives, taking into consideration the interaction amongst involved resources.

As such, total duration and the associated total costs, including direct and indirect costs, can be estimated and optimised. One Youth Habitation project that is executed in 6th of October City in Egypt is analysed in a step-by-step procedure to demonstrate the capability of proposed computer simulation and optimisation prototype (named LIHouse_Sim) in the modelling construction of low-income housing projects using bearing block walls with hollow core technique.

The presented tool proves its practicality to contractors in estimating the time and costs of the recurring process of lowhousing construction, considering income complex interdependencies between construction resources and the uncertainties associated with construction activities. The LIHouse_Sim prototype is used to perform a wide analysis for the alternative of the effective optimisation criteria in the bearing block walls/hollow core technique and for the genetic algorithm optimisation approach elements.

Keywords: Planning; Computer simulation; Low-income housing projects; Optimisation; Genetic algorithms.

560. Behavior of Gusset Plate-to-Ccft Connections with different configurations

M.M. Hassan, H.M. Ramadan, M. Naeem and S.A. Mourad

Steel and Composite Structures, 17: 735-751 (2014) IF: 0.719

Concrete-filled steel tube (CFT) composite columns, either circular (CCFT) or rectangular (RCFT), have many economical and aesthetic advantages but the behavior of their connections are complicated.

This study aims to investigate, through an experimental program, the performance and behavior of different connections configurations between circular concrete filled steel tube columns (CCFT) and gusset plates subjected to shear and axial compression loadings.

The study included seventeen connection subassemblies consisting of a fixed length steel tube and gusset plate connected to the tube end with different details tested under half cyclic loading. A notable effect was observed on the behavior of the connections due to its detailing changes with respect to capacity, failure mode, ductility, and stress distribution.

Keywords: Concrete filled tube (CFT) Columns; Connections; Ductility; Strength; Connection detailing.

561. Quantifying the Impacts of Failures of **Departments of Transportation'S Building Systems** on Road System Users

Umberto C. Gatti, Omar El-Anwar, Giovanni C. Migliaccio, Ken-Yu Lin and Yvonne Medina

Transportation Research Record: Journal of the Transportation Research Board, 2440: 85-93 (2014) IF: 0.556

Because of the financial crisis of 2007 to 2008 and the subsequent economic downturn, funding for transportation agencies has been consistently reduced. This lack of funds prevents the building assets of transportation agencies from being efficiently maintained, so failures may occur that discontinue employees' operations and activities and affect transportation system users. Thus, to maximize the use of available funding, it is compelling to create innovative tools and techniques capable of estimating how potential failures can affect employees' activities and, eventually, transportation system users. Facility managers and decision makers could use such estimates to make decisions on maintenance of building assets that would minimize the risks of disruptions to employees and transportation system users. Among the capital assets of the Washington State Department of Transportation (DOT), transportation equipment fund (TEF) shops are crucial in ensuring timely and effective care and maintenance of the majority of state vehicles and equipment. Therefore, any disruption of the operations of TEF shop facilities could significantly affect not only the Washington State DOT's vehicles and equipment maintenance but also the department's ability to fulfill its core mission. Given the importance of TEF shops, this exploratory case study investigates the failures that have occurred or are likely to occur in these facilities and employs discrete-event simulation to quantify the consequences of such failures on the shop activities and road users.

Keywords: Departments of transportation; Building systems failures; Discrete event simulation.

562. Implementing Earned Value Management Using **Bridge Information Modeling**

Mohamed Marzouk and Mohamed Hisham

Ksce Journal of Civil Engineering, 18: 1302-1313 (2014) IF: 0.511

Building Information Modeling (BIM) has widely become an effective tool in engineering and construction fields. It could be used in: generating shop drawings; detecting clashes; estimating quantities; and controlling documents. Applying BIM technology on bridges is named Bridge Information Modeling (BrIM). Bridge

Information Modeling (BrIM) is an intelligent representation of bridges since it contains all information needed about bridges through their whole lifecycle. This paper presents the use of Building Information Modeling in cost and time management of infrastructure bridges. BIM-based cost estimation application is presented which is capable to carry out approximate cost estimate; and detailed cost estimate. The application is designed in a flexible manner to be used with default values, or user defined values. Different performance measurement indexes are used in order to control the cost and schedule during execution phase of construction projects. This application integrates BIM with Earned Value (EV) concept to determine the project status at specific reporting date. A case study is presented to demonstrate the use of the developed modules.

Keywords: Building information modeling; Infrastructure bridges; Bridge information modeling; Cost estimate; Time; Cost control; Earned value.

563. Collapse Analysis of Utatsu Ohashi Bridge Damaged by Tohuku Tsunami Using Applied Element Method

Hamed Salem, Suzan Mohssen, Kenji Kosa and Akira Hosoda

Journal of Advanced Concrete Technology, 12: 388-402 (2014) IF: 0.508

The 2011 Tohuku tsunami on the east coast of Japan resulted in killing more than 15,000 people and missing more than 2,500 people, washing away of more than 250 coastal bridges and loss of US\$235 billion due to damages. Due to the importance of keeping coastal bridges in service after tsunami impact, in the current study, the collapse of Utatsu Ohashi bridge is numerically studied. The analysis is carried out using the Applied element Method due to its advantages of simulating structural progressive collapse. The AEM is a discrete crack approach, in which elements can be separated, fall and collide to other elements in a fully nonlinear dynamic scheme of computations. The Utatsu Ohashi bridge collapse was successfully simulated using AEM. It was numerically found that the amount of trapped air between deck girders during tsunami had a significant effect on the behavior of the bridge due to the buoyant force accompanied with the trapped air. A simplified method for estimating trapped air was assumed and proved to give good results compared to reality. Three different proposals for mitigating collapse of existing bridges were introduced and applied to Utatsu Ohashi bridge case and found to be very efficient for preventing collapse.

Keywords: Tsunami; Progressive collapse; Hydrodynamic force.

Dept. of Systems and Biomedical Engineering

564. A Collaborative Resource to Build Consensus for Automated Left Ventricular Segmentation of Cardiac Mr Images

Suinesiaputra A, Cowan BR, Al-Agamy AO, Elattar MA, Ayache N, Fahmy AS, Khalifa AM, Medrano-Gracia P, Jolly MP, Kadish AH, Lee DC, Margeta J, Warfield SK and Young AA.

Medical Image Analysis, 18: 50-62 (2014) IF: 3.681

A collaborative framework was initiated to establish a community resource of ground truth segmenta-tions from cardiac MRI. Multisite, multi-vendor cardiac MRI datasets comprising 95 patients (73 men, 22 women; mean age 62.73 ± 11.24 years) with coronary artery disease and prior myocardial infarction, were randomly selected from data made available by the Cardiac Atlas Project (Fonseca et al., 2011). Three semi- and two fullyautomated raters segmented the left ventricular myocardium from short-axis cardiac MR images as part of a challenge introduced at the STACOM 2011 MICCAI workshop (Suinesiapu-tra et al., 2012). Consensus myocardium images were generated based on the Expectation-Maximization principle implemented by the STAPLE algorithm (War?eld et al., 2004). The mean sensitivity, speci?city, positive predictive and negative predictive values ranged between 0.63 and 0.85, 0.60 and 0.98, 0.56 and 0.94, and 0.83 and 0.92, respectively, against the STAPLE consensus. Spatial and temporal agreement var-ied in different amounts for each rater. STAPLE produced high quality consensus images if the region of interest was limited to the area of discrepancy between raters. To maintain the quality of the consensus, an objective measure based on the candidate automated rater performance distribution is proposed. The consensus segmentation based on a combination of manual and automated raters were more consistent than any particular rater, even those with manual input. The consensus is expected to improve with the addition of new automated contributions. This resource is open for future contributions, and is available as a test bed for the evaluation of new segmentation algorithms, through the Cardiac Atlas Project (www.cardiacatlas.org).

Keywords: Segmentation challenge; Consensus images;Lv myocardium.

565. Detecting Hepatic Steatosis Using Ultrasound-Induced Thermal Strain Imaging: an Ex Vivo Animal Study

Ahmed M Mahmoud, Xuan Ding, Debaditya Dutta, Vijay P Singh and Kang Kim

Physics in Medicine and Biology, 59: 881-895 (2014) IF: 2.922

Hepatic steatosis or fatty liver disease occurs when lipids accumulate within the liver and can lead to steatohepatitis, cirrhosis, liver cancer and eventual liver failure requiring liver transplant. Conventional brightness mode (B-mode) ultrasound (US) is the most common noninvasive diagnostic imaging modality used to diagnose hepatic steatosis in clinics. However, it is mostly subjective or requires a reference organ such as the kidney or spleen with which to compare. This comparison can be problematic when the reference organ is diseased or absent. The current work presents an alternative approach to noninvasively detecting liver fat content using US-induced thermal strain imaging (US-TSI). This technique is based on the difference in the change in the speed of sound as a function of temperature between water- and lipid-based tissues. US-TSI was conducted using two system configurations including a mid-frequency scanner with a single linear array transducer (5-14 MHz) for both imaging and heating and a high-frequency (13-24 MHz) small animal imaging system combined with a separate customdesigned US heating transducer array. Fatty livers (n = 10) with high fat content (45.6 \pm 11.7%) from an obese mouse model and control livers (n = 10) with low fat content (4.8 \pm 2.9%) from wild-type mice were embedded in gelatin. Then, US imaging was performed before and after US induced heating. Heating time periods of ~3 s and ~9.2 s were used for the mid-frequency imaging and high-frequency imaging systems, respectively, to induce temperature changes of approximately 1.5 °C. The apparent echo shifts that were induced as a result of sound speed

change were estimated using 2D phase-sensitive speckle tracking. Following US-TSI, histology was performed to stain lipids and measure percentage fat in the mouse livers. Thermal strain measurements in fatty livers ($-0.065 \pm 0.079\%$) were significantly (p < 0.05) higher than those measured in control livers ($-0.124 \pm 0.037\%$). Using histology as a gold standard to classify mouse livers, US-TSI had a sensitivity and specificity of 70% and 90%, respectively. The area under the receiver operating characteristic curve was 0.775. This ex vivo study demonstrates the feasibility of using US-TSI to detect fatty livers and warrants further investigation of US-TSI as a diagnostic tool for hepatic steatosis. **Keywords**: Fatty liver disease; Obese mouse; Ultrasound thermal strain.

566. Spectral Subtraction Denoising Preprocessing Block to Improve P300-Based Brain-Computer Interfacing

Yasser Mostafa Ibrahim Kadah

Biomedical Engineering Online, 13: 1-14 (2014) IF: 1.746

Background: The signals acquired in brain-computer interface (BCI) experiments usually involve several complicated sampling, artifact and noise conditions. This mandated the use of several strategies as preprocessing to allow the extraction of meaningful components of the measured signals to be passed along to further processing steps. In spite of the success present preprocessing methods have to improve the reliability of BCI, there is still room for further improvement to boost the performance even more.

Methods: A new preprocessing method for denoising P300-based brain-computer interface data that allows better performance with lower number of channels and blocks is presented. The new denoising technique is based on a modified version of the spectral subtraction denoising and works on each temporal signal channel independently thus offering seamless integration with existing preprocessing and allowing low channel counts to be used.

Results: The new method is verified using experimental data and compared to the classification results of the same data without denoising and with denoising using present wavelet shrinkage based technique. Enhanced performance in different experiments as quantitatively assessed using classification block accuracy as well as bit rate estimates was confirmed.

Conclusion: The new preprocessing method based on spectral subtraction denoising offer superior performance to existing methods and has potential for practical utility as a new standard preprocessing block in BCI signal processing.

Keywords: Brain-computer interface; Spectral subtraction; Wavelet shrinkage; Signal denoising.

567. Computer Aided Detection System for Micro Calcifications in Digital Mammograms.

Hayat Mohamed, Mai S. Mabroukband Amr Sharawy

Comput Methods Programs Biomedicine, 116: 226-235 (2014) IF: 1.093

Breast cancer continues to be a significant public health problem in the world. Early detection is the key for improving breast cancer prognosis. Mammogram breast X-ray is considered the most reliable method in early detection of breast cancer. However, it is difficult for radiologists to provide both accurate and uniform evaluation for the enormous mammograms generated in widespread screening. Micro calcification clusters (MCCs) and masses are the two most important signs for the breast cancer, and their automated detection is very valuable for early breast cancer diagnosis. The main objective is to discuss the computer-aided detection system that has been proposed to assist the radiologists in detecting the specific abnormalities and improving the diagnostic accuracy in making the diagnostic decisions by applying techniques splits into three-steps procedure beginning with enhancement by using Histogram equalization (HE) and Morphological Enhancement, followed by segmentation based on Otsu's threshold the region of interest for the identification of micro calcifications and mass lesions, and at last classification stage, which classify between normal and micro calcifications 'patterns and then classify between benign and malignant micro calcifications. In classification stage; three methods were used, the voting K-Nearest Neighbor classifier (K-NN) with prediction accuracy of 73%, Support Vector Machine classifier (SVM) with prediction accuracy of 83%, and Artificial Neural Network classifier (ANN) with prediction accuracy of 77%.

Keywords: Artificial neural network (ANN); Histogram equalization (HE); K-Nearest neighbor classifier (K-NN); Micro calcifications (MCCs); Otsu's threshold; Support vector machine (SVM).

568. Greedy Framework for Optical flow Tracking of Myocardium Contours

Al-Agamy, A.O., Khalifa, A. and Fahmy, A.S.

IET Image Processing, 8: 207-212 (2014) IF: 0.676

Optical flow (OF) tracking of the myocardium contours has a potential in segmenting the myocardium in time sequences of cardiac medical images. Nevertheless, to estimate the displacement field of the contour points, a number of assumptions are required to solve an under-determined set of optical flow equations. In this work, a new framework is proposed to solve the of tracking problem using greedy optimization algorithm. The new framework allows different types of constraints such as motion invariance, shape and topology to be applied in a uni ?ed way. The developed methods are applied to a publicly-available cardiac magnetic resonance imaging dataset containing image sequences for 33 patients. Quantitative evaluation of the results shows high potential of the methods to accurately track and segment the myocardium contours.

Keywords: Image segmentation; Myocardium; Mri.

569. Visual Versus Statistical Features Selection Applied to Mammography Mass Detection

Ibrahim Mohamed Ibrahim and Manal Abdel Wahed

Journal of Medical Imaging and Health Informatics, 4: 237-244 (2014) IF: 0.623

Breast cancer is the highest frequent form of cancer in women today. Mammography is the most reliable and practical method capable of detecting breast cancer at its early stage. Physicians' ability to detect tumors can be assisted by using some computerized features extraction algorithms. The key point is to use the most significant features with the most suitable classifiers. This paper presents a comparative study between two statistical feature selection methods and an immature, newly used visual method that comes from the bioinformatics field. The visual method puts the values of the extracted features in a heat map and then assigns different colors for these values. After that, it searches for some visual patterns in these colors that show discrimination power between the different breast tissue types. 61 features were extracted to differentiate between normal and tumorous breast tissues. The discriminatory power of these features was tested using the visual method in a comparison with other two statistical methods: the t-test and the Kullback–Leibler (KL) divergence method. For classification, we used the minimum distance, the k-Nearest Neighbor (k-NN), and the Support Vector Machine (SVM) classifiers. Results show that the visual method needs some pre-processing steps, to overcome noise and database outliers, to provide higher performance over the other two statistical methods.

Keywords: Cad; Features selection; Mammography; Mass.

570. Optimized graphical processing unit processing Framework for Surface Rendering in 4D Ultrasound Imaging

Yasser Mostafa Ibrahim Kadah

Journal of Medical Imaging and Health Informatics, 4: 197-202 (2014) IF: 0.623

Four-dimensional (4D) ultrasound imaging extends the real-time capability of ultrasound to visualize a realtime volume that can be manipulated by the sonographer. Among the different visualization methods, surface rendering is a common mode for displaying volumetric datasets such as in obstetrical applications. A challenge in this mode is that surface shading is required to visualize the surface and enhances the surface contrast and this has very demanding computational requirements for 3D surfaces. Here, we present an optimized high-performance rendering pipeline based on four stages for preprocessing, volume rendering, surface shading, and postprocessing.

The new approach is implemented to render volumes acquired on a 4D commercial ultrasound imaging system to illustrate its practicality. The results demonstrate diagnostic quality of rendered volumes at a computational time cost that is suitable for 4D real-time processing. Given its low cost of required hardware, the new pipeline has potential for making 4D imaging systems more affordable while maintaining diagnostic quality and performance.

Keywords: 4D Ultrasound imaging; Ray-casting; Surface rendering; Visualization.

571. Investigation of New Unsupervised Processing Methods for P300-Based Brain-Computer Interface

Alhaddad, Mohammed J.; Kamel, Mahmoud I.; Kadah, Yasser M.

Journal of Medical Imaging and Health Informatics, 4: 363-369 (2014) IF: 0.623

In Brain-computer Interface (BCI), the detection of activations is based on the experience gained through calibration or training sessions prior to actual use to build the classification model.

This gives rise to several problems that include inter-session variability and time fading of accuracy after calibration. In this work, we investigate a new approach for brain-computer interface data that requires no prior training.

The basic principle of this new class of unsupervised techniques is that the trial with true activation signal within each block has to be different from the rest of the trials within that block. Hence, a measure that is sensitive to this dissimilarity can be used to make a decision based on a single block without any prior training. The new approach is applied to experimental data for P300-based BCI for both normal and disabled subjects and compared to the classification results of the same data using the conventional processing techniques requiring prior calibration. Performance in different experiments assessed using classification block accuracy suggests that this approach can reach accuracies not very far from those obtained with training while maintaining robust performance in practice.

Keywords: Adaptive system; Brain-computer interface; Linear vector spaces; Subspace decomposition.

572. Preventive Maintenance Prioritization Index of Medical Equipment Using Quality Function Deployment

Neven Saleh, Amr A. Sharawi, Manal Abd Elwahed, Alberto Petti, Daniele Puppato and Gabriella Balestra

IEEE Journal of Biomedical and Health Informatics, (2014)

Preventive maintenance is a core function of clinical engineering and it is essential to guarantee the correct functioning of the equipment. The management and control of maintenance activities are equally important to perform maintenance. As the variety of medical equipment increases, accordingly the size of maintenance activities increases, the need for better management and control become essential. This article aims to develop a new model for preventive maintenance priority of medical equipment using quality function deployment (QFD) as a new concept in maintenance of medical equipment. We developed a 3 domain framework model consisting of requirement, function, and concept. The requirement domain is the house of quality matrix (HOQ). The second domain is the design matrix. Finally, the concept domain generates a prioritization index for preventive maintenance considering the weights of critical criteria. According to the final scores of those criteria, the prioritization action of medical equipment is carried out. Our model proposes 5 levels of priority for preventive maintenance. The model was tested on 200 pieces of medical equipment belonging to 17 different departments of 2 hospitals in Piedmont province, Italy. The data set includes 70 different types of equipment. The results show a high correlation between risk - based criteria and the prioritization list.

Keywords: Medical equipment; Preventive maintenance (PM); Prioritization; Quality Function Deployment (QFD).

Faculty of Computers and Information

Dept. of Computer Science (CS)

573. Architecture of Multicast Centralized Key Management Scheme Using Quantum Key **Distribution and Classical Symmetric Encryption**

A.F. Metwaly, M.Z. Rashad, F.A. Omara and A.A. Megahed

European Journal of Medicinal Chemistry, 233(8: 1711-1728 (2014) IF: 1.76

Multicasting refers to the transmission of a message or information from one sender to multiple receivers simultaneously. Although encryption algorithms can be used to secure transmitted messages among group members, still there are many security aspects for designing a secured multicast cryptosystem. The most important aspects of Multicasting are key generation and management. The researchers have proposed several approaches for solving problems of multicast key distribution and management. In this paper, a secure key generation and distribution solution has been proposed for a single host sending to two or more (N) receivers using centralized Quantum Multicast Key Distribution Centre QM_{KDC} and classical symmetric encryption. The proposed scheme uses symmetric classical algorithms for encryption and decryption transmitted messages among multicast group members, but the generated keys which are used for authentication, encryption and decryption also play an important role for designing a secured multicast cryptosystem come from QKD protocols. Authentication verified using EPR entangled Photons and controlled-NOT gate. Multiple requests for initialization as well for transmitting sensitive information handled through priority and sensitivity levels. Multiple members' communication is achieved with full or partial support of QM_{KDC}.

574. A Cognitive Computational Model Inspired by the Immune System Response

Mohamed Abdo Abd Al-Hady, Amr Ahmed Badr and Mostafa Abd Al-Azim Mostafa

Biomed Research International, 2014: 1-15 (2014)

The immune system has a cognitive ability to differentiate between healthy and unhealthy cells. The immune system response (ISR) is stimulated by a disorder in the temporary fuzzy state that is oscillating between the healthy and unhealthy states. However, modeling the immune system is an enormous challenge; the paper introduces an extensive summary of how the immune system response functions, as an overview of a complex topic, to present the immune system as a cognitive intelligent agent. The homogeneity and perfection of the natural immune system have been always standing out as the sought-after model we attempted to imitate while building our proposed model of cognitive architecture. The paper divides the ISR into four logical phases: setting a computational architectural diagram for each phase, proceeding from functional perspectives (input, process, and output), and their consequences. The proposed architecture components are defined by matching biological operations with computational functions and hence with the framework of the paper. On the other hand, the architecture focuses on the interoperability of main theoretical immunological perspectives (classic, cognitive, and danger theory), as related to computer science terminologies. The paper presents a descriptive model of immune system, to figure out the nature of response, deemed to be intrinsic for building a hybrid computational model based on a cognitive intelligent agent perspective and inspired by the natural biology. To that end, this paper highlights the ISR phases as applied to a case study on hepatitis C virus, meanwhile illustrating our proposed architecture perspective.

Keywords: Cognitive intelligent agents; Fuzzy states; Immune system response; Hepatitis C virus.

575. Optimum Resource Allocation of Database in **Cloud Computing**

Fatma A. Omara, Sherif M. Khattab and Radhya Sahal

Egyptian Informatics Journal, 15: 1-12 (2014)

Cloud computing is a new generation of computing based on virtualization technology. An important application on the cloud is the Database Management Systems (DBMSs). The work in this paper concerns about the Virtual Design Advisor (VDA). The VDA is considered a solution for the problem of optimizing the performance of DBMS instances running on virtual machines that share a common physical machine pool. It needs to calibrate the tuning parameters of the DBMS's query optimizer in order to operate in a what-if mode to accurately and quickly estimate the cost of database workloads running in virtual machines with varying resource allocation.

The calibration process in the VDA had been done manually. This manual calibration process is considered a complex, timeconsuming task because each time a DBMS has to run on a different server infrastructure or to replace with another on the same server, the calibration process potentially has to be repeated. According to the work in this paper, an Automatic Calibration Tool (ACT) has been introduced to automate the calibration process.

Also, a Greedy Particle Swarm Optimization (GPSO) search algorithm has been proposed and implemented in the VDA instead of the existed greedy algorithm to prevent the local optimum states from trapping the search process from reaching global optima. The main function of this algorithm is to minimize the estimated cost and enhance the VMs configurations.

The ACT tool and the GPSO search algorithm have been implemented and evaluated using TPC-H benchmark queries against PostgreSQL instances hosted in Virtual Machines (VMs) on the Xen virtualization environment.

Keywords: Virtualization; Resource allocation; Pso; Query optimizer; Calibration.

Dept. of Information Technology (IT)

576. Mri Breast Cancer Diagnosis Hybrid Approach **Ant-Basedsegmentation** Using Adaptive and **Multilayer Perceptron Neural Networks Classifier**

Aboul Ella Hassanien, Hossam M. Moftah, Ahmad Taher Azar and Mahmoud Shomana

Applied Soft Computing, 14: 62-71 (2014) IF: 2.679

This article introduces a hybrid approach that combines the advantages of fuzzy sets, ant-based clustering and multilayer perceptron neural networks (MLPNN) classifier, in conjunction with statistical-based feature extraction technique. An application of breast cancer MRI imaging has been chosen and hybridization system has been applied to see their ability and accuracy to classify the breast cancer images into two outcomes: Benign or

Malignant. The introduced hybrid system starts with an algorithm based on type-II fuzzy sets to enhance the contrast of the input images. This is followed by an improved version of the classical ant-based clustering algorithm, called adaptive ant-based clustering to identify target objects through an optimization methodology that maintains the optimum result during iterations. Then, more than twenty statistical-based features are extracted and normalized. Finally, a MLPNN classifier was employed to evaluate the ability of the lesion descriptors for discrimination of different regions of interest to determine whether the cancer is Benign or Malignant. To evaluate the performance of presented approach, we present tests on different breast MRI images. The experimental results obtained, show that the adaptive ant-based segmentation is superior to the classical ant-based clustering technique and the overall accuracy offered by the employed hybrid technique confirm that the effectiveness and performance of the proposed hybrid system is high.

Keywords: Segmentation; Magnetic resonance (MR) images; Ant Colony Optimization (ACO); Clustering; Swarm intelligence; Neural network classifier.

577. A Novel Approach for Comparing Web Sites by Using Microgenres

Milos Kudelka, Vaclav Snasel, Zdenek Horak, Aboul Ella Hassanien, Ajith Abraham and Juan D. Velásquez

Engineering Applications Of Artificial Intelligence, 35: 187-198 (2014) IF: 1.962

In this paper, a novel approach is introduced to compare web sites by analysing their web page content. Each web page can be expressed as a set of entities called MicroGenres, which in turn are abstractions about design patterns and genres for representing the page content. This description is useful for web page and web site classification and for a deeper insight into the web site?s social context. The web site comparison is useful for extracting patterns which can be used for improving Web search engine effectiveness, the identification of best practices in web site design and of course in the organization of web page content to personalize the web user experience on a web site. The effectiveness of the proposed approach was tested in a real world case, with e-shop web sites showing that a web site can be represented in a high level of abstraction by using MicroGenres, the contents of which can then be compared and given a measure corresponding to web site similarity. This measure is very useful for detecting web communities on the Web, i.e., a group of web sites sharing similar contents, and the result is essential in performing a focused and effective information search as well as minimizing web page retrieval.

Keywords: Web design pattern; Genre; Microgenre; Detection.

578. A Computational Knowledge Representation Model for Cognitive Computers

Mona Nagy ElBedwehy, Mohamed Elsayed Ghoneim, Aboul Ella Hassanien and Ahmad Taher Azar

Neural Computing and Applications, 25: 1517-1534 (2014) IF: 1.763

The accumulating data are easy to store but the ability of understanding and using it does not keep track with its growth. So researches focus on the nature of knowledge processing in the mind. This paper proposes a semantic model (CKRMCC) based on cognitive aspects that enables cognitive computer to process the knowledge as the human mind and find a suitable representation of that knowledge.

In cognitive computer, knowledge processing passes through three major stages: knowledge acquisition and encoding, knowledge representation, and knowledge inference and validation. The core of CKRMCC is knowledge representation, which in turn proceeds through four phases: prototype formation phase, discrimination phase, generalization phase, and algorithm development phase.

Each of those phases is mathematically formulated using the notions of real-time process algebra. The performance efficiency of CKRMCC is evaluated using some datasets from the well-known UCI repository of machine learning datasets. The acquired datasets are divided into training and testing data that are encoded using concept matrix. Consequently, in the knowledge representation stage, a set of symbolic rule is derived to establish a suitable representation for the training datasets.

This representation will be available in a usable form when it is needed in the future. The inference stage uses the rule set to obtain the classes of the encoded testing datasets. Finally, knowledge validation phase is validating and verifying the results of applying the rule set on testing datasets.

The performances are compared with classification and regression tree and support vector machine and prove that CKRMCC has an efficient performance in representing the knowledge using symbolic rules.

Keywords: Cognitive computers; Knowledge processing; Knowledge representation; Denotational mathematics; Cognitive computing; Real-time process algebra..

579. An Effect SVD- Based Image Tampering Detection and Felf-Recovery Using Active Watermarking

Sajjad Dadkhah, Azizah A. Manaf, Hori Yoshiaki, Aboul Ella Hassanien and Somayeh Sadeghi

Signal Processing: Image Communication, 13: (2014) IF: 1.153

In this paper, an effective tamper detection and self-recovery algorithm based on singular value decomposition (SVD) is proposed.

This method generates two distinct tamper detection keys based on the singular value decomposition of the image blocks. Each generated tamper detection and self-recovery key is distinct for each image block and is encrypted using a secret key. A random block-mapping sequence and three unique optimizations are employed to improve the efficiency of the proposed tamper detection and the robustness against various security attacks, such as collage attack and constant-average attack.

To improve the proposed tamper localization, a mixed blockpartitioning technique for 4×4 and 2×2 blocks is utilized.

The performance of the proposed scheme and its robustness against various tampering attacks is analyzed. The experimental results demonstrate that the proposed tamper detection is superior in terms of tamper detection efficiency with a tamper detection rate higher than 99%, security robustness and self-recovery image quality for tamper ratio up to 55%.

580. A Random Forest Classifier for Lymph Diseases

Ahmad Taher Azara, Hanaa Ismail Elshazly, Aboul Ella Hassanien and Abeer Mohamed Elkorany

Computer Methods and Programs in Biomedicine, Vol: 113(2): 465-473 (2014) IF: 1.093

Machine learning-based classification techniques provide support for the decision-making process in many areas of health care, including diagnosis, prognosis, screening, etc. Feature selection (FS) is expected to improve classification performance, particularly in situations characterized by the high data dimensionality problem caused by relatively few training examples compared to a large number of measured features. In this paper, a random forest classifier (RFC) approach is proposed to diagnose lymph diseases. Focusing on feature selection, the first stage of the proposed system aims at constructing diverse feature selection algorithms such as genetic algorithm (GA), Principal Component Analysis (PCA), Relief-F, Fisher, Sequential Forward Floating Search (SFFS) and the Sequential Backward Floating Search (SBFS) for reducing the dimension of lymph diseases dataset. Switching from feature selection to model construction, in the second stage, the obtained feature subsets are fed into the RFC for efficient classification. It was observed that GA-RFC achieved the highest classification accuracy of 92.2%. The dimension of input feature space is reduced from eighteen to six features by using GA.

Keywords: Machine learning (ML); Feature selection (FS); Genetic algorithm (GA); Random forest classifier (RFC); Lymph diseases.

Institute of Statistical Studies and Research

Dept. of Operational Research

581. RDEL: Restart Differential Evolution Algorithm With Local Search Mutation for Global Numerical Optimization

Ali Wagdy Mohamed

Egyptian Informatics Journal, 15 (3): 175–188 (2014)

In this paper, a novel version of Differential Evolution (DE) algorithm based on a couple of local search mutation and a restart mechanism for solving global numerical optimization problems over continuous space is presented. The proposed algorithm is named as Restart Differential Evolution algorithm with Local Search Mutation (RDEL). In RDEL, inspired by Particle Swarm Optimization (PSO), a novel local mutation rule based on the position of the best and the worst individuals among the entire population of a particular generation is introduced. The novel local mutation scheme is joined with the basic mutation rule through a linear decreasing function. The proposed local mutation scheme is proven to enhance local search tendency of the basic DE and speed up the convergence. Furthermore, a restart mechanism based on random mutation scheme and a modified Breeder Genetic Algorithm (BGA) mutation scheme is combined to avoid stagnation and/or premature convergence. Additionally, an exponent increased crossover probability rule and a uniform scaling factors of DE are introduced to promote the diversity of the population and to improve the search process, respectively. The performance of RDEL is investigated and compared with basic differential evolution, and state-of-the-art parameter adaptive differential evolution variants. It is discovered that the proposed modifications significantly improve the performance of DE in terms of quality of solution, efficiency and robustness.

Keywords: Evolutionary computation; Differential evolution; Local search mutation; Restart mechanism; Global numerical optimization.



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(3) Medical Sciences Sector

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- 3-2 Faculty of Oral & Dental Medicine
- **3-3 Faculty of Pharmacy**
- **3-4 National Cancer Institute**
- **3-5 Faculity of Physical Therapy**
- **3-6 Faculity of Nursing**

Publicatin in Journals

Faculty of Medicine

Dept. of Anatomy

582. Age Related Alteration in the Lacrimal Gland of Adult Albino Rat: A Light and Electron Microscopic Study

Amina B. El-Fadaly, Ehab A.A. El-Shaarawy, Ayman A. Rizk, Mogeda M. Nasralla and Doaa M.A. Shuaib

Annals of Anatomy, 196: 336-351 (2014) IF: 2.075

Background: Age related changes in the lacrimal gland are associated with alterations in the structural organization and functional response in the gland of diverse mammalian species. Dry eye syndrome is one of the most common ocular problems in the world especially in old age. It results when the lacrimal gland fails to secrete proteins and fluid in sufficient quantity or appropriate composition.

Aim of the work: The present study is designed to demonstrate the influence of aging on the structure of the lacrimal gland of albino rat and to provide a morphological basis to explain the pathogenesis of the dry eye syndrome with ageing. It also aims to carry out a comparative analysis of age-dependent changes in male and female rats and to address how the lacrimal gland ages in each sex.

Material and Methods: Eighty albino rats were used in this study. The animals were divided into two age groups, young adult and senile. Tear secretion was measured using a modified Schirmer test. Corneal impression cytology of the anesthetized rats was done. The glands were subjected to gross morphologic examination, microscopic examination using H&E, PAS, Masson's trichrome and Giemsa stains. Electron microscopic examination was done in addition to quantitative histomorphometric estimations included acinar density, ductal count and mast cell count.

Results: Light microscopic examination of the lacimal glands of the senile rats revealed different patholog-ical changes. These included acinar, ductal as well as stromal changes. Electron microscope examination of the lacrimal gland of the senile group showed a decrease in the electron dense secretory vesicles, mitochondrial swelling and lipofuscin-like inclusions were frequently seen in the cytoplasm of acinar cells in senile rats.

Conclusion: The structural changes in the lacrimal glands of senile rats were associated with reduction in tear secretion as well as alterations in corneal epithelium. Gender difference in lacrimal gland structure was recorded.

Keywords: Aging; cytology; Histology; Lacrimal gland; Pathology.

583. Effect of Glucocorticoids on Indomethacin-Induced Gastric Ulcer in the Adult Male Albino Rat – Histological, Morphometric and Electron Microscopy Study

Sherif Mohamed Zaki and Enas Ahmed Mohamed

Archives of Medical Science, 10(2): 381-388 (2014) IF: 1.89

Introduction: Indomethacin is a non steroidal anti-inflammatory drug (NSAID) which is capable of producing injury to gastric mucosa. To prevent of NSAID-induced gastropathy, it is important to evaluate the risk factors. One of them is steroid. The aim is to study time dependent effects of glucocorticoids (GC) on indomethacin induced gastric ulcer.

Material and Methods: Forty-nine albino rats were used. They were divided into control and experimental groups. The experimental group was subgroup I (rats were given indomethacin and were sacrificed 1 day after drug intake), subgroup II (rats were given indomethacin + dexamethasone and were sacrificed 1 day after drug intake), subgroup III (rats were given indomethacin + dexamethasone and were sacrificed 3 days after drug intake) and subgroup IV (rats were given indomethacin + dexamethasone and were sacrificed 7 days day after drug intake). Histological, scanning electron microscopy and morphometric studies were used.

Results: Indomethacin induced gastric ulceration with shredding of the superficial epithelial cells. The fundic glands were dilated in the subgroups II, III, IV. The surface epithelial cells were shredded and the ulcer sizes were big in subgroup IV. All subgroups exhibited abnormal surface epithelial cells within the gastric ulcer area.

Conclusions: Indomethacin is capable of producing injury to gastrointestinal mucosa. With prolonged use of GC the surface epithelial cells became more affected and the ulcer sizes became bigger. Concomitant use of both medications will delay the healing of the indomethacin induced gastric ulcer and induce more gastric complication.

Keywords: Indomethacin; Glucocorticoids; Gastric ulcer.

584. Lung Damage After Long-Term Exposure of Adult Rats to Sodium Fluoride

Fayza Abdel-Raouf Abdel-Gawad, Maha Hussein Ashmawy, Sherif Mohamed Zaki and Gaber Hassan Abdel-Fatah

Archives of Medical Science, 10(5): 1035-1040 (2014) IF: 1.89

Introduction: Fluorides, when taken in amounts exceeding the standard therapeutic dosage, are regarded as toxic substances. Chronic fluorosis causes marked destruction of lung tissues. The study aimed to determine whether the effect of a chronic toxic dose of sodium fluoride on the lung of an adult male albino rat is reversible or irreversible. This was done through light and electron microscopic studies. Morphometric study was also done. **Material and methods:** Forty adult male rats were used. The animals were divided into 3 groups: control group; group I (chronic fluorosis group) in which sodium fluoride was given daily for 3 months; and group II (recovery group) in which sodium fluoride was given the taken and after that the rats survived for another month.

Results: The lung of group I was characterized by presence of blood and lymph congestion. Thickening of alveolar septa was also observed with rupture of septa and widening of the air spaces. The area % of collagen (1.13 ±0.5), septal wall thickness (13.47 ±6.1), and number of macrophages (5 ±2.5) increased in comparison to the control group ($p \le 0.05$). With discontinuation of sodium fluoride (group II), no much improvement was observed.

Conclusions: Chronic fluorosis has many pathological effects on the lung which are irreversible.

Keywords: Chronic fluorosis; Lung damage.

585. Morphological and Morphometrical Study of the Nasal Opening of the Nasolacrimal Duct in Man

E. A.A. El-Shaarawy

Folia Morphologica, 73 (3): 321-330 (2014) IF: 0.524

Background: Epiphora constitutes one of the major and very common problems in all age groups. Recent developments in ophthalmology such as balloon dilatation, stent implantation, laser therapy and endoscopy of the lacrimal drainage system raise the need for a detailed anatomical knowledge of this system. It is also important for formulation of principles and techniques in the management of lacrimal problems.

Aim of the work: The aim of this study was to demonstrate variations in shape, size and location of the opening of the nasolacrimal duct and of the lacrimal fold.

Materials and methods: Twenty sagittal head sections were obtained, the nasal septum was removed and the lateral wall of the nasal cavity was exposed and examined. The opening of the nasolacrimal duct (NLD) was demonstrated and was subjected to anatomical observations for the shape, site, size, opening type and the presence of the lacrimal fold. The different measurements for the distances between the opening of NLD and anterior nasal spine, palate and inferior concha were made.

Results: The examined specimens showed that the opening of the NLD was variable in shape taking the form of sulcus in 70% and fissure in 30% of specimens. The sulcus was either vertical or oblique while the fissure was either vertical, oblique or in the form of anteroposterior one. Regarding the location, the opening of the NLD was located at anterior one third below line of attachment of the inferior concha in nearly half of cases (45%). The lacrimal fold was present in most of examined specimens (70%) and absent in 30%. The fold take 5 different forms.

Conclusions: The knowledge of the morphology and morphometry of the lacrimal drainage system enables the ophthalmologist to plan intervention on the lacrimal drainage system precisely and avoid unnecessary manipulations and also minimizing the risk of injury during intra-nasal surgery.

Keywords: Nasolacrimal duct (NLD) opening; Morphology of NLD; Morphometry of NLD.

586. Morphological and Radiometrical Study of the Human Intervertebral Foramina of the Cervical Spine

S. H. Ahmed, E. A. A. El-Shaarawy, M. F. Ishaq and M. H. Abdel Moniem

Folia Morphologica, 73 (1): 7-18 (2014) IF: 0.524

Background: Degenerative changes of the cervical spine are an inevitable response to certain occupational status and aging processes. Compression of cervical nerve roots may result from disc degeneration, disc herniation or intervertebral foraminal stenosis. The precise and detailed anatomical knowledge of the intervertebral foramen of the cervical spine is essential for the diagnosis and management of cervical radiculopathy.

Aim of the work: The significance of the observations and findings of the present study was to elucidate the correlation between the morphology and disorders of the cervical intervertebral foramina in normal and pathological conditions especially at the level of C3-C4 to C6-C7 on both sides and in both sexes. Moreover, it will help greatly in the planning of both surgical and conservative strategies.

Materials and Methods: In the present study, 5 formalin-fixed adult cadavers and radiological specimens of the cervical region of the vertebral column of 28 normal and 209 subjects suffering from cervical disorder from both sexes and different age groups. They subjected for morphological and radiometrical analysis.

Results: All measurements of the present study of the cervical disorders in females were found to be 6% less than in males in all age groups, which is statistically significant (p < 0.01) as compared with the control group (2%). The mean intervertebral foraminal areas in the control group of C5-C6 and C6-C7 are significantly greater than those of C3-C4 and C4-C5.

Conclusions: The mean intervertebral foraminal area was greater in the lower cervical region than the upper in normal adult individuals. In pathological condition the affection of C3-C4 and C4-C5 intervertebral foramina was more due to narrower surface area. The pathology of cervical spine affecting the intervertebral foramina of female which complaint earlier than male due to narrower foramina.

Keywords: Cervical spine; Cervical radiology; Cervical radiometry.

587. Relationship Between Biochemical Bone Markers and Bone Mineral Density in Patients With Phenylketonuria Under Restricted Diet

Hala M. Koura, Sherif M. Zaki, Nagwa A. Ismail, Emad E. Salama, Dalia H. El Lebedy and Laila K. Effat

Iranian Journal of Pediatrics, 24(1): 23-28 (2014) IF: 0.344

Objective: Most of phenylketonuria (PKU) develops bone turnover impairment and low bone mineral density (BMD). Measurements of BMD reflect only bone mineral status but not the dynamics of bone turnover. Bone markers are a noninvasive tool useful for the assessment of bone formation and bone resorption processes. Our study was to assess the levels of bone markers in PKU in order to select a screen marker and detect the most specific marker which can be combined with BMD for appropriate follow up.

Methods: Thirty three classic PKU patients were studied. BMD and bone mineral content (BMC) were measured. Total alkaline phosphatase (ALP), osteocalcin (OC) and carboxy-terminal propeptide of type I collagen (CICP), osteoprotegerin (OPG), receptor activator of nuclear factor $\kappa\beta$ ligand (RANKL) and Deoxypyridinoline (DPD) were measured.

Findings: Nineteen (57.6%) male and fourteen (42.4%) female PKU patients were involved in the current study. Their mean age was 8.4±4.6 yrs and the age range 3-19 yrs. The control group consisted of twenty two (52.4%) males and twenty (47.6%) females. Their mean age was 8.5±3.3 yrs and th age range 2-17 yrs. Using the Z score values, there was a significant decrease of total BMC (TBMC-Z), BMD of the femoral neck BMD-FN-Z, BMD of lumbar vertebrae (BMD-L-Z), BMD-FN and DPD while RANKL increased. There was a negative correlation between CICP and TBMC and between CICP and BMD-L in these patients. Also, a negative correlation between ALP and TBMC and between ALP and BMD-L was observed. It was concluded that the ALP provides a good impression of the new bone formation in the PKU patients and it has a highly significant negative correlation with the many parameters of the bone mineral status beside the wide availability of inexpensive and simple methods. So a screening test and/or follow up for the PKU patients using ALP would be available. Once the level of ALP decrease is detected, one can combine it with BMD to explore the bone mineral status and with specific bone markers (OC, RANKL and DBD), to verify the dynamics of bone turnover.

Conclusion: This schedule will reduce the risk of exposure of these patients to the risk hazards of DXA and limit its use only to a limited number of the highly suspected cases.

Keywords: Phenylketonuria; PKU; Bone mineral density; RANKL; Osteocalcin; Bone mineral content.

Dept. of Andrology & Sexology 588. Seminal BAX and BCL2 Gene and Protein Expressions in Infertile Men With Varicocele

Taymour Mostafa, Laila Rashed, Nashaat Nabil and Rania Amin

Urology, 84 (3): 590-595 (2014) IF: 2.132

Objective:To assess seminal BAX and BCL2 gene and protein expressions in infertile men with varicocele (Vx).

Materials and Methods: A total of 111 men were investigated and divided into the following groups: healthy fertile men (n = 20), fertile men with Vx (n = 16), infertile oligoasthenoteratozoospermic men without Vx (n = 29), and infertile oligoasthenoteratozoospermic men with Vx (n = 46). They were subjected to history taking, clinical examination, and semen analysis. In their seminal plasma, BAX and BCL2 gene and protein expressions were estimated.

Results: The mean level of seminal BAX gene and protein was significantly decreased, and the mean level of seminal BCL2 gene and protein was significantly increased in fertile men compared with fertile men with Vx and in infertile men without Vx compared with infertile men with Vx. The mean level of seminal BAX gene and protein were significantly increased in men associated with bilateral Vx compared with men associated with unilateral Vx and in cases with Vx grade III compared with Vx grade I and II cases. Seminal BAX demonstrated significant negative correlation with sperm concentration, sperm motility, and sperm normal forms. Seminal BCL2 demonstrated significant positive correlation with sperm concentration, sperm motility, and sperm normal forms and significant negative correlation with sperm concentration sperm motility, and sperm normal forms and significant negative correlation with sperm concentration, sperm motility, and sperm normal forms and significant negative correlation with sperm concentration.

Conclusion: Seminal BAX is significantly increased and seminal BCL2 is significantly decreased in men associated with Vx. Seminal BAX is significantly increased in men associated with bilateral Vx compared with unilateral Vx and in cases with Vx grade III compared with Vx grade I and II cases. Seminal BAX demonstrates significant negative correlation with sperm concentration, sperm motility, and sperm normal forms, whereas seminal BCL2 demonstrates significant reverse positive correlations.

Keywords: Male infertility; Semen; Varicocele; Apoptosis.

589. Seminal Helicobacter Pylori Treatment Improves Sperm Motility in Infertile Asthenozoospermic Men

Yehia El-Garem, Mohamed El-Sawy and Taymour Mostafa

Urology, 84 (6): 1347-1350 (2014) IF: 2.132

Objective: To assess the effect of treatment of seminal Helicobacter pylori in infertile asthenozoospermic men.

Methods: In all, 223 infertile asthenozoospermic men were consecutively selected. They were subjected to history taking, clinical examination, semen analysis, and estimation of H pylori IgA antibodies in their seminal fluid. Infertile men with high seminal H pylori IgA were subjected to triple drug treatment, omeprazole, 20 mg; tinidazole, 500 mg; and clarithromycin, 250 mg twice a day for 2 weeks. Semen analysis as well as H pylori IgA antibodies was estimated after 3 months.

Results: In all, 22 of 223 men (9.87%) demonstrated H pylori IgA antibodies in their seminal plasma. After treatment, mean seminal H pylori IgA levels demonstrated significant decrease (1.55 0.4 vs 0.52 0.26; 95% confidence interval, 0.83-1.21; P ¹/₄ .001) concomitant with improved progressive as well as nonprogressive sperm motility. H pylori IgA antibodies demonstrated significant negative correlation with progressive sperm motility, nonprogressive sperm motility, normal sperm morphology, and significant positive correlation with immotile sperm motility.

Conclusion: H pylori treatment significantly improves sperm motility in infertile asthenozoospermic men with elevated seminal H pylori IgA.

Keywords: Male infertility; Semen; Sperm motility; H. Pylori.

590. Female Sexual Dysfunction Across the Three Pregnancy Trimesters: An Egyptian Study

Samy Hanafy, Neveen E. Srour and Taymour Mostafa

Sexual Health, 11 (3): 240-243 (2014) IF: 1.576

Background: Pregnancy is a special period in the life of women characterised by physical, hormonal and psychological changes that, in conjugation with social and cultural influences, could affect women's sexuality as well as couples' sexual relationships. This cross-sectional study aimed to evaluate female sexual dysfunction (FSD) among the three pregnancy trimesters. **Methods:** A total of 300 healthy heterosexual pregnant Egyptian women with stable marital relationships were included. The Female Sexual Function Index (FSFI) questionnaire was used as a standard method for measuring female sexual function in each pregnancy trimester.

Results: There was no significant relationship between FSD and women's education, work, gravidity and parity. The incidence of FSD demonstrated significant alterations throughout pregnancy, being 68% in the first trimester, decreasing in the second trimester to 51% and increasing to 72% in the third trimester. Sexual desire decreased in the first trimester, was variable in the second trimester and decreased at the end of the third trimester (3.51.2, 3.71.2 and 3.41.1 respectively). Sexual satisfaction declined significantly in the first trimester compared with the second and the third trimesters (4.21.1, 4.80.8 and 4.61.0 respectively). Scores for the arousal, lubrication and orgasm domains were significantly decreased in the third trimester, where pain was increased in the second trimester compared with the first and third trimesters.

Conclusion: Female sexual function is affected during pregnancy, with a significant change in all Female Sexual Function Index domains, especially in the first and third trimesters.

Keywords: Desire; Female sexual function index; Satisfaction.

591. in Vitro Study of Cypermethrin on Human Spermatozoa and the Possible Protective Role of Vitamins C and E

A. Zalata, S. Elhanbly, H. Abdalla, M. S. Serria, A. Aziz3, S. A. El-Dakrooy, A. A. El-Bakary and T. Mostafa

Andrologia, 46(10): 1141-1147 (2014) IF: 1.172

Cypermethrin, a type II synthetic pyrethroid pesticide, is widely used in pest control programmes in agriculture and public health. This study aimed to assess the potential effect of cypermethrin on human spermatozoa and the possible ameliorative effects of

vitamins C and E. Semen samples of 20 healthy normozoospermic men were divided into six aliquots at room temperature. The first aliquot served as control not exposed to treatments, and the second was incubated with 20 mM vit. C and 2 mM vit. E where the third one was exposed to 10 lM cypermethrin for 6 h. The other three aliquots were incubated with vit. C, vit. E and both vitamins for 30 min before cypermethrin exposure. Semen aliquots were analysed for sperm motility, sperm viability, hypo-osmotic swelling test and modified alkaline comet assay. The results demonstrated a significant decrease in sperm motion, sperm function and increased sperm DNA damage in the cypermethrin group. Addition of vitamins C and E alone/combined led to significant improvement in sperm motion, sperm function and DNA damage, being maximal with both vitamins together. It is concluded that in vitro cypermethrin can alter sperm function and induce DNA damage in spermatozoa, which is improved after using vitamins C and E. Keywords: Antioxidants; Cypermethrin; Male infertility; Pyrethroid; Spermatozoa.

592. Oestrogen Receptor Alpha Gene Polymorphisms Relationship With Semen Variables in Infertile Men

A. Zalata, H. A. Abdalla, Y. El-Bayoumy and T. Mostafa

Andrologia, 46(6): 618-624 (2014) IF: 1.172

This study aimed to assess the association of oestrogen receptor alpha (ER-a) gene polymorphisms and semen variables in infertile oligoasthenoteratozoospermic (OAT) men. In all, 141 men were grouped into fertile men (n = 60) and infertile OAT men (n = 81). They were subjected to assessment of semen analysis, acrosin activity, serum reproductive hormones and genotyping of ER-a gene. Frequencies of p and x alleles in ER-a gene PvuII and XbaI polymorphisms were more prevalent among fertile men compared with infertile OAT men. Presence of P and X alleles was associated with increased incidence of male infertility for genotypes PP, XX compared with genotypes pp and xx (OR = 2.8; 95% CI: 2.36-6.97; P = 0.001 and OR = 4.1, 95% CI: 1.49-11.39; P = 0.001, respectively). The mean of semen variables and sperm acrosin activity were significantly higher in cases associated with pp than PP and in xx than XX genotypes of ER-a gene. Mean levels of all serum reproductive hormones demonstrated nonsignificant differences in different ER-a genotypes except oestrogen that was elevated in PP and XX ER-a gene genotypes. It is concluded that as oestrogen is concerned in male gamete maturation, ER-a gene polymorphisms might play a role in the pathophysiology of male infertility.

Keywords: Hormones; Male infertility; Oestrogen; Polymorphism; Semen.

593. Seminal Androgens, Oestradiol and Progesterone in Oligoasthenoteratozoospermic Men With Varicocele

A. Zalata, M. El-Mogy, A. Abdel-Khabir, Y. El-Bayoumy, M. El-Baz and T. Mostafa

Andrologia, 46 (7): 761-765 (2014) IF: 1.172

This study aimed to assess seminal androgens, oestradiol, progesterone levels in oligoasthenoteratozoospermic (OAT) men with varicocele (Vx). In all, 154 men with matched age and body mass index were investigated that were divided into healthy

fertile controls (n = 35), OAT men with Vx (n = 55), OAT men without Vx (n = 64). They were subjected to assessment of semen parameters, seminal levels of testosterone (T), androstenedione (A), 5α -androstane-3 α , 17 β -diol (3 α -diol), oestradiol (E2), 17hydroxyprogesterone (17-OHP) and progesterone (P). Seminal levels of T and A were significantly decreased where seminal levels of 3 α -diol, E2, 17-OHP, P were significantly higher in OAT men with/without Vx compared with fertile controls. Sperm count, sperm motility and sperm normal forms percentage demonstrated significant positive correlation with seminal T and A and significant negative correlation with seminal 3 α -diol, E2, P. It is concluded that in fertile men, seminal T and A are significantly increased and seminal 3 a-diol, E2, 17-OHP, P are significantly decreased compared with infertile OAT men with/without Vx. Association of Vx demonstrated a nonsignificant influence on these hormonal levels in OAT cases. Sperm count, sperm motility and sperm normal forms demonstrated significant positive correlation with seminal T, A and significant negative correlation with seminal 3 α -diol, E2, P. Keywords: Male infertility; Oestrogen; Progesterone; Semen; Testosterone; Varicocele

594. Smoking Influence on Sperm Vitality, DNA Fragmentation, Reactive Oxygen Species and Zinc in Oligoasthenoteratozoospermic Men With Varicocele

E. A. Taha, A. M. Ezz-Aldin, S. K. Sayed, N. M. Ghandour and T. Mostafa

Andrologia, 46 (6): 687-691 (2014) IF: 1.172

This study aimed to assess the influence of smoking duration and intensity on sperm vitality, sperm DNA fragmentation, reactive oxygen species (ROS) and zinc (Zn) levels in oligoasthenoteratozoospermic (OAT) men with varicocele (Vx). A total of 246 men were investigated who were divided into OAT nonsmokers, OAT smokers, OAT nonsmokers and OAT smokers with Vx. They were subjected to history taking, clinical examination and semen analysis. In their semen, sperm hypoosmotic swelling (HOS) test, sperm DNA fragmentation test, seminal ROS and seminal Zn were assessed. The results demonstrated significantly decreased HOS test, seminal Zn level and significantly increased sperm DNA fragmentation, seminal ROS levels in OAT smokers with Vx more than OAT smokers compared with OAT nonsmokers. Smoking intensity, smoking duration and Vx grade demonstrated significant negative correlations with sperm motility, HOS test percentage and significant positive correlations with sperm DNA fragmentation, seminal ROS level. It is concluded that smoking has a negative impact on sperm progressive motility, HOS test, seminal Zn and positive impact on sperm DNA fragmentation, semen ROS level that are exaggerated if Vx is associated being correlated with smoking intensity, smoking duration and Vx grade.

Keywords: DNA fragmentation; Hos test; Male infertility; Semen; Smoking; Varicocele; Zinc.

595. Triorchidism: Two Case Reports

A. Hassan, S. Elhanbly, M. S. El-Mogy and T. Mostafa

Andrologia, 46 (9): 1073-1077 (2014) IF: 1.172

In this study, two cases of triorchidism are reported. The first case (29 years) had two right discrete ovoid nontender, firm, mobile lumps with testicular sensation. The second case (32 years) had

two left discrete ovoid nontender, firm, mobile lumps with normal testicular sensation. They were subjected to the estimation of serum follicle-stimulating hormone, luteinising hormone, free and total testosterone, alpha-fetoprotein, prostate-specific antigen, semen analysis. karyotyping and Imaging included ultrasonography, transrectal ultrasound, magnetic resonance imaging and intravenous pyelography. The first case had two testes in the right side. Each one had an epididymis where one vas deferens was palpated. The second case had two left testes with normal testicular sensation. The lower left lump represented normal-sized testis attached to its epididymis and a single palpated vas deferens. Diagnosis of the first case was triorchidism associated with left varicocele (grade D with oligoasthenoteratozoospermic semen profile. Intracytoplasmic sperm injection was carried out resulting in a twin. Diagnosis of the second case was triorchidism with accessory testis on the left associated with left varicocele (grade I) and side asthenozoospermic semen profile that was submitted to medical treatment. It is concluded that triorchidism is an uncommon congenital anomaly that should be not overlooked in diagnosing scrotal masses.

Keywords: Infertility; Polyorchidism; Testis; Triorchidism; ultrasonography.

Dept. of Anesthesiology

596. Acute Pain Services; An Egyptian Experience

Amany Ezzat Ayad Ibrahim

Pain Medicine, 15(2): 336-336 (2014) IF: 2.243

Inadequacies in postoperative pain relief have been evident for decades despite the availability of variable drugs and sophisticated techniques for management [1,2]. This is thought of due to lack of an appropriate service that deploys available expertise rather than the need for new medications or pain management modalities. Thus, establishing an acute pain service (APS) based on an evidence-based approach within the available resources sounds like a solution Perineal Cancer-Related Pain Impar-Ganglion Neurolysis Lower End Block (Intrathecal Neurolysis)* Consider always a test dose.

597 Infection Complications and Pattern of Bacterial Resistance in Living-Donor Liver Transplantation: A Multicenter Epidemiologic Study in Egypt

Mukhtar A, Abdelaal A, Hussein M, Dabous H, Fawzy I, Obayah G, Hasanin A, Adel N, Ghaith D, Bahaa M, Abdelaal A, Fathy M and El Meteini M

Transplantation Proceedings, 46: 1444-7 (2014) IF: 0.984

Introduction: Data on the prevalence and pattern of infection after living-donor liver transplantation (LDLT) are scarce in Egypt. We therefore conducted this study to quantify the incidence, risk factors, and pattern of bacterial resistance post-LDLT in 3 hospitals in Egypt.

Patients and Methods: We conducted a retrospective, multicenter study of the medical records of 246 patients who underwent LDLT between January 2006 and April 2011 at 3 transplant centers in Egypt.

Results: Of 246 patients enrolled in this study, 127 (52%) developed infectious complications after LDLT, with 416 episodes of infection occurring within 3 months of transplantation. Biliary tract infection was the most common,

occurring in 169 (40.6%) patients. The rate of infection with Gram-negative bacteria was higher than that of infection with Gram-positive bacteria (310 [74%] vs 87 [21%]; P < .001). Overall, 75% of Gram-negative isolates were multidrug resistant. Significant independent risk factors for infection were portal vein thrombosis (odds ratio, 2.4; P = .037) and biliary complications (odds ratio, 5.4; P < .001).

Conclusions: Our data showed a high-resistance pattern of bacterial infection after LDLT in Egypt. Early biliary complications were an independent risk factor for bacterial infection.

Keywords: Liver transplantation; Infection; Egypt.

Dept. of Cardiology

598. TGF-β Signaling Mediates Endothelial-To-Mesenchymal Transition (EndMT) During Vein Graft Remodeling

Brian C. Cooley, Jose Nevado, Jason Mellad, Dan Yang, Cynthia St. Hilaire, Alejandra Negro, Fang Fang, Guibin Chen, Hong San, Avram D. Walts, Robin L. Schwartzbeck, Brandi Taylor, Jan D. Lanzer, Andrew Wragg, Abdalla Elagha, Leilani E. Beltran, Colin Berry, Robert Feil, Renu Virmani, Elena Ladich, Jason C. Kovacic and Manfred Boehm

Science Translational Medicine, 6: 227-234 (2014) IF: 14.414

Veins grafted into an arterial environment undergo a complex vascular remodeling process. Pathologic vascular remodeling often results in stenosed or occluded conduit grafts. Understanding this complex process is important for improving the outcome of patients with coronary and peripheral artery disease undergoing surgical revascularization. Using in vivo murine cell lineage-tracing models, we show that endothelialderived cells contribute to neointimal formation through endothelial-to-mesenchymal transition (EndMT), which is dependent on early activation of the Smad2/3-Slug signaling pathway. Antagonism of transforming growth factor– β (TGF- β) signaling by TGF-B neutralizing antibody, short hairpin RNA-Smad3 Smad2 mediated or knockdown, Smad3 haploinsufficiency, or endothelial cell-specific Smad2 deletion resulted in decreased EndMT and less neointimal formation compared to controls. Histological examination of postmortem human vein graft tissue corroborated the changes observed in our mouse vein graft model, suggesting that EndMT is operative during human vein graft remodeling. These data establish that EndMT is an important mechanism underlying neointimal formation in interpositional vein grafts, and identifies the TGF-β -Smad2/3-Slug signaling pathway as a potential therapeutic target to prevent clinical vein graft stenosis.

Keywords: TGF- β ; Endothelial-to-mesenchymal transition; Vein graft remodeling.

599. Idiopathic Left Ventricular Outflow Tract Ectopy: A Single Focus With Extremely Divergent Breakouts

Sherif Gouda, Dan Wichterle, Petr Peichl1 and Josef Kautzner

Bmc Cardiovascular Diorders, 14: 1-5 (2014) IF: 1.5

Background: Idiopathic ventricular tachycardia (VT) and/or premature ventricular contractions (PVCs) arise most commonly from the right ventricular outflow tract and less frequently from

the left ventricular outflow tract (LVOT), either below or above the semilunar valves.

Case presentation: We report a case of 24-year-old man with idiopathic ventricular tachycardia from a single focus in the supravalvular left ventricular outflow tract with two extremely divergent breakouts observed during the ablation procedure.

Conclusion: Focal sources of ventricular arrhythmia in the aortic root may have different preferential exits and meticulous activation sequence mapping is the preferable strategy to delineate the site of origin.

Keywords: Ventricular tachycardia; Premature ventricular contractions; Left ventricular outflow tract; Preferential conduction; Non-coronary Aortic cusp; Catheter ablation.

Dept. of Chemical Pathology

600. Durable Diagnosis of Seminal Vesicle and Sexual Gland Diseases Using the Nano Optical Sensor Thin Film Sm-Doxycycline Complex

Attia M.S., Youssef A.O. and El-Sherif RH

Anal Chim Acta, 835 (2014): 56-64 (2014) IF: 4.517

A new method in which a nano optical sensor for diagnosis of different diseases of seminal vesicle and sexual gland was prepared. The working principle of the method depends on the determination of the fructose concentration in semen of different patients by using nano optical sensor thin film Sm-doxycycline doped in sol-gel matrix.

The assay is based on the quenching of the characteristic emission bands of Sm(3+) present in silica doped Sm-doxycycline nanooptode thin film by different fructose concentrations in acetonitrile at $\lambda ex = 400$ nm.

This method was optimized for parameters, such as, solvent effect, operational stability, shelf life and interference parameters. Good and reproducible linearity $(1 \times 10(-9) - 5.0 \times 10(-5) \text{ mol } L(-1))$ with a detection limit of $9.0 \times 10(-10)$ mol L(-1) and quantification limit of detection (LOQ) $2.7 \times 10(-9)$ mol L(-1) were obtained. Seminal fructose determination in different patient samples after appropriate dilutions confirmed the reliability of this technique.

The method was successfully applied for routine fructose monitoring in human semen samples of different cases such as; obstructive and non-obstructive azoospermia, inflammation of male accessory glands, atrophy of seminal vesicle, congenital vas deferens and retrograde ejaculation.

Keywords: Luminescence intensity; Nano optical sensor thin flim; Quenching; Seminal fructose; Seminal vesicle; Sm-doxycycline.

601. Increased DNA Damage in Hepatitis C Virus-Related Hepatocellular Carcinoma

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Dna and Cell Biology, 33: 884-890 (2014) IF: 1.991

One consequence of hepatitis C virus (HCV) infection is an elevated cancer risk. During chronic viral infection, deoxyribonucleic acid (DNA) damage is being induced by reactive oxygen and nitrogen species, which may play a pathogenic role in HCV-induced carcinogenesis. The study investigated DNA damage in peripheral blood lymphocytes from

patients with hepatocellular carcinoma (HCC) and those with HCV infection with and without associated cirrhosis and normal controls. As a measure for genomic damage, the comet assay (single cell gel electrophoresis) was applied, which detects singleand double-strand breaks and alkali-labile sites through electrophoretic mobility of the resulting fragments.

The levels of DNA damage were significantly higher in HCC and HCV-associated cirrhosis compared to HCV without cirrhosis and the control group. Patients presenting with DNA damage more than mean + two standard deviation of the controls had a 3.6-fold risk of having HCC more than those with undamaged DNA. HCV disease progression was the only discriminator predicting the extent of DNA damage. The accumulation of DNA damage is important in HCC evolution. DNA damage indicating intracellular oxidative and nitrative stress may lead to mutagenesis and consequently malignant transformation, which emphasizes the need to optimize the therapy for reducing the degree of genomic damage.

Keywords: Comet assay; HCV, HCC, DNA damage.

Dept. of Clinical & Chemical Pathology

602. Repeat Endocarditis: Analysis of Risk Factors Based on the International Collaboration on Endocarditis-Prospective Cohort Study

Alagna L, Park LP, Nicholson BP, Keiger AJ, Strahilevitz J, Morris A, Wray D, Gordon D, Delahaye F, Edathodu J, Miró JM, Fernández-Hidalgo N, Nacinovich FM, Shahid R, Woods CW, Joyce MJ, Sexton DJ and Chu VH.

Clinical Microbiology and Infection, 20: 566-575 (2014) IF: 5.197

Repeat episodes of infective endocarditis (IE) can occur in patients who survive an initial episode. We analysed risk factors and 1-year mortality of patients with repeat IE. We considered 1874 patients enrolled in the International Collaboration on Endocarditis – Prospective Cohort Study between January 2000 and December 2006 (ICE-PCS) who had definite native or prosthetic valve IE and 1-year follow-up.

Multivariable analysis was used to determine risk factors for repeat IE and 1-year mortality. Of 1874 patients, 1783 (95.2%) had single-episode IE and 91 (4.8%) had repeat IE: 74/91 (81%) with new infection and 17/91 (19%) with presumed relapse.

On bivariate analysis, repeat IE was associated with haemodialysis (p 0.002), HIV (p 0.009), injection drug use (IDU) (p < 0.001), Staphylococcus aureus IE (p 0.003), healthcare acquisition (p 0.006) and previous IE before ICE enrolment (p 0.001).

On adjusted analysis, independent risk factors were haemodialysis (OR, 2.5; 95% CI, 1.2–5.3), IDU (OR, 2.9; 95% CI, 1.6–5.4), previous IE (OR, 2.8; 95% CI, 1.5–5.1) and living in the North American region (OR, 1.9; 95% CI, 1.1–3.4). Patients with repeat IE had higher 1-year mortality than those with single-episode IE (p 0.003).

Repeat IE is associated with IDU, previous IE and haemodialysis. Clinicians should be aware of these risk factors in order to recognize patients who are at risk of repeat IE.

Keywords: Complication of endocarditis; Recurrence of endocarditis; Relapse of endocarditis; Repeat endocarditis; Risk factors for endocarditis.

603. Clinical Utility of Chitotriosidase Enzyme Activity in Nephropathic Cystinosis

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Orphanet Journal of Rare Diseases, 9 (1): 155 (2014) IF: 3.958

Background: Nephropathic cystinosis is an inherited autosomal recessive lysosomal storage disorder characterized by the pathological accumulation and crystallization of cystine inside different cell types. WBC cystine determination forms the basis for the diagnosis and therapeutic monitoring with the cystine depleting drug (cysteamine).

The chitotriosidase enzyme is a human chitinase, produced by activated macrophages. Its elevation is documented in several lysosomal storage disorders. Although, about 6% of Caucasians have enzyme deficiency due to homozygosity of 24-bp duplication mutation in the chitotriosidase gene, it is currently established as a screening marker and therapeutic monitor for Gaucher's disease.

Methods: Plasma chitotriosidase activity was measured in 45 cystinotic patients, and compared with 87 healthy controls and 54 renal disease patients with different degrees of renal failure (CKD1-5). Chitotriosidase levels were also correlated with WBC cystine in 32 treated patients. Furthermore, we incubated control human macrophages in-vitro with different concentrations of cystine crystals and monitored the response of tumor necrosis factor-alpha (TNF-a) and chitotriosidase activity. We also compared plasma chitotriosidase activity in cystinotic knocked-out (n= 10) versus wild-type mice (n=10).

Results: Plasma chitotriosidase activity in cystinotic patients (0– 3880, median 163 nmol/ml/h) was significantly elevated compared to healthy controls (0–90, median 18 nmol/ml/h) and to CKD patients (0–321, median 52 nmol/ml/h), P <0.001 for both groups. Controls with decreased renal function had mild to moderate chitotriosidase elevations; however, their levels were significantly lower than in cystinotic patients with comparable degree of renal insufficiency.

Chitotriosidase activity positively correlated with WBC cystine content for patients on cysteamine therapy (r=0.8), P< 0.001. In culture, human control macrophages engulfed cystine crystals and released TNF-a into culture supernatant in a crystal concentration dependent manner. Chitotriosidase activity was also significantly increased in macrophage supernatant and cell-lysate. Furthermore, chitotriosidase activity was significantly higher in cystinotic knocked-out than in the wild-type mice, P=0.003.

Conclusions: This study indicates that cystine crystals are potent activators of human macrophages and that chitotriosidase activity is a useful marker for this activation and a promising clinical biomarker and therapeutic monitor for nephropathic cystinosis.

Keywords: Lysosomal storage disorders; Nephropathic cystinosis; Cystine crystals; Macrophage activation; Chitotriosidase enzyme; Clinical screening; Cysteamine; Therapeutic monitoring.

604. Analysis of Oxidative Stress Status, Catalase Andcatechol-O-Methyltransferase Polymorphisms Inegyptian Vitiligo Patients

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Plos One, 9 (6): (2014) IF: 3.534

Vitiligo is the most common depigmentation disorder of the skin. Oxidative stress is implicated as one of the probable events involved in vitiligo pathogenesis possibly contributing to melanocyte destruction. Evidence indicates that certain genes including those involved in oxidative stress and melanin synthesis are crucial for development of vitiligo. This study evaluates the oxidative stress status, the role of catalase (CAT) and catechol-O-Methyltransferase (COMT) gene polymorphisms in the etiology of generalized vitiligo in Egyptians. Total antioxidant capacity (TAC) and malondialdehyde (MDA) levels as well as CAT exon 9 T/C and COMT 158 G/A polymorphisms were determined in 89 patients and 90 age and sex-matched controls. Our results showed significantly lower TAC along with higher MDA levels in vitiligo patients compared with controls. Meanwhile, genotype and allele distributions of CAT and COMT polymorphisms in cases were not significantly different from those of controls. Moreover, we found no association between both polymorphisms and vitiligo susceptibility. In conclusion, the enhanced oxidative stress with the lack of association between CAT and COMT polymorphisms and susceptibility to vitiligo in our patients suggest that mutations in other genes related to the oxidative pathway might contribute to the etiology of generalized vitiligo in Egyptian population. Keywords: Vitiligo; Oxidative; Molecular.

605. Triple Test Screening for Down Syndrome: An Egyptian-Tailored Study

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Plos One, 9 (10): (2014) IF: 3.534

Background: The incidence of Down syndrome (DS) in Egypt varies between 1:555 and 1:770 and its screening by triple test is becoming increasingly popular nowadays. Results, however, seem inaccurate due to the lack of Egyptian-specific information needed for risk calculation and a clear policy for programme implementation. Our study aimed at calculation and validation of the triple marker medians used in screening Egyptian females as well as to recommend programme conventions to unify screening in this country.

Methods: The study was conducted on 668 Egyptian women, in weeks 15–20 of pregnancy as proven by sonar. Chorionic gonadotropin (CG), a-fetoprotein (AFP) and unconjugated oestriol (uE3) were measured on Siemens Immulite analyzer. Medians of the three parameters were calculated, regressed against gestational age (GA) and weighted by the number of participants/week. Equations were derived to adjust each parameter to the maternal weight and were centered on the median Egyptian weight. Prisca software was fed with the above data, multiples-of-median (MoM) and DS risks were calculated and the screening performance was evaluated at a mid-trimester risk cutoff of 1:270.

Results: Log-linear $[AFP/uE3 = {}^{10(A+B^*GA)}]$ and exponential equations $[CG = A^*e {}^{(B^*GA)}]$ were derived and the regressed medians were found to follow similar patterns to other Asian and

Western medians. Oestriol was always lowest (even halved) while CG and AFP were intermediate. A linear reciprocal model best fitted weight distribution among Egyptians and successfully adjusted each parameter to a weight of 78.2 kg. Epidemiological monitoring of these recommendations revealed satisfactory performance in terms of 6.7% initial positive rate and 1.00 grand MoM.

Conclusions: Adoption of the above recommendations is hoped to pave the way to a successful DS screening programme tailored to Egyptian peculiarities.

Keywords: Down syndrome.

606. the Clinical Relevance and Prognostic Significance of Adenosine Triphosphate ATP-Binding Cassette (ABCB5) and Multidrug Resistance (MDR1) Genes Expression in Acute Leukemia: An Egyptian Study

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J Cancer Res Clin Oncol., 93(11): 1859-1865 (2014) IF: 3.009

Aim: Multidrug resistance (MDR1) represents a major obstacle in the chemotherapeutic treatment of acute leukemia (AL). Adenosine triphosphate ATP-binding cassette (ABCB5) and MDR1 genes are integral membrane proteins belonging to ATPbinding cassette transporters superfamily.

Purpose: The present work aimed to investigate the impact of ABCB5 and MDR1 genes expression on the response to chemotherapy in a cohort of Egyptian AL patients. The study included 90 patients: 53 AML cases and 37 ALL cases in addition to 20 healthy volunteers as controls.

Methods: Quantitative assessment of MDR1 and ABCB5 genes expression was performed by quantitative real-time polymerase chain reaction. Additional prognostic molecular markers were determined as internal tandem duplications of the FLT3 gene (FLT3-ITD) and nucleophosmin gene mutation (NPM1) for AML cases, and mbcr-abl fusion transcript for B-ALL cases.

Results: In AML patients, ABCB5 and MDR1 expression levels did not differ significantly between de novo and relapsed cases and did not correlate with the overall survival or disease-free survival. AML patients were stratified according to the studied genetic markers, and complete remission rate was found to be more prominent in patients having low expression of MDR1 and ABCB5 genes together with mutated NPM1 gene. In ALL patients, ABCB5 gene expression level was significantly higher in relapsed cases and MDR1 gene expression was significantly higher in patients with resistant disease.

Conclusion: In conclusion, the results obtained by the current study provide additional evidence of the role played by these genes as predictive factors for resistance of leukemic cells to chemotherapy and hence treatment outcome

Keywords: ABCB5; MDR1; AML; ALL; Egypt.

607. Evaluation of Squamous Cell Carcinoma Antigen-Immunoglobulin M Complex (SCCA-IGM) and Alpha-L-Fucosidase (AFU) as Novel Diagnostic Biomarkers for Hepatocellular Carcinoma

Mossad NA, Mahmoud EH, Osman EA, Mahmoud SH and Shousha HI

Tumour Biol, 35: 11559-11564 (2014) IF: 2.84

Hepatocellular carcinoma (HCC) surveillance lacks a reliable biomarker. Alpha-fetoprotein (AFP) is the most widely used. However, not all HCCs secrete AFP.

AFP may be elevated with cirrhosis in the absence of HCC. Serum alpha-L-fucosidase (AFU) and squamous cell carcinoma antigen-immunoglobulin M complex (SCCA-IgM) were found to be useful markers in diagnosing HCC. SCCA-IgM and AFU were assessed by ELISA technique; AFP was measured by enzyme chemiluminescence in serum of 40 patients with HCC, 30 patients with liver cirrhosis, and 20 healthy control participants to compare their accuracy in early diagnosis of HCC.

Serum SCCA-IgM and AFU levels were significantly elevated in HCC group compared to cirrhotic group (P value<0.001 and <0.001, respectively). Receiver operating characteristic curve showed the optimal cutoff value for SCCA-IgM was 233 AU/ml with sensitivity 87.5% and specificity 66% and for AFU was 25 U/L with sensitivity 87.5% and specificity 98%. AFP cutoff value was 48 ng/mL with sensitivity of 70% and specificity of 53.3%. The simultaneous determination of AFP and SCCA-IgM activity increased the sensitivity to 92.5% and specificity to 62.1%. There were positive significant correlations between SCCA-IgM and each of AFU (r=0.296, P=0.005) and AFP (r=0.284, P=0.007) and no correlation between AFP and AFU. All markers did not correlate with the tumor size or affected by the Child score. The significant difference between SCCA-IgM and AFU levels among HCC and cirrhotic patients suggests their use as potential diagnostic tools and allows identifying a new group of HCC patients even in the absence of elevated AFP.

Keywords: SCCA; IGM; AFU; AFP; HCC.

608. Comparative Characteristics of Endotheliallike Cells Derived from Human Adipose Mesenchymal Stem Cells and Umbilical Cord Blood-Derived Endothelial Cells

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Clinical and Experimental Medicine, 14: 177-184 (2014) IF: 2.824

Adult peripheral blood contains a limited number of endothelial progenitor cells that can be isolated for treatment of ischemic diseases. The adipose tissue became an interesting source of stem cells for regenerative medicine. This study aimed to investigate the phenotype of cells obtained by culturing adipose-derived mesenchymal stem cells (ad-MSCs) in the presence of endothelial growth supplements compared to endothelial cells obtained from umbilical cord blood (UCB).

Passage 3 ad-MSCs and mononuclear layer from UCB were cultured in presence of endothelial growth media for 3 weeks followed by their characterization by flow cytometry and polymerase chain reaction. After culture in endothelial inductive media, ad-MSCs expressed endothelial genes and some endothelial marker proteins as CD31 and CD34, respectively. Adipose tissue could be a reliable source for easy obtaining, expanding and differentiating MSCs into endothelial-like cells for autologous cell-based therapy.

Keywords: Adipose tissue; Mesenchymal stem cells; Endothelial progenitor cells; Regenerative medicine.

609. Association of Cytotoxic T-Lymphocyte Antigen 4 Genetic Polymorphism, Hepatitis C Viral Infection and B-Cell Non-Hodgkin Lymphoma: An Egyptian Study

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Leukemia Lymphoma, 55(5): 1061-1066 (2014) IF: 2.605

Genetic and environmental factors are involved in the pathogenesis of non-Hodgkin lymphoma (NHL). The present study aimed to investigate the association between cytotoxic Tlymphocyte antigen 4 (CTLA-4) genetic polymorphism, hepatitis C virus (HCV) infection and B-cell NHL risk in Egypt. Genotyping of CTLA-4 single nucleotide polymorphisms (SNPs) was performed by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) assay for 181 adult patients with B-NHL and 200 controls. Our study revealed that CTLA-4 + 49 A/G polymorphism conferred increased risk of B-NHL (odds ratio [OR] = 1.7, 95% confidence interval [CI] = 1.36-2.565). The prevalence of HCV infection in individuals harboring the mutant genotype + 49 A/G and - 318 C/T SNPs was higher in patients with B-NHL and was associated with increased risk of B-NHL (OR = 2.79, 95% CI = 1.24-6.93 for + 49 A/G and OR = 3.9, 95% CI = 1.01-15.98 for - 318 C/T). In conclusion, some SNPs of CTLA-4 are genetic risk factors for B-NHL. Moreover, this study identified an association of CTLA-4 + 49 A/G and - 318 C/T promoter polymorphisms with HCV infection.

Keywords: CTLA-4; Genetic polymorphism; HCV; B-NHL; Egypt.

610. Genetic Polymorphisms of Surfactant Protein D Rs2243639, Interleukin (IL)-1β Rs16944 and IL-1RN rs 2234663 in Chronic Obstructive Pulmonary Disease, Healthy Smokers, and Non-Smokers

Issac MS, Ashur W and Mousa H

Molecular Diagnosis and Therapy, 18: 343-354 (2014) IF: 2.589

Background and Objectives: Chronic obstructive pulmonary disease (COPD) is a complex chronic inflammatory disease that involves the activity of various inflammatory cells and mediators. It has been suggested that susceptibility to COPD is, at least in part, genetically determined. The primary aim of this study was to investigate the association between surfactant protein D (SFTPD) rs2243639, interleukin (IL)-1 β rs16944 and IL-1 receptor antagonist (IL-1RN) rs2234663 gene polymorphisms and COPD susceptibility, as well as examining the association between the various IL-1RN/IL-1 β haplotypes and pulmonary function tests (PFT). Secondly, we aimed to examine the influence of SFTPD rs2243639 polymorphism on serum surfactant protein D (SP-D) level.

Methods: A total of 114 subjects were recruited in this study and divided into three groups: 63 COPD patients, 25 asymptomatic smokers, and 26 healthy controls. Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) was performed for the detection of SFTPD rs2243639 and IL-1 β rs16944 polymorphisms. Detection of variable numbers of an 86-bp tandem repeat (VNTR) of IL-1RN was done using PCR. Serum SP-D level was measured using enzyme linked-immunosorbent assay. PFTs were measured by spirometry.

Results: Carriers of the SFTPD AG and AA polymorphic genotypes constituted 71.4 % of COPD patients versus 48 % in

asymptomatic smokers, with a statistically significant difference between the two groups (p = 0.049). Smokers who were carriers of the polymorphic SFTPD rs2243639 A allele (AG and AA genotypes) have a 2.708 times risk of developing COPD when compared with wild-type GG genotype carriers [odds ratio (OR) 2.708 (95 % CI 1.041-7.047)]. Forced expiratory flow (FEF) 25-75 % predicted was higher in IL-1RN*1/*1 when compared with *1/*2 (p = 0.013). FEF25-75 % predicted in carriers of haplotype IL-1RN $*1/IL-1\beta$ T (49.21 ± 10.26) was statistically significantly higher than in carriers of IL-1RN $*2/IL-1\beta$ T (39.67 ± 12.64) [p = 0.005]. Forced expiratory volume in 1 s (FEV1)/forced vital capacity (FVC) in carriers of haplotype IL-1RN *1/IL-1B T (64.09 ± 6.39) was statistically significantly higher than in carriers of IL-1RN $*2/IL-1\beta T$ (59.44 \pm 7.71) [p = 0.048]. There was no association between SFTPD rs2243639 genotypes and serum SP-D level.

Conclusions: Smokers who are carriers of the SFTPD AG and AA polymorphic genotypes may be at a higher risk of developing COPD when compared with wild-type GG genotype carriers. IL-1RN rs2234663/IL-1 β rs16944 haplotypes influence FEF25-75 % predicted and FEV1/FVC. SFTPD rs2243639 polymorphism did not influence serum SP-D levels in our group of recruited subjects **Keywords**: Surfactant Protein D, Interleukin -1B,II-1Rn, Copd.

611. Is There A Role for MDR1, EPHX1 and Protein Z Gene Variants in Modulation of Warfarin Dosage? A Study on A Cohort of the Egyptian Population

Issac MS, El-Nahid MS and Wissa MY

Molecular Diagnosis and Therapy, 18: 73-83 (2014) IF: 2.589

Background: There is considerable inter-individual variability in warfarin dosages necessary to achieve target therapeutic anticoagulation. Polymorphisms in genes, which master warfarin pharmacokinetics and pharmacodynamics, might influence warfarin dose variation. Genes encoding drug transporters, such as human multidrug resistance (MDR1), as well as epoxide hydrolase 1 (EPHX1), which is a putative subunit of the vitamin K epoxide reductase, and Protein Z (PZ), which is a vitamin K-dependent plasma glycoprotein, are among those candidate genes. **Objective**: The purpose of this study was to investigate the contribution of MDR1 C3435T, EPHX1 H139R and PZ A-13G gene polymorphisms in warfarin dose variation in a cohort of the Egyptian population.

Methods: Eighty-four patients whose international normalized ratio (INR) was in the range of 2-3, 41 males and 43 females, with a mean (±SD) age of 40.9 (13.3) years were recruited into this study. MDR1 C3435T, EPHX1 H139R and PZ A-13G gene polymorphisms were detected by polymerase chain reaction-restriction fragment length polymorphism. Primarily, linear regression analysis, including the variables age, gender, MDR1 C3435T, EPHX1 H139R and PZ A-13G genotypes, was used to assess the effective factors for warfarin maintenance dose. Secondly, the previously examined cytochrome P450 (CYP) 2C9 A1075C and vitamin K epoxide reductase complex subunit 1 (VKORC1) C1173T were added to the regression analysis.

Results: Warfarin dose/week was not influenced by each of the MDR1 C3435T, EPHX1 H139R, and PZ A-13G gene polymorphisms when examined separately. However, when these single nucleotide polymorphisms (SNPs) were combined, MDR1 TT/EPHX1 RH,RR/PZ AA subjects showed statistically significant increase in warfarin dose/week when compared with

MDR1 CC/EPHX1 RH,RR/PZ AA subjects [median (25th-75th percentiles): 49.0 (42.0-59.5) vs. 35.0 (24.5-42.0) mg/week, respectively] (p = 0.014). In contrast, in the presence of wild-type EPHX1 HH, there was a decrease in warfarin dose/week in MDR1 TT subjects when compared with CT and CC subjects [median (25th-75th percentiles): 22.0 (17.5-30.6), 42.0 (35.0-49.0) and 42.0 (28.0-54.3) mg/week, respectively] (p = 0.005 and 0.030, respectively). Age had a significant contribution (p = 0.048) to the overall variability in warfarin dose. Calculated dose = $52.928 - (0.289 \times age) + (9.709 \times combined)$ weekly genotype). The multivariate linear regression equation of warfarin maintenance dose accounted for about 8 % of variation in dose (R (2) = 0.079), age accounted for 5 % of variation, while combined genotypes added the extra 3 %. However, the new regression equation accounted for 20.9 % of variation in dose. Age accounted for 5 %, while VKORC1 C1173T accounted for an extra 13 % of variation and MDR1 C3435T accounted for the remaining 3 % of variation. Calculated dose = 64.909 -(0.282 × age) - (13.390 × VKORC1) - (7.164 × MDR1).

Correlation analysis showed a close and significant relationship between the calculated and actual warfarin dose (r = 0.457; p < 0.0005).

Conclusion: Warfarin dose/week was significantly influenced by the combined MDR1 C3435T and EPHX1 H139R gene polymorphism since no polymorphism of PZ A-13G SNP was detected in our studied Egyptian population. Future studies with larger sample size will be needed to confirm our findings before definitive conclusions can be made.

Keywords: MDR1; EPHX1; Protein Z; Warfarin.

612. Association Between Matrix Metalloproteinase 2 (MMP2) Promoter Polymorphisms and the Susceptibility To Non-Hodgkin'S Lymphoma in Egyptians

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Annals of Haematology, 93(8): 1313-1318 (2014) IF: 2.396

metalloproteinases (MMPs) Matrix are zinc-dependent endopeptidases capable of extracellular matrix degradation. MMP2 is the key molecule that control invasion, tumor growth, and metastasis, and has been associated with poor prognosis in several tumors. Several epidemiological studies have focused on the associations between MMP2 promoter polymorphisms and cancer susceptibility; however, little is known about their role in hematological malignancies. The present study aimed to investigate the association of MMP2 -735C/T and -1306C/T promoter polymorphisms with B-NHL susceptibility and their clinicopathological characteristics. The study included 100 B-NHL patients and 100 healthy controls. Genotyping of MMP2 -735C/T and MMP2 -1306C/T was done by polymerase chain reaction restricted fragment length polymorphism (PCR-RFLP) technique. MMP2 -735C/T heteromutant genotype (CT) was detected in 23 % of patients, and the homomutant genotype (TT) was detected in 7 % of patients. The polymorphic allele, T allele, was associated with susceptibility to B-NHL (OR = 2.8:95 %CI = 1.48-5.28). For MMP2 -1306C/T, the frequencies of the polymorphic variants were 5 % for the heteromutant genotype (CT) and 3 % for the homomutant genotype (TT). The polymorphic allele, T allele, conferred almost fourfold increased risk of B-NHL (OR = 3.8, 95 %CI = 1.05-13.9), and the risk

elevated to be almost eight folds when confined to diffuse large B-cell lymphoma (DLBCL) (OR = 7.9, 95 %CI = 1.67-32.27). MMP2 -735C/T polymorphic genotypes were correlated with advanced clinical stages of the disease (stages III and IV). In conclusion, the study revealed that the variant alleles of MMP2 - 735C/T and MMP2 -1306C/T can be considered as molecular risk factors for B-NHL among Egyptians.

Keywords: MMP2--735C/T M; MP2 -1306C/T; B-NHL; Egypt.

613. Toll-Like Receptor 2 and 9 Genetic Polymorphisms and the Susceptibility to B Cell Non-Hodgkin Lymphoma in Egypt

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Ann Hematol., 93(11): 1859-65 (2014) IF: 2.396

Non-Hodgkin lymphomas (NHL) entail considerable heterogeneity regarding their morphology, clinical course, etiological factors, or response to therapy. Increased incidence of NHL in immunocompromised individuals and after autoimmune diseases suggests that infections and immune dysregulation could play a role in the susceptibility to NHL. Accordingly, genetic variation in Toll-like receptor (TLR) genes might be considered as molecular risk factors for NHL. The aim of the current study was to investigate the possible association between genetic polymorphism of the TLRs genes and B cell NHL (B-NHL) risk in Egypt. The present study included 100 B-NHL patients and 100 healthy controls. Genotyping of TLR2-1350 T/C and TLR9-1237 T/C were done by polymerase chain reaction restricted fragment length polymorphism (PCR-RFLP) technique. The frequency of TLR2-1350 T/C polymorphic genotypes in B-NHL patients was 18 % for the heteromutant genotype (TC) and 1 % for the homomutant (CC). There was no statistical difference in the distribution of TLR2-1350 T/C genotypes between B-NHL patients and controls. As for TLR9-1237 T/C, the frequency of the heteromutant genotype (TC) was 58 % and the homomutant genotype (CC) was 1 % in B-NHL patients. Calculated risk estimation revealed that TLR9-1237 (TC) heterotype conferred almost fourfold increased risk of B-NHL (odds ratio (OR)= 3.93, 95% confidence interval (CI)= 2.16-7.14), and the risk was higher in patients with indolent subtypes (OR=6.64, 95%CI=2.31-9.08). In conclusion, the study revealed that TLR9-1237 T/C polymorphism can be considered as molecular risk factor for B-NHL among Egyptians.

Keywords: TLR2-1350 T/C; TLR9-1237 T/C; B-NHL; Egypt.

614. Gene Expression Profiling of Endometrium Versus Bone Marrow-Derived Mesenchymal Stem Cells: Upregulation of Cytokine Genes

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Moll Cell Biochem, 395: 29-43 (2014) IF: 2.388

Postulated Stem/progenitor cells involved in endometrium regeneration are epithelial, mesenchymal, and endothelial. Bone marrow (BM) has been implicated in endometrial stem cells. We aimed at studying gene expression profiling of endometrial mesenchymal stem cells compared to BM MSCS to better understand their nature and functional phenotype. Endometrial tissues were obtained from premenopausal hysterectomies (n = 3), minced and enzymatically digested as well as Normal BM

(n=3). Immunophenotyping, differentiation to aspirates mesoderm, and proliferation were studied. The expression profile of 84 genes relevant to mesenchymal stem cells was performed. Fold change calculations were determined with SA Biosciences data analysis software. VEGF, G-CSF, and GM-CSF in cultures supernatants of MSCs were assayed by Luminex immunoassay. Endo MSCs possess properties similar to BM MSCs. Cumulative population doubling was significantly higher in Endo MSCs compared to BM MSCs (p < 0.001). 52 core genes were shared between both generated MSCs including stemness, self-renewal, members of the Notch, TGFB, FGF, and WNT.16 downregulated genes (VCAM, IGF1)and 16 upregulated in Endo MSCs compared to BM ($p < 0.05 \rightarrow$ fourfolds). They included mostly cytokine and growth factor genes G-CSF, GM-CSF, VWF, IL1b, GDF15, and KDR. VEGF and G-CSF levels were higher in Endo MSCs supernatants (p < 0.0001). Cells sharing MSC and endothelial cell characteristics could be isolated from the human endometrium. Endo MSCs share a core genetic profile with BM MSCs including stemness. They show upregulation of genes involved in vasculogenesis, angiogenesis, cell adhesion, growth proliferation, migration, and differentiation of endothelial cells, all contributing to endometrial function.

Keywords: Mesenchymal stem cells; 1self-renewal 1 microarray; 1 gene expression profile; 1 endometrium; 1 bone marrow mesenchymal stem cells.

615. FAS and FAS Ligand Gene Polymorphisms in Egyptian Females With Preeclampsia

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Journal of Reproductive Immunology, 104-105: 63-67 (2014) IF: 2.373

withpreeclampsia, investigating whether the G 670 Fas gene variant and the Fas LigandINV2nt 124 G variant had a differential distribution in patients with preeclampsia. Thepreeclamptic group consisted of 50 pregnant women who developed preeclampsia, whilethe control group consisted of 50 age-matched pregnant women with uncomplicated preg-nancies.

Fas and Fas ligand gene polymorphisms were tested using polymerase chainreaction-restriction fragment length polymorphism. Regarding the Fas 670 A > G polymor-phism, statistically significant differences were found between the two groups regarding the AA and GG/AG genotypes as well as the A, G allele frequency, while no statistically sig-nificant differences were found regarding AG or GG genotypes. Regarding the FasLG IVS2nt124 A > G polymorphism, no statistically significant differences were found between thetwo groups studied. Concerning the Fas 670 A > G gene, no statistically significant differ-ences between the severe and mild preeclampsia groups regarding the A allele frequencywere found. Concerning the FasLG IVS2nt 124 A > G gene, there were no statistically significant differences between the severe and mild preeclampsia groups regarding the A allelefrequency or the G allele frequency. The presence of the Fas gene polymorphism Fas A670Gis associated with an increased risk of preeclampsia, while the presence of FasLG IVS2nt124 A > G gene may be protective against preeclampsia.

Keywords: FAS; FAS ligand genes; Gene polymorphisms.

616. International Nosocomial Infection Control Consortium (INICC) Report, Data Summary of 43 Countries for 2007-2012. Device-Associated Module

Rosenthal VD, Maki DG, Mehta Y, Leblebicioglu H, Memish ZA, Al-Mousa HH, Balkhy H, Hu B, Alvarez-Moreno C, Medeiros EA, Apisarnthanarak A, Raka L, Cuellar LE, Ahmed A, Navoa-Ng JA, El-Kholy AA, Kanj SS, Bat-Erdene I, Duszynska W, Van Truong N, Pazmino LN, See-Lum LC, Fernández-Hidalgo R, Di-Silvestre G, Zand F, Hlinkova S, Belskiy V, Al-Rahma H, Luque-Torres MT, Bayraktar N, Mitrev Z, Gurskis V, Fisher D, Abu-Khader IB, Berechid K, Rodríguez-Sánchez A, Horhat FG, Requejo-Pino O, Hadjieva N, Ben-Jaballah N, García-Mayorca E, Kushner-Dávalos L, Pasic S, Pedrozo-Ortiz LE, Apostolopoulou E, Mejía N, Gamar-Elanbya MO, Jayatilleke K, de Lourdes-Dueñas M and Aguirre-Avalos G

American Journal of Infection Control, 42 (9): 942-956 (2014) IF: 2.326

We report the results of an International Nosocomial Infection Control Consortium (INICC) surveillance study from January 2007-December 2012 in 503 intensive care units (ICUs) in Latin America, Asia, Africa, and Europe. During the 6-year study using the Centers for Disease Control and Prevention's (CDC) U.S. National Healthcare Safety Network (NHSN) definitions for device-associated health care-associated infection (DA-HAI), we collected prospective data from 605,310 patients hospitalized in the INICC's ICUs for an aggregate of 3,338,396 days. Although device utilization in the INICC's ICUs was similar to that reported from ICUs in the U.S. in the CDC's NHSN, rates of deviceassociated nosocomial infection were higher in the ICUs of the INICC hospitals: the pooled rate of central line-associated bloodstream infection in the INICC's ICUs, 4.9 per 1,000 central line days, is nearly 5-fold higher than the 0.9 per 1,000 central line days reported from comparable U.S. ICUs. The overall rate of ventilator-associated pneumonia was also higher (16.8 vs 1.1 per 1,000 ventilator days) as was the rate of catheter-associated urinary tract infection (5.5 vs 1.3 per 1,000 catheter days). Frequencies of resistance of Pseudomonas isolates to amikacin (42.8% vs 10%) and imipenem (42.4% vs 26.1%) and Klebsiella pneumoniae isolates to ceftazidime (71.2% vs 28.8%) and imipenem (19.6% vs 12.8%) were also higher in the INICC's ICUs compared with the ICUs of the CDC's NHSN.

Keywords: Antibiotic resistance; Bloodstream infection; Catheter-associated urinary tract infection; Central line– associated bloodstream infections; Developing countries; Deviceassociated infection; Health care–associated infection; Hospital infection; Limited resources countries; Low income countries; Network; Nosocomial infection; Urinary tract infection; Ventilator-associated pneumonia.

617. Blood Spot Versus Plasma Chitotriosidase: A Systematic Clinical Comparison

Mohamed A. Elmonem, Dalia I. Ramadan, Marianne S.M. Issac, Laila A. Selimb and Sara M. Elkateb

Clinical Biochemistry, 47: 38-43 (2014) IF: 2.229

Objectives: This study aimed to evaluate the agreement between blood spot and plasma chitotriosidase using the economic substrate 4-methylumbelliferyl $-\beta$ -D-N,N',N"triacetylchitotrioside, and to investigate the utility of the blood spot assay for the wide scale screening for lysosomal storage disorders among the clinically suspected.

Design and Methods: Blinded blood spot samples were compared with the corresponding plasma levels in 199 children (56 with confirmed diagnoses of ten different lysosomal storage disorders, 73 normal controls and 70 pathological controls). Several performance criteria (limit of detection, linearity, withinrun and day-to-day precision and sample stability) were also evaluated.

Results: Plasma assay performed better by most criteria; however, blood spot performance was quite satisfactory. Quantitative values of the two methods can't be used interchangeably based on their 95% limits of agreement. Diagnostic sensitivity and specificity derived from ROC curves were 75.0 and 85.3% for the plasma assay and 71.4 and 79.0% for the blood spot assay, respectively. Cohen's kappa was 0.72 (95% CI: 0.616–0.821) denoting a good categorical agreement between the two methods.

Conclusion: The clinical use of blood spot chitotriosidase for the screening of lysosomal storage disorders can be quite practical, provided proper cut-off values are determined for each lab.

Keywords: Chitotriosidase; Dried blood spot; Lysosomal storage disorder; Clinical agreement.

618. Factor V Leiden 1691G/A and Prothrombin Gene 20210G/A Polymorphisms as Prothrombotic Markers in Adult Egyptian Acute Leukemia Patients

Azza Hamdy El Sissy, Maha H. El Sissy and Shereef Elmoamly

Medical Oncology, 31(11): 1-7 (2014) IF: 2.058

FactorVLeiden 1691G/A and prothrombin gene 20210G/A mutations are the most common genetic defects leading to thrombosis. This work aimed to study the FV Leiden and the prothrombin gene polymorphism in adult Egyptian patients with acute leukemia and their importance in thrombophilia screening. The study included 76 patients with acute leukemia and 100 healthy controls. Genotyping was done by real-time polymerase chain reaction technique. For factor V Leiden, the frequency of G/A mutation conferred more than 2.5-fold of increased risk of (OR 2.639 95 % CI 1.045-6.669). The frequency of factor V Leiden combined (G/A +A/A) genotypes conferred 2.83-fold of increased risk (OR 2.828, CI 1.13-7.075), The A allele conferred almost threefold increased risk (OR 2.824, 95 % CI 1.175-6.785). Despite higher frequency in patients compared to controls, there was no risk of association between prothrombin gene mutation and acute leukemia in adult Egyptians nor was there between combined genotypes of prothrombin gene mutation and factor V Leiden.

Keywords: Factor V prothrombin leukemia egypt.

619. Methylene Tetrahydrofolate Reductase (MTHFR) Gene Polymorphisms in Chronic Myeloid Leukemia: An Egyptian Study

Mervat Mamdooh Khorshied, Iman Abdel Mohsen Shaheen, Reham E. Abu Khalil and Rania Elsayed Sheir

Medical Oncology, 31(1): 794-799 (2014) IF: 2.058

Methylenetetrahydrofolate reductase (MTHFR) gene plays a pivotal role in folate metabolism. Several genetic variations in MTHFR gene as MTHFR-C677T and MTHFR-A1298C result in decreased MTHFR activity, which could influence efficient DNA methylation and explain susceptibility to different cancers. The etiology of chronic myeloid leukemia (CML) is obscure and little is known about individual's susceptibility to CML. In order to assess the influence of these genetic polymorphisms on the susceptibility to CML and its effect on the course of the disease among Egyptians, we performed an age-gender-ethnic matched case-control study. The study included 97 CML patients and 130 healthy controls. Genotyping of MTHFR-C677T and -A1298C was performed by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) technique. The results showed no statistical difference in the distribution of MTHFR-C677T and -A1298C polymorphic genotypes between CML patients and controls. The frequency of MTHFR 677-TT homozygous variant was significantly higher in patients with accelerated/blastic transformation phase when compared to those in the chronic phase of the disease. In conclusion, our study revealed that MTHFR-C677T and -A1298C polymorphisms could not be considered as genetic risk factors for CML in Egyptians. However, MTHFR 677-TT homozygous variant might be considered as a molecular predictor for disease progression. Keywords: MTHFR; C677t; A1298c; CML; Pcr; Rflp.

620. Interleukin 28B Polymorphisms and Therapy Response in Egyptian Hepatitis C Genotype-4 Patients

Heba M. Gouda, Zainab A. El-Saadany, Neveen B. Foad and Rabab M. Salama

DNA and Cell Biology, 33(9): 642-646 (2014) IF: 1.991

Hepatitis C infection represents a major health problem in Egypt; only 20% of patients undergo spontaneous clearance of the virus and around 25% of all patients progress to develop cirrhosis. More than 90% of Egyptian patients have hepatitis C virus (HCV) genotype-4. Combined pegylated interferon and oral ribavirin are the current standard therapies for HCV-4. The aim of the work is to evaluate the predictive power of the rs12979860IL28B SNP and rs12980275 IL28B SNP for treatment response in Egyptian patients infected with HCV genotype 4. One hundred eleven HCVpatients receiving combined treatment were studied for rs12979860 and rs12980275 polymorphisms by the restriction fragment length polymorphism technique. The rs12979860 CC and rs12979860 AA genotypes were significantly associated with sustained virological response (p=0.001). Our results suggest that studying IL28B polymorphisms contribute to proper prediction of response to standard therapies in Egyptian patients, optimizing cost effectiveness, and minimizing unneeded adverse effect of therapy.

Keywords: Il28- Rs12980275-Rs12979860i.

621. Evaluation of Cytokines in Follicular Fluid and Their Effect on Fertilization and Pregnancy Outcome

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Immunological Investigations, 43: 572-584 (2014) IF: 1.903

Cytokines in follicular fluid (FF) are important for reproduction as they modulate oocyte maturation and ovulation which influence subsequent fertilization, development of early embryo and potential for implantation. We evaluated FF cytokines in women who underwent intracytoplasmic sperm injection (ICSI) and their association with fertilized oocvtes, embryo quality and pregnancy outcome. FF belonging to 38 patients including 18 polycystic ovary (PCO) and 20 male/unexplained infertility patients were investigated for granulocyte colony stimulating factor (G-CSF), regulated upon activation normal T cell expressed and presumably secreted (RANTES), tumour necrosis factor (TNFa), interferon gamma (IFNa) and interleukins (IL-4 and IL-2) by bead-based sandwich immunoassay. Our findings revealed that on the day of oocyte retrieval, G-CSF was positively correlated with the number of fertilized oocytes, while TNFa detection was associated with reduced number of fertilized oocytes. Only G-CSF showed significant positive effect to the pregnancy outcome although the cytokines studied were not associated with embryo quality. PCO as the cause of infertility did not show an association with cytokines in FF. The functions of cytokines in reproduction are likely to be complex, and cytokine evaluation may offer insight to the understanding of the mechanisms leading to success or failure of assisted reproduction. Keywords: Follicular Fluid; G-Csf; Il-4; Intracytoplasmic sperm injection; Rantes; TNF.

622. Frequency of CYP2C9 and VKORC1 Gene **Polymorphisms and Their Influence on Warfarin Dose in Egyptian Pediatric Patients**

Mennat-Allah Kamal El-Din, Marwa Salah Farhan, Randa Ibrahim El Shiha, Rania Mohammed Helmy El-Kaffas and Somaia Mohammed Mousa

Pediatric Drugs, 16(4): 337-341 (2014) IF: 1.721

Introduction: Warfarin is a widely used anticoagulant that shows a high inter-individual variability in the dose needed to achieve target anticoagulation. In adults, common genetic variants in the cytochrome P450-2C9 (CYP2C9) and vitamin K epoxide reductase complex (VKORC1) enzymes, in addition to nongenetic factors, explain this dose variability. In children, data about warfarin pharmacogenetics are limited and inconsistent.

Methods: CYP2C9 (*2 and *3) alleles and the VKORC1 (C1173T and G-1639A) polymorphisms were studied by multiplex real time polymerase chain reaction in 41 pediatric patients who received stable warfarin maintenance dose.

Results: The allele frequency of the studied genes was CYP2C9*2 (0.085), CYP2C9*3 (0.12), VKORC1 1173T (0.52), and VKORC1 -1639A (0.54). In univariate analysis, patients' age, weight, and height were significantly (p < 0.0001) associated with warfarin maintenance dose. However, CYP2C9 and VKORC1 gene polymorphisms did not affect warfarin dose. In multivariate analysis, age was found to be the only significant determinant of daily warfarin maintenance dose (p = 0.045).

Conclusion: Age was the most significant determinant of warfarin dosage in this preliminary study including Egyptian pediatric patients. Further studies involving larger numbers of children are warranted to determine the true impact of genetic factors on warfarin doses in pediatric patients.

Keywords: CYP2C9; VKORC1; Warfarin.

623. Tumor Necrosis Factor-A -308G/A Gene Polymorphism in Egyptian Children With Immune **Thrombocytopenic Purpura**

Maha H. El Sissy, A.H. El Sissy and Sherif Elanwary

Blood Coagulation and Fibrinolysis, 25(5): 458-463 (2014) IF: 1.38

Keywords: ITP Egyptian Tumor Necrosis Factor-Alpha: Immune Thrombocytopenic Purpura.

Immune thrombocytopenic purpura (ITP) is an autoimmune

disease characterized by increased platelet destruction. Although

the cause of ITP remains unclear, it is accepted that both

environmental and genetic factors play an important role in the

development of the disease. Children with ITP have a T-helper 1-

type cytokine pattern with elevated levels of tumor necrosis

624. Risk Factors of Prolonged Hospital Stay in **Children With Viral Severe Acute Respiratory** Infections

Wilkins.

El Kholy AA, Mostafa NA, Ali AA, El-Sherbini SA, Ismail RI, Magdy RI, Soliman MS and Said MM.

Journal of Infection in Developing Countries, 15: 1285-93 (2014) IF: 1.267

Introduction: Severe acute lower respiratory infections (SARIs) are one of the major causes of morbidity and mortality in young children, especially in developing countries. The present study focused on detection of risk factors for prolonged hospital stays among children with viral SARIs.

Methodology: A sentinel surveillance study was conducted at Cairo University Hospital (CUH) between February 2010 and May 2011. Nasopharyngeal (NP) and oropharyngeal (OP) swabs were collected from all children admitted with SARIs. Viruses were identified using reverse transcription polymerase chain reaction (RT-PCR).

Results: Out of 1,046 children, 380 (36%) were positive for one or more viruses; these included respiratory syncytial virus (RSV) (22.9%), adenovirus (6.2%), parainfluenza viruses (PIVs1-3) (5.1%), human metapneumovirus (HMPV) (4.5%), influenza A (1.4%), and influenza B (0.6%). Viral etiology was mainly detected in children under one year of age (88.9%). Prolonged length of stay was independently associated with the presence of cyanosis and underlying chronic illness (OR 7.4, CI: 1.8-30.32 [p = 0.005], OR 2.5, CI: 1.36-4.64 [p = 0.004], respectively). Virus type did not affect the length of hospital stay (p > 0.05). Oxygen therapy was required in 91% of the patients. A total of 43 patients (11.6%) required intensive care admission. Twenty-one patients (5.5%) died, and 15 of them (71.4%) had an underlying chronic illness.

Conclusions: The study demonstrated the important burden of respiratory viruses as a cause of SARI in hospitalized children in a tertiary Egyptian hospital. Cyanosis and underlying chronic illness were significantly associated with prolonged length of stay.

Keywords: Respiratory Viruses; Children; SARI; Prolonged Stay.

625. Association of the Luteinizing Hormone/ Choriogonadotropin Receptor Gene Polymorphism With Polycystic Ovary Syndrome

Yasmin Ahmed Bassiouny,Walaa Ahmed Rabie, Ayman Ahmed Hassan and Rania Kamal Darwish

Gynecological Endocrinology, 30: 428-430 (2014) IF: 1.136

This study aimed at evaluating possible associations of the single nucleotide polymorphism (SNP) in luteinizing hormone/ choriogonadotropin receptor (LHCGR) gene G935A and polycystic ovary syndrome (PCOS) phenotype. The study included 100 PCOS female patients and 60 healthy female control subjects. The patients were recruited from the Gynecology outpatient clinic, Kasr Al-Aini Hospital, Cairo University. All candidates underwent full history taking and clinical examination with calculation of body mass index. Serum and EDTA samples were collected from each patient after a written consent. A hormonal profile was done for each patient as well as DNA analysis of the G935A polymorphism of LHCGR gene. In PCOS group, 26% were homozygous (AA), 27% were heterozygous (GA) and 47% were wild genotype (GG), while in controls 30% were heterozygous and 70% were wild genotype (OR: 2.25; CI: 1.16-4.386; p value: 0.012). The homozygous 935A individuals were at higher risk to develop PCOS than controls (OR: 1.80; CI: 1.54-2.09; p value50.001).We found a genetic variant, which is associated with PCOS in a sample of the Egyptian population. These results may provide an opportunity to test this SNP at the LHCGR gene in fertile or infertile women with family history to assess their risk of PCOS.

Keywords: G935a Polymorphism; Genetic factors; Luteinizing hormone/choriogonadotropin receptor gene; Polycystic ovary syndrome; Polymerase chain reaction-restriction Fragment Length Polymorphism Technique; Single nucleotide polymorphism.

626. Detection of Trisomy 4 and 10 in Egyptian Pediatric Patients With Acute Lymphoblastic Leukemia

Somaia Mousa, Shady Mostafa, Iman Shaheen and Esam Elnoshokaty

Clinical Laboratory, 60 (4): 609-614 (2014) IF: 1.084

Background: Improvement in cure rates for children with acute lymphoblastic leukemia (ALL) has focused attention on better methods of identifying patients with increased or decreased risk of treatment failure. Chromosome aberrations have a major role in pediatric ALL risk assessment. The aim of this work is to detect the frequency of trisomy 4 and 10 in Egyptian pediatric ALL patients and to analyze their possible prognostic significance.

Methods: Forty newly diagnosed pediatric ALL patients were subjected to bone marrow aspirate morphological examination and immunophenotyping. Detection of copy number of chromosome 4 and 10 was done using Fluorescence In Situ Hybridization (FISH) technique using whole chromosome painting probes.

Results: Combined trisomy 4 and 10 was detected in 7 cases (17.5%), all of them were of B-ALL type. Single trisomy 4 or 10 was not detected in any case. Trisomy positive patients had a statistically significant lower total leucocytic count (p = 0.041), higher platelet count (p = 0.018), and lower blast percentage in peripheral blood (p = 0.016) at diagnosis.

Conclusions: Combined trisomy 4 and 10 identifies a group of ALL patients that have good prognostic indicators. Screening of Egyptian pediatric ALL patients for trisomy 4 and 10 may help in "patients' stratification" aiming to develop a risk-adapted therapy in order to minimize therapy related morbidities particularly in children.

Keywords: Acute Lymphoblastic Leukemia, Trisomy 4, Trisomy 10, FISH, Prognosis.

627. Plasma Annexin A5, Anti-Annexin A5 Antibodies and Annexin A5 Polymorphism in Egyptian Female Patients With Systemic Lupus Erythematosus and Antiphospholipid Syndrome

Aya Nasef, Mona Ibrahim, Nermine Riad and Somaia Mousa

Clinical Laboratory, 60 (1): 133-137 (2014) IF: 1.084

Background: Annexin A5 exhibits anticoagulant properties that appear to be defective in patients with antiphospholipid syndrome (APS) resulting in repeated thrombosis and recurrent pregnancy loss (RPL). APS occurs frequently in association with systemic lupus erythematosus (SLE). The present study aimed to find out a possible relationship between annexin A5 (gene polymorphism, antibodies or plasma level) and the pathophysiology of SLE, APS and RPL.

Methods: 47 female patients divided into 3 groups (SLE, APS and RPL) and 20 healthy controls are included in the study. Detection of annexin A5 (-1C/T) gene polymorphism was done by Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP) assay. Anti-annexin A5 antibodies (IgG and IgM) and annexin A5 plasma level were measured by Enzyme Linked Immunosorbent Assay (ELISA).

Results: The frequency of annexin A5 (-1C/T) polymorphism was significantly higher in SLE related groups (p = 0.02), but it did not correlate with RPL (p = 0.57) or annexin A5 level (p = 0.5). Anti-annexin A5 IgM level was significantly higher among APS patients and was associated with RPL (p = 0.005, odds ratio =23.75, 95% confidence interval = 2.15 - 262.48).

Conclusions: Annexin A5 (-1C/T) gene mutation may play a role in the pathophysiology of SLE. Anti-annexin A5 IgM was the antibody associated with RPL in this group of APS patients. Annexin A5 plasma levels are not affected by the presence of annexin A5 (-1C/T) polymorphism.

Keywords: Annexin A5; Annexin A5 (-1C/T) Polymorphism; Systemic Lupus Erythematosus; Antiphospholipid Syndrome; Recurrent Pregnancy Loss.

628. Low Incidence of Adamts13 Missense Mutation R1060w in Adult Egyptian Patients Withthrombotic Thrombocytopenic Purpura

Maha H. El Sissy, A. Abd El Hafez and A.H. El Sissy

Acta Haematol - Basel, 132: 30-35 (2014) IF: 0.994

Thrombotic thrombocytopenic purpura (TTP) is an acute lifethreatening disorder, characterized by thrombocytopenia, microangiopathic hemolytic anemia, widespread microvascular thrombi and consequent clinical sequelae due to ischemic organ damage. TTP is most commonly associated with deficiency or Willebrand factor-cleaving inhibition of von protease (ADAMTS13) activity. ADAMTS13 mutations and polymorphisms have been reported in childhood congenital TTP, but their significance in adult-onset TTP is still under investigation. Two mutations stand out: the single base insertion 4143insA in exon 29 and the missense mutation R1060 Win exon 24 have both been observed in several unrelated families, mainly in adult-onset TTP, and over a wide geographic area. Our objective in this study is to identify the prevalence of R1060W missense mutation in exon 24 ADAMTS13 in a sample of adult Egyptian TTP patients. Thirty- one adult-onset TTP patients were included in this study, with a male/female ratio of 1: 4. Twentysix cases (84%) presented with acute idiopathic TTP, 2 cases were drug abusers and 3 cases were pregnant. None of the study cases provided a history of suspicious TTP symptoms during childhood (2 cases gave a history of episodes of thrombocytopenia during childhood). All cases showed statistically significant decreased ADAMTS13 activity compared to normal controls (p < 0.001). The study revealed a high statistical difference regarding the ADAMTS13 inhibitor level in primary versus secondary cases (p = 0.003). None of our Egyptian cases or of the healthy normal controls are positive for exon 24 missense mutation. Larger studies and regional and national TTP registries are recommended.

Keywords: ADAMTS13; Missense mutation R1060W; Thromboticthrombocytopenic Purpura.

629. Glutathione S-Transferase Gene Polymorphisms (GSTM1, GSTT1, and GSTP1) in Egyptian Pediatric Patients With Sickle Cell Disease

Hala Fathy Shiba, Mona Kamal El-Ghamrawy, Iman Abd El-Mohsen Shaheen, Rasha Abd El-Ghani Ali and Somaia Mohammed Mousa

Pediatric and Developmental Pathology, 17(4): 265-270 (2014) IF: 0.857

Sickle cell disease (SCD) complications are associated with oxidative stress. Glutathione S-transferases (GSTs) are a group of enzymes that protect against oxidative stress. The aims of this study was to evaluate the prevalence of GSTM1, GSTT1, and GSTP1 gene polymorphisms among homozygous sickle cell anemia patients and to investigate the possible association between the presence of these polymorphisms and SCD severity and complications. Genotyping the polymorphisms in GSTT1 and GSTM1 genes was performed using the multiplex polymerase chain reaction (PCR) method. The GSTP1 ILe105Val polymorphism was determined using PCR-restriction fragment length polymorphism. GSTM1 null genotype was significantly associated with increased risk of severe vaso-occlusive crises (VOC) (odds ratio 5 1.52, 95% confidence interval = 0.42-5.56, P = 0.005). We found no significant association between GST genotypes and frequency of sickle cell-related pain, transfusion frequency, disease severity, or hydroxyurea treatment. GSTM1 gene polymorphism may be associated with risk of severe VOC among Egyptian SCD patients.

Keywords: Egypt; Glutathione S-Transferase; Polymorphism.

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630. Association of Interferon-γ Inducible Protein-10 Pretreatment Level and Sustained Virological Response in Hcv-Positive Egyptian Patients

Omran D., Hamdy S., Tawfik S., Esmat S., Saleh D.A. and Zayed R.A.

Annals of Clinical & Laboratory Science, 44(2): 169-174 (2014) IF: 0.839

Background: The response to antiviral therapy in HCV infected patients depends on several predictive factors; however, the ability to achieve sustained virological response is still limited to around 60% of the patients infected with the HCV-4 genotype. Increased serum and intrahepatic interferon- γ inducible protein 10 (IP-10) levels in patients with chronic hepatitis C have been described. The aim of the work was to study the impact of pretreatment serum IP-10 level on the antiviral treatment outcome in a group of Egyptian patients infected with HCV.

Materials and Methods: The study included 80 treatment naive HCV patients. Serum IP-10 levels were determined by an enzyme linked immunosorbent assay before therapy was introduced. Serum samples were examined twice by Real-Time PCR after complete

course of therapy for detection of HCV RNA; at the end of the antiviral therapy and six months later to detect sustained virological response (SVR). Results. 57 patients (71%) achieved SVR while 23 (29%) patients were non-responders (NR). Pretreatment serum IP-10 levels were significantly lower in patients who achieved SVR than in NR (p=0.000).

Conclusion: Low pretreatment serum IP-10 is a favorable predictive of response to antiviral HCV therapy in Egyptian patients.

Keywords: HCV; Predictors, Response, Therapy, Ip-10

631. Mesenchymal Stem Cells from Pediatric Patients With Aplastic Anemia: Isolation, Characterization, Adipogenic, and Osteogenic Differentiation

Eman Refaat El-Mahgoub, Ebtisam Ahmed, Reham Abd-El Aleem Afifi, Mennat-Allah Kamal and Somaia Mohammed Mousa

Fetal and Pediatric Pathology, 33(1): 9-15 (2014) IF: 0.398

Aplastic anemia is a syndrome of bone marrow (BM) failure characterized by peripheral pancytopenia and marrow hypoplasia. Its exact pathophysiology is still not clear. Mesenchymal stem cells (MSCs) play an important role in providing the specialized BM microenvironment for hematopoietic stem cells survival and differentiation. MSCs were isolated from BM of five patients with aplastic anemia and five controls. MSCs were characterized by morphology and immunophenotyping. Their viability, proliferative capacity, and adipogenic as well as osteogenic differentiation potentials were assessed. MSCs from aplastic anemia patients and controls shared similar spindle-shaped morphology and surface marker expression. MSCs derived from patients with a lastic anemia showed lower viability (74.2 \pm 4.44% vs. 97.0 \pm 1.58, p < 0.0001) and slower expansion rate as indicated by smaller population doubling and smaller cumulative population doubling from passages 1 to 4 (0.70 \pm 0.22 vs. 2.34 \pm 0.84; p = 0.009). Besides, aplastic anemia MSCs had poor capacity to differentiate into adipocytic and osteocytic lineages.

Keywords: Aplastic anemia; Hematopoiesis; Mesenchymal stem cells; Bone marrow microenvironment.

Dept. of Clinical Oncology and Nuclear Medicine

632. Second Cancer Risk After 3D-CRT, IMRT and VMAT for Breast Cancer

Abo-Madyan Y, Aziz MH, Aly MM, Schneider F, Sperk E, Clausen S, Giordano FA, Herskind C, Steil V, Wenz F and Glatting G

Radiotherapy and Oncology, 110 (3):471-476 (2014) IF: 4.857

Purpose: Second cancer risk after breast conserving therapy is becoming more important due to improved long term survival rates. In this study, we estimate the risks for developing a solid second cancer after radiotherapy of breast cancer using the concept of organ equivalent dose (OED).

Materials and Methods: Computer-tomography scans of 10 representative breast cancer patients were selected for this study. Three-dimensional conformal radiotherapy (3D-CRT), tangential intensity modulated radiotherapy (t-IMRT), multibeam intensity modulated radiotherapy (m-IMRT), and volumetric modulated arc therapy (VMAT) were planned to deliver a total dose of 50 Gy in 2 Gy fractions. Differential dose volume histograms (dDVHs) were created and the OEDs calculated. Second cancer risks of ipsilateral, contralateral lung and contralateral breast cancer were estimated using linear, linear-exponential and plateau models for second cancer risk.

Results: Compared to 3D-CRT, cumulative excess absolute risks (EAR) for t-IMRT, m-IMRT and VMAT were increased by $2 \pm 15\%$, $131 \pm 85\%$, $123 \pm 66\%$ for the linear-exponential risk model, $9 \pm 22\%$, $82 \pm 96\%$, $71 \pm 82\%$ for the linear and $3 \pm 14\%$, $123 \pm 78\%$, $113 \pm 61\%$ for the plateau model, respectively.

Conclusion: Second cancer risk after 3D-CRT or t-IMRT is lower than for m-IMRT or VMAT by about 34% for the linear model and 50% for the linear-exponential and plateau models, respectively.

Keywords: Breast cancer; Intensity modulated radiation therapy (IMRT); Organ equivalent dose (OED); Second cancer risk.

633. INTRAGO: Intraoperative Radiotherapy in Glioblastoma Multiforme–A Phase I/II Dose Escalation Study

Frank A Giordano, Stefanie Brehmer, Yasser Abo-Madyan, Grit Welzel, Elena Sperk, Anke Keller, Frank Schneider, Sven Clausen, Carsten Herskind, Peter Schmiedek and Frederik Wenz

BMC Cancer, 14: (2014) IF: 3.319

Background: Glioblastoma multiforme (GBM) is the most frequent primary malignant brain tumor in adults. Despite multimodal therapies, almost all GBM recur within a narrow margin around the initial resected lesion. Thus, novel therapeutic intensification strategies must target both, the population of dispersed tumor cells around the cavity and the postoperative microenvironment. Intraoperative radiotherapy (IORT) is a pragmatic and effective approach to sterilize the margins from persistent tumor cells, abrogate post-injury proliferative stimuli and to bridge the therapeutic gap between surgery and radiochemotherapy. Therefore, we have set up INTRAGO, a phase I/II dose-escalation study to evaluate the safety and tolerability of IORT added to standard therapy in newly diagnosed GBM. In contrast to previous approaches, the study involves the application of isotropic low-energy (kV) x-rays delivered by spherical applicators, providing optimal irradiation properties to the resection cavity.

Methods/Design: INTRAGO includes patients aged 50 years or older with a Karnofsky performance status of at least 50% and a histologically confirmed (frozen sections) supratentorial GBM. Safety and tolerability (i.e., the maximum tolerated dose, MTD) will be assessed using a classical 3 + 3 dose-escalation design. Dose-limiting toxicities (DLT) are wound healing deficits or infections requiring surgical intervention, IORT-related cerebral bleeding or ischemia, symptomatic brain necrosis requiring surgical intervention and early termination of external beam radiotherapy (before the envisaged dose of 60 Gy) due to radiotoxicity. Secondary end points are progression-free and overall survival.

634. Differentiated Thyroid Carcinoma: An Analysis of 249 Patients Undergoing Therapy and Aftercare At A Single Institution

Amin A, Badwey A and El-Fatah S.

Clin Nucl Med, 39 (2): 142-146 (2014) IF: 2.857

Purpose: Well-differentiated thyroid cancer (WDTC) is rising in incidence across the world over the past 3 decades. We aimed to evaluate the natural history and clinical outcome of differentiated thyroid carcinoma by a retrospective analysis of 249 patients treated at a single institution.

Methods: A cohort of 249 patients who underwent thyroidectomy for WDTC in the last 10 years in Maadi Military Hospital was studied. Main outcome measures were clinical management at the diagnosis, survival, morbidity, and prognostic risk factors.

Results: Mean age at diagnosis was 44.7 (SD, 14.6) years, where 52.2% were 45 years or older. Females represent 70.7% (P = 0.01), with female-to-male ratio of 4.1:1. Near-total thyroidectomy was done in 70.7% of the cases where papillary cancer was found in 80.8% and node metastasis in 10.5%. Radioactive 1311 (RA 1311) was given an all cases (dose range, 80Y150 mCi) with ablation success rate of 79.2%. Locoregional recurrence and metastasis (lungs and bones) were found in 2% and 6.8%, respectively. Multivariate Cox regression analysis showed that the mean ablation dose of RA 1311 (odds ratio, 1.045; 95% confidence interval, 0.936Y1.1189; P = 0.01) and presence of remote deposits (odds ratio, 1.049; 95% confidence interval, 0.836Y1.1189; P = 0.01) are the significant influential factor in ablation success rate and survival, respectively.

Conclusions: Our data suggest that proper ablation dose of RA 131I and absence of remote metastasis are the powerful predictors for excellent outcome in WDTC patients.

Keywords: Radioactive 131I; Well-differentiated thyroid Carcinoma; Prognosis; Survival.

635. Response Rate and Factors Affecting the Outcome of A Fixed Dose of Rai-131 Therapy in Graves' Disease: A 10-Year Egyptian Experience

El-Kareem MA, Derwish WA and Moustafa HM.

Nuclear Medicine Communications, 35: 900-907 (2014) IF:1.371

The aim of this study was to evaluate response and compare the success rate of two different doses of iodine-131 ((131)I) therapy in the treatment of Graves' disease and investigate the factors that may affect outcome. A retrospective analysis was carried out on

321 patients treated with (131)I for Graves' disease. Group 1 (155 patients) received 8 mCi and group 2 (166 patients) received 12 mCi. The therapy was considered successful if euthyroidism or hypothyroidism was achieved within 1 year of therapy. The outcome was compared with multiple parameters. A significant difference in the outcome between the two groups was found in favor of the second group (P<0.001). Logistic regression analysis showed that lower dose, technetium-99m pertechnetate thyroid uptake greater than 20.9%, and moderate and marked goiter were independent variables associated significantly with a lower response rate (odds ratio 2.601, 4.023, and 3.309, respectively), whereas previous surgical treatment was associated with a higher response rate (odds ratio 3.071). No correlation was found between outcome and age, presence of exophthalmos, previous treatment with methimazole, and its duration. The response rate to the second dose was significantly increased compared with the first one by 27.8%; there was no correlation among the abovementioned factors and its outcome. The third dose controlled the disease in 81.3% of the remaining patients and control was achieved in the rest after the fourth dose. (131)I is a very effective therapy for Graves' disease, with a cure rate of 100% after four doses. Higher first dose activity is recommended in the presence of poor prognostic factors. The second dose is not necessarily increased in the nonresponders.

Keywords: Fixed dose; Graves' disease; Radioactive iodine therapy; Tc-99 Pertechnetate Thyroid Uptake.

636. A Novel Approach for Superficial Intraoperative Radiotherapy (IORT) Using A 50 kV X-ray Source: A Technical and Case Report

Frank Schneider, Sven Clausen, Johannes Thölking, Frederik Wenz and Yasser Abo-Madyan

Journal of Applied Clinical Medical Physics, 15 (1): (2014) IF: 1.11

The use of IORT as a treatment modality for patients with close or positive margins has increased over the past decade. For situations where a flat area (up to 6 cm in diameter) has to be treated intraoperatively, new applicators for superficial treatment with a miniature X-ray source (INTRABEAM system) were developed. Here we report our evaluation of the dosimetric characteristics of these new applicators and their first clinical use. Each of these flat and surface applicators consists of a radiation protective metal tube and a flattening filter, which converts the spherical dose distribution of the X-ray source into a flat one. The homogeneity of each dose distribution and depth-dose measurements were evaluated using film dosimetry in a solid water phantom and a soft X-ray ionization chamber in a water tank. The first patient was treated with 5 Gy delivered in 5 mm using a 4 cm FLAT applicator over 21 minutes. The flat applicators show the maximum homogeneity, with a uniformity ratio of 1.02-1.08 in certain depths. In 1 mm depth surface applicators show a uniformity ratio of 1.15-1.28. They also show a higher dose rate and a steeper dose gradient compared to the flat applicators. The results of this investigation demonstrated that the flat and surface applicators have unique dosimetric characteristics that need to be considered during the treatment planning stages. This work also showed that it is possible to perform a superficial localized IORT which provides new application possibilities for use of the INTRABEAM system.

Keywords: Intraoperative radiotherapy; Electronic brachytherapy; X-ray; INTRABEAM radiotherapy system; Superficial radiotherapy.

Dept. of Clinical Pathology

637. Detection of Expression of IL 18 and Its Bimnding Protein in Egyptian Pediatric Immune Thrombocytopenic Purpura

Shahira Kamal Anis Botros

Platelets, 25: 193-196 (2014) IF: 2.627

Immune thrombocytopenic purpura (ITP) is an autoimmune disorder, characterized by dysfunctional cellular immunity including the presence of activated platelet specific autoreactive T cells that recognize and respond to autologous platelet antigens. Autoreactive T cells drive the generation of platelet reactive autoantibodies by B cells as well as T-cytotoxic cellmediated lysis of platelets. Interleukin-18 (IL-18) is a mediator of T helper type 1 cell responses synergistically with IL-12 that initiate and promote host defense and inflammation. IL-18 has a specific binding protein (IL-18BP) which belongs to the immunoglobulin superfamily. In the present study, serum level and messenger RNA(mRNA) expression of IL-18 as well as IL-18BP mRNA expression were measured in peripheral blood mononuclear cells (PBMNCs) of 100 Egyptian pediatric patients with ITP (70 acute and 30 chronic). In addition to this, we recruited 80 healthy volunteers in order to investigate the possible association between the imbalance of IL-18 and IL-18 BP expressions and the pathogenesis of ITP. IL-18 serum level and mRNA expression were not elevated in cases more than in the control group, but IL-18 mRNA was higher in chronic cases when compared to the acute ones (p1/40.031) and there was a good negative correlation between the platelet count and serum IL-18. IL-18 BP m-RNA was slightly elevated in cases more than in the control group (95% Confidence interval¼1.15-2.01). Our results were not supportive for previous findings of elevated IL18/BP mRNA ratio in ITP patients.

This could be referred to the fact that autoimmune diseases are complex genetic disorders, therefore further studies on polymorphisms affecting IL-18 gene expression as well as kinetics of IL-18 expression are required to evaluate the role of interleukin 18 and its binding protein in the pathogenesis of ITP. **Keywords**: ITP, II-18, Peripheral Blood Mononuclear Cells.

638. Immunoregulatory Cytokines Gene Polymorphisms in Egyptian Patients Affected With Acquired Aplastic Anemia

Iman R. El Mahgoub, Reham A. Aleem Afify, Shahira K. A. Botros and Rania Fawzy

Ann Hematol, 93: 923-929 (2014) IF: 2.396

The immune system is thought to play an important role in aplastic anemia (AA) in light of recent findings of hematologic reconstitution after immunosuppressive therapy. T cell activation, apoptosis, and the cytokines interferon- and TNF- α are suspected to play a role in the suppression of growth of progenitor cells and induced apoptosis in CD34 target cells, TGF β is a multifunctional peptide, usually produced in latent form and requiring activation to produce a biological response. Also, TGF- β 1 has been described as an important negative regulator of haemopoiesis.

Over production of IL-6 is described in AA but is of unknown pathophysiological significance. To investigate the role of cytokine gene polymorphisms (IL-6/-174, TNF- α /-308, IFN- γ /+874, and TGF β 1/-509) in patients with acquired AA to assess if genotypes associated with higher or lower production were more prevalent than in established control population and to study the possible association of these genotypes with the disease severity. Fifty AA patients were included in this study. Polymerase chain reaction–amplification refractory mutation system (PCR–ARMS) technique was used to detect INF- γ single nucleotide polymorphism –874A/T, and polymerase chain reaction–restriction fragment length polymorphism (PCR– RFLP) was used to assess IL-6-174 C/G, TNF- α -308G/A,

and TGFb1-509C/T gene polymorphisms. Genotypes associated with high production of TNF- α , TGF- β and IFN- γ , and IL-6 were more frequent in patients than in control; no association was found between the presence of hypersecretory genotypes and the disease severity.

Keywords: Aplastic anemia; TNF- α ; INF- γ ; IL-6; TGF- β 1; Cytokine gene polymorphism.

639. Evaluation of Broad-Range 16S rRNA PCR for the Diagnosis of Bloodstream Infections: Two Years of Experience

Hassan RM, El Enany MG and Rizk HH

Journal of Infections In Developing Countries, 8 (10): 1252-1258 (2014) IF: 1.267

Introduction: Diagnosis of bloodstream infections using bacteriological cultures suffers from low sensitivity and reporting delay. Advanced molecular techniques introduced in many laboratories provide rapid results and may show improvements in patient outcomes. This study aimed to evaluate the usefulness of a molecular technique, broad-range 16S rRNA PCR followed by sequencing for the diagnosis of bloodstream infections, compared to blood culture in different patient groups.

Methodology: Conventional PCR was performed, using broadrange 16S rRNA primers, on blood cultures collected from different patients with suspected bloodstream infections; results were compared with those of blood culture.

Results: Though blood culture is regarded as the gold standard, PCR evaluation showed sensitivity of 86.25%, specificity of 91.25%, positive predictive value of 76.67%, negative predictive value of 95.22%, and accuracy of 88.8%.

Conclusions: Molecular assays seem not to be sufficient to replace microbial cultures in the diagnosis of bloodstream infections, but they can offer a rapid, good negative test to rule out infection due to their high negative predictive value.

Keywords: Blood stream infection; Blood cultures; 16S rRNA; PCR.

640. Stromal Cell Derived Factor-1 (CXCL12) Chemokine Gene Variant in Myeloid Leukemias

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Clinical Laboratory, 60: 735-741 (2014) IF: 1.084

Background: Acute and chronic myeloid leukemia are initiated and sustained by a small, self-renewing population of leukemic stem cells, which produce progeny of a heterogeneous population of progenitor cells. CXCL12, a chemokine abundantly produced by the bone marrow microenvironment, and its receptor CXCR4 have crucial roles in malignant cell trafficking. We set out to determine the CXCL12 gene polymorphism at codon G801A and evaluate its influence on malignant cell dissemination and tissue infiltration in myeloid leukemias. Methods: Genotyping for CXCL12 was done by restriction PCR-RFLP for 48 myeloid leukemia patients: 38 de novo AML and 10 CML. Fifty age and gender matched volunteers were evaluated as controls.

Results: Regarding AML patients, the frequency of wild genotype was 50% and the heterozygous genotype was 50%. In CML patients, the frequency of wild genotype was 30% while the heterozygous genotype was 70%. In the control group, 57.2% had wild genotype while 42.8% had heterozygous genotype with no significant difference detected between myeloid leukemia patients and the control group. There was a statistically insignificant association between wild and heterozygous genotypes regarding clinical, laboratory data and extramedullary dissemination.

Conclusions: CXCL12 polymorphism is not associated with either increased myeloid leukemia risk or extramedullary blast dissemination.

Keywords: CXCL12; AML; CML; RFLP-PCR.

641. MDM2 SNP309 and *P53* Codon 72 Genetic Polymorphisms and Risk of AML: An Egyptian Study

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Annals of Clinical and Laboratory Science, 44: 449-454 (2014) IF: 0.839

Background: Acute myeloid leukemia (AML) is a heterogeneous disease with numerous genetic abnormalities corresponding to a variety of subtypes. p53 is involved in multiple cellular pathways including apoptosis, transcriptional control, and cell cycle regulation. A single nucleotide polymorphism (SNP) at codon 72 of the p53 gene is associated with the risk for development of various neoplasms. MDM2 SNP309 is a single nucleotide T to G polymorphism located in the MDM2 gene promoter, which enhances the expression of MDM2 protein and thereby leads to attenuation of the p53 stress response.

Objective: The current study aimed to define the roles of MDM2 and p53 genetic polymorphisms with the risk of AML. **Methodology**: Genotyping for MDM2 was done by AS-PCR technique while p53 codon 72 genotyping was done by PCR-RFLP for 50 patients and 50 controls.

Results: The study did not detect any significant differences regarding MDM2 or p53 polymorphisms in AML cases, as compared to controls. A borderline significance was found between cases and controls regarding combined MDM2 T/G and p53 genotyping. MDM2 variant genotype was significantly associated with a younger age group and lower Hb level, while the P53 variant was significantly associated with less frequent CD117 expression.

Keywords: MDM2; P53 codon 72; AML; AS-PCR; RFLP-PCR.

Dept. of Dermatology

642. Olopatadine Hydrochloride Decreases Tissue Interleukin-31 Levels in An Atopic Dermatitis Mouse Model

Murota H, El-latif MA, Tamura T and Katayama I

Acta Dermato-Venereologica, 94: 78-79 (2014) IF: 4.244

Atopic dermatitis (AD) is an inflammatory skin disease characterized by an intensely pruritic skin rash (1). A variety of mediators, including histamine and neuropeptides, are involved in pruritus. We previously reported that olopatadine hydrochloride (olopatadine), a histamine H1 receptor antagonist, significantly suppresses the number of scratching events associated with a decreasing number of intraepidermal nerve fibres via increased semaphoring 3A expression and decreased nerve growth factor (NGF) levels in NC/Nga mice (2). Oral olopatadine (Kyowa Hakko Kirin, Tokyo, Japan) has been prescribed in Japan and Korea for treatment of allergic rhinitis, urticarial, pruritus, eczema, prurigo, psoriasis vulgaris, and erythema multiforme, which was covered by insurance. Recently, interleukin (IL)-31 was found to play a role in pruritus and skin barrier function in AD (3-5). It was reported that transgenic mice overexpressing IL-31 exhibit spontaneous pruritus and develop severe dermatitis (6). Moreover, serum and tissue IL-31 levels in patients with AD were increased compared with levels in control subjects, and IL-31 levels correlated with both disease activity and severity of AD (3, 7-9). Thus, we evaluated the effect of olopatadine on tissue IL-31 levels in an AD model using NC/Nga mice.

Keywords: Olopatadine; Interleukin; 31; Atopic dermatitis.

643. Beyond Vitiligo Guidelines: Combined Stratified/Personalized Approaches for theVitiligo Patient

Anbar TS, Hegazy RA, Picardo M and Taieb A.

Experimental Dermatology, 23: 219-223 (2014) IF: 4.115

'Vitiligo' is a word that bears endless possibilities and no promises. Each vitiligo patient has a different story that demands a different therapeutic approach. Even though great efforts have been made to evaluate, study, compare and document the different therapeutic modalities available for vitiligo, clearly handling their modes of actions as well as their side effects and establishing clear stratified guidelines, numerous dilemmas are frequently met on practical grounds. 'Stabilize', 'repigment', 'depigment' or 'camouflage'? 'for whom and how do we achieve the best results' ? 'Separately or in combination ? - questions that need to be answered and decisions need to be taken in the appropriate timing and altered when the necessity arises. In the current viewpoint, we have utilized the available knowledge and exploited years of experience in an attempt to go beyond the guidelines to set the rationale for an optimal and personalized therapy, within the framework of a stratified approach.

Keywords: Guidelines; Repigmentation; Stabilization; Treatment; Vitiligo.

644. T Helper 17 and Tregs: A Novel Proposed Mechanism for NB-UVB in Vitiligo

Hegazy RA, Fawzy MM, Gawdat HI, Samir N and Rashed LA.

Experimental Dermatology, 23: 283-286 (2014) IF: 4.115

Narrowband ultraviolet (NB-UV)B is accepted as corner stone therapy for vitiligo. Its influence on the expression of IL-17, IL-22 and FoxP3 as markers for the Th17 and Tregs lineages has not been studied before in the context of non-segmental vitiligo (NSV). The study included 20 active NSV patients who received 36 NB-UVB sessions and 20 controls. Clinical evaluation Vitiligo Area Scoring Index (VASI) and determination of tissue expression of IL-17, IL-22 and FoxP3 by gRT-PCR (lesional, perilesional) were carried out before and after therapy. Baseline levels of IL-17 and IL-22 were significantly higher in patients, whereas FoxP3 was significantly lower. After therapy, IL-17 and IL-22 significantly dropped, whereas FoxP3 significantly increased (lesional, perilesional). Baseline and post-treatment VASI showed significant positive correlations with IL-17 and IL-22 and significant negative correlation with FoxP3 expression. Restoration of the balance between Th17 and Tregs might represent a novel pathway for the improvement that NB-UVB exerts in vitiligo patients.

645. Topical Application of Rapamycin Ointment Ameliorates Dermatophagoides Farina Body Extract-Induced Atopic Dermatitis in NC/NGA Mice

Fei Yang, Mari Tanaka, Mari Wataya-Kaneda, Lingli Yang, Ayumi Nakamura, Shoji Matsumoto, Mostafa Attia, Hiroyuki Murota and Ichiro Katayama

Experimental Dermatology, 23: 568-572 (2014) IF: 4.115

Atopic dermatitis (AD), a chronic inflammatory skin disease characterized by relapsing eczema and intense prurigo, requires effective and safe pharmacological therapy. Recently, rapamycin, an mTOR (mammalian target of rapamycin) inhibitor, has been reported to play a critical role in immune responses and has emerged as an effective immunosuppressive drug. In this study, we assessed whether inhibition of mTOR signalling could suppress dermatitis in mice. Rapamycin was topically applied to inflamed skin in a murine AD model that was developed by repeated topical application of Dermatophagoides farina body (Dfb) extract antigen twice weekly for 7 weeks in NC/Nga mice. The efficacy of topical rapamycin treatment was evaluated immunologically and serologically. Topical application of rapamycin reduced inflammatory cell infiltration in the dermis, alleviated the increase of serum IgE levels and resulted in a significant reduction in clinical skin condition score and marked improvement of histological findings. In addition, increased mTOR phosphorylation in the lesional skin was observed in our murine AD model. Topical application of rapamycin ointment inhibited Dfb antigen-induced dermatitis in NC/Nga mice, promising a new therapy for atopic dermatitis.

Keywords: Atopic dermatitis; mTOR; Rapamycin.

646. Expression of Osteopontin Genotypes (T-4754-C and A-9138-C) in Psoriasis and their Relation to Metabolic Syndrome

Rania Abdel Hay, Faisal Nour-Edin, Rehab Hegazy, Sayed Khadiga and Laila Rashed

Journal of Dermatological Science, 75: 150-153 (2014) IF: 3.335

Osteopontin (OPN) is a multifactorial molecule with a postulated key role in several T helper (Th) 1- and Th17-mediated diseases including psoriasis.

Genetic variants in the OPN gene have shown to be involved in susceptibility to immune-mediated diseases, and several OPN haplotypes were found to be associated with Crohn's disease (CD) susceptibility including (T-4754-c) and (A-9138-C) genotypes.

Owing to the common pathways linking between both psoriasis and CD [5], in the present study, we aimed to analyze the role of those particular OPN gene variants on psoriasis susceptibility as well as the association with metabolic syndrome (MetS) in such patients.

Keywords: Metabolic syndrome; Osteopontin; Psoriasis.

647. Homocysteine and Other Cardiovascular Risk Factors in Patients With Lichen Planus

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Journal of European Academy of Dermatology and Venereology, 28: 1507-1513 (2014) IF: 3.105

Background: Chronic inflammation was found to play an important role in the development of cardiovascular risk factors. Homocysteine (Hcy) and fibrinogen have been identified as a major independent risk factor for cardiovascular disease. Lichen planus is assumed to be closely related to dyslipidaemia. Several cytokines involved in lichen planus pathogenesis, could explain its association with dyslipidaemia. Also chronic inflammation with lichen planus has been suggested as a component of the metabolic syndrome.

Objective: The aim of this study was to detect a panel of cardiovascular risk factors in patients of lichen planus.

Patients and Methods: This study was done on 40 patients of lichen planus and 40 healthy controls. All patients and controls were subjected to clinical examination. Serum levels of homocysteine, fibrinogen and high-sensitive C-reactive protein (hs-CRP) were measured by enzyme-linked immunosorbent assay technique (ELISA). Metabolic syndrome parameters including anthropometric measures, lipid profiles, blood sugar and blood pressure were studied.

Results: Patients with lichen planus showed significant association with metabolic syndrome parameters than controls (P < 0.001). Serum homocysteine, fibrinogen and hs-CRP were significantly higher in lichen planus patients than controls (P < 0.001). Serum homocysteine correlated with both serum hs-CRP and serum fibrinogen. However, there was no correlation between serum levels of homocysteine and fibrinogen with any metabolic syndrome criteria and related disorders except for a negative correlation of fibrinogen with high-density lipoprotein (HDL).

Conclusion: In the present work, patients with lichen planus were found to have higher makers of both metabolic and cardiovascular risk factors in relation to controls most probably due to long standing inflammation.

Keywords: Lichen planus; Homocysteine; Fibrinogen; Metabolic syndrome.

648. Does Fluorescence Diagnosis Have A Role in Follow Up of Response to Therapy in Mycosis Fungoides?

Manal Bosseila, Doaa Mahgoub, Abeer El-Sayed, Dina Salama, Marwa Abd El-Moneim and Fatma Al-Helf

Photodiagnosis and Photodynamic Therapy, 11(4): 595-602 (2014) IF: 2.524 **Background**: Monitoring of tumor burden during mycosis fungoides (MF) treatment, is crucial to adjust therapy accordingly. This is usually achieved through combined by clinical assessment with histopathological and immunohistochemical evaluation.

Aim: To assess the validity of fluorescence diagnosis (FD) in the measurement of response to therapy in early MF, using in comparison flow cytometric technique of skin biopsies for CD4+/CD7- malignant T-cell count before and after therapy.

Patients and Methods: Twenty-two patients of histologically proven early MF (stages Ia, Ib, IIa) were subjected to fluorescence diagnosis of their most affected skin lesion before and after 12 weeks of phototherapy with or without combination therapy. In comparison flow cytometric assessment of skin biopsies for CD4+/CD7- malignant T-cell count was evaluated before and after therapy from skin biopsy of the same lesion.

Results: All tested MF lesions showed varying degrees of fluorescence by FD at week zero, with a mean accumulation factor (AF), which is the fluorescence ratio between the tumor tissue and normal skin, of 2.2. After 12 weeks of therapy, the mean AF showed significant reduction to 1.94 (p = 0.009). The percent of CD4+/CD7- cells dropped significantly after treatment (p = 0.029). No correlation between CD4+/CD7- cell counts and the mean AF could be deduced.

Conclusion: In cases of mycosis fungoides, fluorescence diagnosis can represent an effective tool for evaluating the response to therapy. Changes in accumulation factor values can be used for follow-up of therapy in the same patient, but it should not be used as an absolute value.

Keywords: Mycosis fungoides; Fluorescence diagnosis; Flowcytometry; CD4+/CD7- T Cells.

649. Autologous Platelet Rich Plasma: Topical Versus Intradermal After Fractional Ablative Carbon Dioxide Laser Treatment of Atrophic Acne Scars

Heba I. Gawdat, Rehab A. Hegazy, Marwa M. Fawzi and Marwa Fathy

Dermatologic Surgery, 40: 152-161 (2014) IF: 2.467

Background A proposal has recently been made regarding the potential adjuvant use of platelet-rich plasma (PRP) with fractional carbon dioxide laser (FCL) for the correction of acne scars.

Objective To compare the efficacy and safety of two administration modes of autologous PRP (intradermal injection (ID) and topical application) after FCL with that of FCL alone in the treatment of atrophic acne scars.

Patients and Methods Thirty patients were randomly divided into two groups. Both underwent split-face therapy. Group 1 was administered FCL followed by ID PRP on one side and FCL followed by ID saline on the other. In group 2, one cheek was treated with FCL followed by ID PRP, and the other received FCL followed by topical PRP. Each patient received 3 monthly sessions. The final assessment took place at 6 months.

Results Combined PRP- and FCL-treated areas had a significantly better response (p = .03), fewer side effects, and shorter downtime (p = .02) than FCL-treated areas, but there were no significant differences in ID-and topical PRP-treated areas in degree of response and downtime (p = .10); topically treated areas had significantly lower pain scores.

Conclusion The current study introduces the combination of topical PRP and FCL as an effective, safe 2 modality in the treatment of atrophic acne scars with shorter down-time and better tolerability.

Keywords: Autologous platelet rich plasma (PRP); Fractional Co2, Atrophic Acne Scars, Downtime, Side Effects.

650. Fractional Co2 Laser is An Effective Therapeutic Modality for Xanthelasma Palpebrarum: A Randomized Clinical Trial

Samia M. Esmat, Amany Z. Elramly, Dalia M. Abdel Halim, Heba I. Gawdat and Hanaa I. Taha

Dermatologic Surgery, 40: 1349-1355 (2014) IF: 2.467

Background Xanthelasma palpebrarum (XP) is a common cosmetic concern. Although there is a wide range of therapeutic modalities for XP, there is no general consensus on the optimal treatment for such condition.

Objective Compare the efficacy and safety of super pulsed (SP) and fractional CO2 lasers in the treatment of XP.

Patients and Methods This prospective randomized comparative clinical study included 20 adult patients with bilateral and symmetrical XP lesions. Xanthelasma palpebrarum lesions were randomly assigned to treatment by either single session of ablative SP CO2 laser or 3 to 5 sessions of ablative fractional CO2 laser with monthly intervals. All patients were assessed using digital photography and optical coherence tomography images.

Results Xanthelasma palpebrarum lesions on both sides were successfully removed with significant improvement in size, color, and thickness. Although lesions treated by SP CO2 laser showed significantly better improvement regarding color and thickness of the lesions, downtime and patient satisfaction were significantly better for lesions treated with fractional CO2 laser. Scarring and recurrence were significantly higher in lesions treated by SP CO2 laser.

Conclusion Ablative fractional CO2 laser is an effective and safe therapeutic option for XP with significantly shorter downtime and higher patient satisfaction compared with SP CO2 laser.

Keywords: Xanthelasma palpebrarum; Fractional Co2; Superpulsed Co2; Efficacy; Safety.

651. Efficacy and Safety of Fractional Carbon Dioxide Laser for Treatment of Unwanted Facial Freckles in Phototypes II-IV: A Pilot Study

El Zawahry B, Zaki N, Hafez V, Hay RA and Fahim A

Lasers Med Sci, 29: 1937-1942 (2014) IF: 2.419

Facial freckles are a cosmetic concern to Egyptians, particularly young females. Several therapeutic lines exist with variable response rates and limitations. Fractional carbon dioxide (FCO2) laser provides minimal ablation and therefore less down time and less side effects. The efficacy and safety of this laser technology have still not been studied in freckles. The aim of this study is to assess the efficacy and safety of FCO2 laser in the treatment of unwanted facial freckles in Egyptians. Twenty patients undergone a single session of FCO2 laser and then were followed up clinically a month later. Photographs were taken before treatment and at follow-up visit and were assessed by three blinded investigators. Percent of global improvement was measured on a 4-point grading scale. Patient's satisfaction and adverse events were recorded. Two patients (10 %) showed grade 1 improvement, while eight patients (40 %) showed grade 2 improvement. Nine patients (45 %) showed grade 3 improvement, and only one patient (5 %) showed grade 4 improvement. FCO2 laser resurfacing is effective and safe in treatment of facial freckles in skin phototypes II-IV. It can offer a more practical alternative to topical treatments, and a cheaper alternative to Q-switched lasers.

Keywords: Freckles; Ablative laser; Fractional carbon dioxide laser; Efficacy; Safety; Pigmentation.

652. Mutational Spectrum of Xeroderma Pigmentosum Group A in Egyptian Patients

Amr K, Messaoud O, El Darouti M, Abdelhak S and El-Kamah G.

Gene, 533: 52-56 (2014) IF: 2.082

Xeroderma pigmentosum (XP) is a rare autosomal recessive hereditary disease characterized by hyperphotosensitivity, DNA repair defects and a predisposition to skin cancers. The most frequently occurring type worldwide is the XP group A (XPA). There is a close relationship between the clinical features that ranged from severe to mild form and the mutational site in XPA gene. The aim of this study is to carry out the mutational analysis in Egyptian patients with XP-A. This study was carried out on four unrelated Egyptian XP-A families. Clinical features were examined and direct sequencing of the coding region of XPA gene was performed in patients and their parents. Direct sequencing of the whole coding region of the XPA gene revealed the identification of two homozygous nonsense mutations: (c.553C>T; p.(Gln185*)) and (c.331G>T; p.(Glu111*)), which create premature, stop codon and a homodeletion (c.374delC: p.Thr125Ilefs*15) that leads to frameshift and premature translation termination. We report the identification of one novel XPA gene mutation and two known mutations in four unrelated Egyptian families with Xermoderma pigmentosum. All explored patients presented severe neurological abnormalities and have mutations located in the DNA binding domain. This report gives insight on the mutation spectrum of XP-A in Egypt. This would provide a valuable tool for early diagnosis of this severe disease. Keywords: Xeroderma pigmentosum-group A; Novel mutation; Clinical correlation to mutation location.

653. Does Increasing the Pulse Duration Increase the Efficacy of Long Pulsed Nd:YAG Laser Assisted Hair Removal? A Split-Chin Clinical Trial

Samia Esmat, Mona R. E. Abdel-Halim, Amira El-Tawdy, Marwa M. Fawzy, Asmaa Ragheb and Nabila Hasan

European Journal of Dermatology, 24 (3): 391-392 (2014) IF: 1.953

Apart from immediate transient side effects; perifollicular erythema, edema and pain, no chronic adverse side effects developed. High overall satisfaction with the results was reported by 20 patients (83.33%).

To the best of our knowledge, this is the first split chin. controlled trial to study the effects of increasing the pulse duration of long pulsed Nd:YAG and to evaluate the A/T ratio and hair shaft thickness following laser hair removal. It appears that increasing the pulse duration of long pulsed Nd:YAG significantly decreases hair thickness and induces more telogen hair but does not affect

the percentage of hair reduction or the onset of hair re-growth. Various manipulations in the pulse duration and fluence are recommended until reaching the best parameters to achieve permanent hair loss.

654. Study of T Helper (17) and T Regulatory Cells in Psoriatic Patients Receiving Live Attenuated Varicella Vaccine Therapy in A Randomized Controlled Trial

Mohammad Aly Abdel Qader El Darouti

European Journal of Dermatology, 24: 464-469 (2014) IF: 1.953

Background: The use of live attenuated varicella vaccine (Varilrix®) as an adjuvant treatment in severe cases of psoriasis has recently been postulated. Its efficacy raised questions regarding its possible mechanisms of action.

Objective: To compare the efficacy and safety of combining Varilrix® and cyclosporine to cyclosporine alone in the treatment of severe psoriasis. Furthermore, to study the expression of T helper (Th)17 and T regulatory (Tregs) cells before and after therapy.

Materials and Methods: This randomized controlled trial included 24 psoriatic patients, randomly divided into 2 groups (A and B). All patients received cyclosporine at a daily dose of 2.5 mg/kg/day. In addition, group A received 4 doses of Varilrix® once/3 weeks, and group B received 4 doses of subcutaneous saline. Skin biopsies were obtained from all patients before and after therapy and from all controls for estimation of interleukin (IL)-17, IL-22 and Forkhead boxP3 (FoxP3) using RT-PCR.

Results: Group A patients showed a significantly higher % of clinical improvement (P = 0.011), which occurred earlier than group B. At baseline, levels of IL-17 and IL-22 were significantly higher while the level of FoxP3was significantly lower in patients (P<0.001) compared to controls. After therapy, both groups showed significant reductions in both IL-17 and IL-22 levels, and significant elevation in FoxP3 (P<0.001). This change was significantly more evident in group A patients.

Conclusion: Live attenuated varicella vaccine could play a role in the treatment of psoriasis when combined with low dose cyclosporine through accentuating the influence on the Th17/Treg balance.

Keywords: Cyclosporine; Live attenuated varicella vaccine; Psoriasis; T Helper 17; T Regulatory cells.

655. Deep Peeling Using Phenol Versus Percutaneous Collagen Induction Combined With Trichloroacetic Acid 20% in Atrophic Post-Acne Scars; A Randomized Controlled Trial

Tahra Mohamed Leheta, Rania Mounir Abdel Hay and Yehia Farouk El Garem

J. of Dermatological Treatment, 25: 130-136 (2014) IF: 1.764

Background: Deep peeling using phenol and percutaneous collagen induction (PCI) are used in treating acne scars. Aim: To compare deep peeling using phenol and PCI combined with trichloroacetic acid (TCA) 20% in treating atrophic acne scars. **Methods**: 24 patients with post-acne atrophic scars were randomly divided into two groups; group 1 was subjected to one session of deep peeling using phenol, and group 2 was subjected to four sessions of PCI combined with TCA 20%. As a secondary outcome measure, side effects were recorded and patients were

asked to assess their % of improvement by a questionnaire completed 8 months after the procedure.

Results: Scar severity scores improved by a mean of 75.12% (p < 0.001) in group 1 and a mean of 69.43% (p < 0.001) in group 2. Comparing the degree of improvement in different types of scars, within the same group after treatment, revealed a significant highest degree of improvement in the rolling type (p = 0.005) in group 2.

Conclusion: Deep peeling using phenol and PCI with TCA 20% were effective in treating post-acne atrophic scars.

Keywords: Acne; Collagen induction; Peeling; TCA.

656. Do Combined Alternating Sessions of 1540 Nm Nonablative Fractional Laser and Percutaneous Collagen Induction With Trichloroacetic Acid 20% Show Better Results Than Each Individual Modality in theTreatment of Atrophic Acne Scars? A Randomized Controlled Trial

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J. of Dermatological Treatment, 25: 137-141 (2014) IF: 1.764

Background: There have been no well-controlled studies evaluating the efficacy of combining 1540 nm nonablative fractional laser with percutaneous collagen induction (PCI) and trichloroacetic acid (TCA) 20% in the treatment of atrophic acne scars. Objective: We hypothesized that combined alternating sessions of both modalities would show better results than each individual modality.

Methods and materials: Thirty-nine patients with post acne atrophic scars were included in this study. Patients were randomly equally divided into three groups; group 1 was subjected to six sessions of PCI combined with TCA 20% in the same session, group 2 was subjected to six sessions of 1540 nm fractional laser and group 3 was subjected to combined alternating sessions of the previously mentioned two modalities.

Results: Scar severity scores improved by a mean of 59.79% (95% CI 47.38–72.21) (p < 0.001) in group 1, a mean of 61.83% (95% CI 54.09–69.56) (p < 0.001) in group 2 and a mean of 78.27% (95% CI 74.39–82.15) (p < 0.001) in group 3. The difference in the degree of improvement was statistically significant when comparing the three groups using ANOVA test (p = 0.004).

Conclusion: The current work recommends combining 1540 nm nonablative fractional laser in alternation with PCI and TCA 20% in the treatment of atrophic acne scars.

Keywords: Acne Scars, Fractional Laser, Percutaneous Collagen Induction.

657. The Pro12ala Polymorphism of theGene for Peroxisome Proliferator Activated Receptor-Gamma Is Associated With A Lower Global Acne Grading System Score in Patients With Acne Vulgaris

K. Amr, M. Abdel-Hameed, K. Sayed, F. Nour-Edin and R. Abdel Hay

Clinical and Experimental Dermatology, 39: 741-5 (2014) IF: 1.234

Background: Acne vulgaris is a multifactorial disease of the skin. Several studies have shown that sebocyte proliferation and/or lipogenesis, as well as inflammatory reactions, may be regulated by peroxisome proliferator-activated receptor (PPAR)γ-mediated disease

pathways. **Aim**: To investigate whether the Pro12Ala polymorphism of the PPARy gene might be associated with the risk of acne, and to assess the effect of this polymorphism on acne severity.

Methods: This case–control study enrolled 100 patients with acne and 100 apparently healthy subjects. The clinical grade of acne was assessed using the Global Acne Grading System. We used PCR to identify the presence of the Pro12Ala polymorphism in exon 2 of PPARy.

Results: Our results revealed a statistically significant difference (P = 0.001) in the genotype distribution between patients and controls, with higher incidence of the Pro/Ala genotype in controls (51%) than in patients (28%). A statistically significant association (P < 0.001) between disease severity and genotype distribution was found, indicating that the Pro/Ala genotype is less prevalent in patients with severe acne.

Conclusions: Our results suggest that that the Ala allele might be a protective factor against acne development or may attenuate acne severity.

Keywords: Acne; Gene polymorphism; PPARy.

Dept. of Diagnostic Radiology

658. High-Intensity Focused Ultrasound for Potential Treatment of Polycystic Ovary Syndrome: Toward A Noninvasive Surgery

Islam A. Shehata, John R. Ballard, Andrew J. Casper, Leah J. Hennings, Erik Cressman and Emad S. Ebbini

Fertility and Sterility, 101: 545-551 (2014) IF: 4.295

Objective: To investigate the feasibility of using high-intensity focused ultrasound (HIFU), under dual-mode ultrasound arrays (DMUAs) guidance, to induce localized thermal damage inside ovaries without damage to the ovarian surface.

Design: Laboratory feasibility study.

Setting: University-based laboratory.

Animal(S): Ex vivo canine and bovine ovaries.

Intervention(S): DMUA-guided HIFU.

Main Outcome Measure(S): Detection of ovarian damage by ultrasound imaging, gross pathology, and histology.

Result(S): It is feasible to induce localized thermal damage inside ovaries without damage to the ovarian surface. DMUA provided sensitive imaging feedback regarding the anatomy of the treated ovaries and the ablation process. Different ablation protocols were tested, and thermal damage within the treated ovaries was histologically characterized.

Conclusion(S): The absence of damage to the ovarian surface may eliminate many of the complications linked to current laparoscopic ovarian drilling (LOD) techniques. HIFU may be used as a less traumatic tool to perform LOD.

Keywords: Polycystic ovary syndrome (PCOS); Dual-mode ultrasound arrays (DMUA); High-intensity focused ultrasound (HIFU); Infertility; Laparoscopic ovarian drilling (LOD)

659. Biotin-Responsive Basal Ganglia Disease: Neuroimaging Features Before nd After Treatment

H. Kassem, A. Wafaie, S. Alsuhibani and T. Farid

American J. of Neuroradiology, 35: 1990-1995 (2014) IF: 3.675

Background and Purpose: Biotin-responsive basal ganglia disease is an autosomal recessive neurometabolic disorder presenting with subacute encephalopathy that can cause death if left untreated. The purpose of this study is to assess the neuroimaging and clinical features of the disease before and after treatment with biotin.

Materials and Methods: We retrospectively reviewed the clinical, laboratory, and neuroimaging features of 15 geneticallyproved Middle Eastern cases of biotin-responsive basal ganglia disease. BrainMRimaging was done at the onset of symptoms in all cases and within 2–8 weeks after biotin and thiamine therapy in 14 patients. The MR imaging datasets were analyzed according to lesion location, extent, and distribution.

Results: Brain MR imaging showed bilateral lesions in the caudate nuclei with complete or partial involvement of the putamen and sparing of the globus pallidus in all cases. In 80%, discrete abnormal signals were observed in the mesencephalon, cerebral corticalsubcortical regions, and thalami. In 53%, when the disease was advanced, patchy deep white matter affection was found. The cerebellum was involved in 13.3%. The signal abnormality of the mesencephalon, cortex, and white matter disappeared after treatment whereas the caudate and putamen necrosis persisted in all patients, including those who became asymptomatic.

Conclusions: Biotin-responsive basal ganglia disease is a treatable underdiagnosed disease. It should be suspected in pediatric patients with unexplained encephalopathy whose brainMRimaging shows bilateral and symmetric lesions in the caudate heads and putamen, with or without involvement of mesencephalon, thalami, and cortical-subcortical regions, as the therapeutic trial of biotin and thiamine can be lifesaving.

Keywords: Biotin-Responsive Basal Ganglia Disease; Biotin; Encephalopathy.

660. Prenatal Diagnosis of Isolated Butterfly Vertebra

Youssef A, Zagonari S, Salsi G, Saleem SN, Krsmanovic J, Pacella G, Ghi T, Rizzo N and Pilu G

Ultrasound Obstet Gynecol, 44: 725-726 (2014) IF: 3.14

A 37-year-old low-risk woman, gravida 2 para 1, attended our hospital at 21 weeks' gestation for a routine mid-trimester scan. During the scan, the operator suspected a vertebral malformation in the thoracolumbar region (Figure 1a). No gross deformities of the fetal spine were noted in the mid-sagittal view. A detailed twoand three-dimensional (2D/3D) spinal examination was undertaken in sagittal, coronal and transverse planes. On transverse view, a thin complete cleft in one vertebra in the thoracolumbar region was noted, extending obliquely from the right anterolateral angle throughout the whole thickness of the vertebral body into the left posterolateral edge (Figure 2). Using the 3D technique, volumes acquired in the axial view confirmed the presence of the cleft at vertebral body T-12, on both transverse and coronal projections (Figure 3). The parents were counseled on the rarity of the finding, and on its likely benignity in the light of the absence of spinal mal-alignment or other associated malformations. The couple decided to continue with the pregnancy and declined further assessment, including fetal magnetic resonance imaging. A healthy boy was born at term. Neonatal frontal X-ray showed a small focal depression and interruption at the center of the superior endplate of vertebra T-12 with a subtle irregular linear vertical lucency running in the midline of the vertebral body (Figure 4). At the time of writing

the child was 6 months old and showed no spinal deformity. Radiological re-assessment of the spine was recommended at the age of 1 year to evaluate development of the spine. Butterfly vertebra is a rare congenital spinal anomaly1,2. Very few cases of prenatal diagnosis have been reported, and when this has occurred it has typically been during the assessment of more complex spinal malformation.

Keywords: Spine; Fetal; Ultrasound.

661. Fetal MRI: An Approach To Practice: A Review

Sahar N. Salem

Journal of Advanced Research, 5: 507-523 (2014) IF: 3

MRI has been increasingly used for detailed visualization of the fetus in utero as well as pregnancy structures. Yet, the familiarity of radiologists and clinicians with fetal MRI is still limited. This article provides a practical approach to fetal MR imaging. Fetal MRI is an interactive scanning of the moving fetus owed to the use of fast sequences. Single-shot fast spin-echo (SSFSE) T2weighted imaging is a standard sequence. T1-weighted sequences are primarily used to demonstrate fat, calcification and hemorrhage. Balanced steady-state free-precession (SSFP), are beneficial in demonstrating fetal structures as the heart and vessels. Diffusion weighted imaging (DWI), MR spectroscopy (MRS), and diffusion tensor imaging (DTI) have potential applications in fetal imaging. Knowing the developing fetal MR anatomy is essential to detect abnormalities. MR evaluation of the developing fetal brain should include recognition of the multilayered-appearance of the cerebral parenchyma, knowledge of the timing of sulci appearance, myelination and changes in ventricular size. With advanced gestation, fetal organs as lungs and kidneys show significant changes in volume and T2-signal. Through a systematic approach, the normal anatomy of the developing fetus is shown to contrast with a wide spectrum of fetal disorders. The abnormalities displayed are graded in severity from simple common lesions to more complex rare cases. Complete fetal MRI is fulfilled by careful evaluation of the placenta, umbilical cord and amniotic cavity. Accurate interpretation of fetal MRI can provide valuable information that helps prenatal counseling, facilitate management decisions, guide therapy, and support research studies.

Keywords: Fetal; MRI; Anomalies; Prenatal.

662. Leukoencephalopathy With Brainstem and Spinal Cord Involvement and Lactate Elevation (LBSL): Assessment of the Involved White Matter Tracts by MRI

Hassan Kassem, Ahmed Wafaie, Sherif Abdelfattah and Tarek Farid

European Journal of Radiology, 83: 191-196 (2014) IF: 2.16

Background and purpose: Leukoencephalopathy with brain stem and spinal cord involvement and lactate elevation (LBSL) is a recently identified autosomal recessive disorder with early onset of symptoms and slowly progressive pyramidal, cerebellar and dorsal column dysfunction. LBSL is characterized by distinct white matter abnormalities and selective involvement of brainstem and spinal cord tracts. The purpose of this study is to assess the imaging features of the involved white matter tracts in cases of LBSL by MRI. Patients and Methods: We retrospectively reviewed the imaging features of the selectively involved white matter tracts in sixteen genetically proven cases of leukoencephalopathy with brainstem and spinal cord involvement and elevated brain lactate (LBSL). All patients presented with slowly progressive cerebellar sensory ataxia with spasticity and dorsal column dysfunction. MRI of the brain and spine using 1.5 T machine and proton magnetic resonance spectroscopy (1H MRS) on the abnormal white matter were done to all patients. The MRI and MRS data sets were analyzed according to lesion location, extent, distribution and signal pattern as well as metabolite values and ratios in MRS. Laboratory examinations ruled out classic leukodystrophies. Results: In all cases, MRI showed high signal intensity in T2weighted and FLAIR images within the cerebral subcortical, periventricular and deep white matter, posterior limbs of internal semiovale, medulla capsules. centrum oblongata. intraparenchymal trajectory of trigeminal nerves and deep cerebellar white matter. In the spine, the signal intensity of the dorsal column and lateral cortico-spinal tracts were altered in all patients. The subcortical U fibers, globi pallidi, thalami, midbrain and transverse pontine fibers were spared in all cases. In 11 cases (68.8%), the signal changes were inhomogeneous and confluent whereas in 5 patients (31.2%), the signal abnormalities were spotty. MRI also showed variable signal abnormalities in the sensory and pyramidal tracts in addition to the brainstem and cerebellar connections. Proton MRS showed consistent elevation of the lactate within the abnormal white matter.

Conclusion: Distinct MRI findings in the form of selective affection of subcortical and deep white matter tracts of the brain (involving the posterior limb of internal capsules and sparing the subcortical U fibers), dorsal column and lateral cortico-spinal tracts of the spinal cord should lead to the diagnosis of LBSL supported by the presence of lactate peak in 1H MRS. The disease can be confirmed by the analysis of the disease gene DARS2.

Keywords: Leukoencephalopathy; Brainstem; Spinal cord; Lactate.

663. Pneumatosis Intestinalis Following Pediatric Live-Related Liver Transplant: A Case Report and Successful Conservative Approach

Omer Abdel-Aziz, Ahmed H. Elaffandi, Mostafa El Shazly, Adel Hosny and Hanaa El-Karaksy

Pediatric Transplantation, 18: 18-21 (2014) IF: 1.63

PI has been rarely reported following pediatric live-related liver transplantation. Such a disorder is characterized by accumulation of gas in the bowel wall. The cause of PI has not been yet established; however, it has been strongly linked with steroid therapy. In this report, we present a case of PI following pediatric live-related liver transplantation that has been successfully managed conservatively.

Keywords: Pneumatosis intestinalis; Ldltpediatric.

664. Multidetector Computed Tomographic Study of Amulets Jewelry, and Other Foreign Objects in Royal Egyptianmummies Dated from the 18Th to 20Th Dynasties

Sahar N. Salem and Zahi Hawass

J. Comput Assist Tomogr, 38(2): 153-158 (2014) IF: 1.602

Objective: The objective of this study was to study the role of multidetector computed tomography (MDCT) in the analysis of foreign objects found within or on the royal Egyptian mummies.

Methods: We studied MDCT images of 15 royal Egyptian mummies (1493-1156 BC) for the presence of foreign objects. We studied each found object for its location, morphology, dimensions, and density in correlation with the archeologic literature.

Results: We detected 14 objects in 6 mummies: a heart amulet, 3 Eye of Horus, 4 Sons of Horus, a crowned-Osiris amulet, 2 bracelets, 2 sets of beads/stones, and an arrowhead that may be linked to injury. The MDCT images suggested the material of the objects to be metal (n = 6), semiprecious stone (n = 1), quartzlike (faience) (n = 2), and fired clay (n = 5). Placement of an amulet within the heart supports our knowledge that its funeral purpose was meant for the purpose of protection.

Conclusions: Multidetector computed tomography offers a detailed noninvasive analysis of objects on/in mummies and differentiates funerary objects from those that may be related to cause of death.

Keywords: Mummy; CT; Amulet; Funeral; Royal; Egypt.

665. Holoprosencephaly Spectrum Among Egyptian Patients: Clinical and Cytogenetic Study

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Genetic Counseling, 25(4): 369-381 (2014) IF: 0.537

Summary: Holoprosencephaly spectrum among Egyptian patients: clinical and cytogenetic study: We report 24 patients with holoprosencephaly (HPE) spectrum screened for Del 7q36 and subtelomere 13q. They were divided according to the type of HPE into: 6 alobar, 15 semilobar, 1 lobar and 2 middle interhemispheric variant (MIH). All patients presented with global developmental delay. Microcephaly was in 83.3% and midfacial developmental defects were in the form of; cyclopia, arrhinia and agnathia in 2 patients (8.3%), premaxillary agenesis in 2 patients (8.3%), cleft lip and palate in 7 patients (29.2%), hypotelorism in 8 patients (33.3%) and hypertelorism in 9 patients (37.5%). The neurological deficits were as follows: abnormal tone and spasticity were present in all of them with exceptional of a single patient with MIH who presented with hypotonia and was able to walk independently at the age of 3 years, athetoid and/or dystonic movements of limbs in 22 patients, seizures in twelve patients (50%) and abnormal EEG in 15 patients (62.5%). Poor temperature regulation was found in 50% of patients and diabetes insipidus was documented in 3 patients (12.5%). The MRI showed complete or partial fusion of basal ganglia and thalami in 21 patients (87.5%) and 19 patients (79.2%) respectively, fused mesencephalon in 8 patients (33.3%), incomplete separation of mesencephalon from diencephalon in 4 patients (16.7%), dorsal cyst in 10 patients (41.7%), abnormal gyral pattern anteriorly in 15 patients (62.5%), anterior located sylvian fissures in 22 patients (99.7%), complete or partial agenesis of the corpus callosum (ACC) in all patients and Dandy-Walker malformation (DWM) in three patients (12.5%). A small occipital cephalocele was detected clinically and radiological as atretic type in MIH patient. Karyotype analysis demonstrated 47, XY+13 in a patient with alobar holoprosencephaly, 46, XY,t (12;13) (q13q24.1; q14q33) in a semilobar case associated with DWM, 46, XY, del(13)(q34) in one semilobar case and three cases had del 7q36 using FISH technique in two semilobar cases and one lobar case. Conclusion: This study highlights the clinical spectrum in

patients with HPE and report a case of HPE and DWM associated with t(12;13).Neuroimaging delineated the pathogenesis underlying developmental defects in HPE. Accurate molecular diagnosis is crucial for further understanding of the pathogenesis of HPE.

Keywords: Holoprosencephaly; MRI Translocation 12; 13 - Deletion 7Q36 Del 13(Q); Dandy-Walker Malformation

666. Ankylosing Spondylitis or Diffuse Idiopathic Skeletal Hyperostosis in Royal Egyptian Mummies of the 18Th–20Th Dynasties? Computed Tomography Andarchaeology Studies

Sahar N. Saleem and Zahi Hawass

Arthritis & Rheumatology, 66(12): 3311-3316 (2014)

Objective: To study the computed tomography (CT) images of royal Ancient Egyptian mummies dated to the 18th to early 20th Dynasties for the claimed diagnoses of ankylosing spondylitis (AS) and diffuse idiopathic skeletal hyperostosis (DISH) and to correlate the findings with the archaeology literature.

Methods: We studied the CT images of 13 royal Ancient Egyptian mummies (1492–1153 BC) for evidence of AS and DISH and correlated our findings with the archaeology literature. **Results:** The findings of the CT scans excluded the diagnosis of AS, based on the absence of sacroiliac joint erosions or fusion of the facet joints. Four mummies fulfilled the diagnostic criteria for DISH: Amenhotep III (18th Dynasty), Ramesses II, his son Merenptah, and Ramesses III (19th to early 20th Dynasties). The diagnosis of DISH, a commonly asymptomatic disease of old age, in the 4 pharaohs is in concordance with their longevity and active lifestyles.

Conclusion: CT findings excluded the diagnosis of AS in the studied royal Ancient Egyptian mummies and brought into question the antiquity of the disease. The CT features of DISH during this ancient period were similar to those commonly seen in modern populations, and it is likely that they will also be similar in the future. The affection of Ramesses II and his son Merenptah supports familial clustering of DISH. The process of mummification may induce changes in the spine that should be considered during investigations of disease in ancient mummies. **Keywords**: Spine; Mummy; Ankylosing Spondylitis.

Dept. of Ear Nose & Throat

667. Otolaryngologic Manifestations of Diffuse Idiopathic Skeletal Hyperostosis

Mosaad Abdel-Aziz, Noha A. Azab, Mohammed Rashed and Ahmed Talaat

Eur Arch Otorhinolaryngol, 271(6): 1785-1790 (2014) IF: 1.608

Diffuse idiopathic skeletal hyperostosis (DISH) is characterized by formation of large cervical osteophytes that may compress the posterior wall of the aerodigestive tract. It is a rare cause of dysphagia in the elderly. The aim of this study was to investigate the various otolaryngologic manifestations of DISH. Eleven elderly patients with DISH were included in the study. All patients presented with dysphagia that was graded on the swallowing screening tool (EAT-10), and the diagnosis of DISH was based on computed tomographic criteria. The patients were subjected to otolaryngologic examination and flexible laryngoscopy. Polysomnography was used for patients with excessive daytime sleepiness for detection of obstructive sleep apnea (OSA). In addition to dysphagia of varying severity, OSA was found in nine patients, change of voice in six, globus sensation in seven, aspiration in three, and cervical pain in seven. Flexible laryngoscopy showed bulging of the posterior pharyngeal wall in all patients. DISH may be an unrecognized contributory factor to both dysphagia and OSA in the elderly. Change of voice, aspiration, globus sensation, and cervical pain are other otolaryngologic manifestations that may be encountered symptoms of the disease. An otolaryngologist should be aware of the disease that may be overlooked, and computed tomography is a confirmatory diagnostic method.

Keywords: Dysphagia Obstructive Sleep Apnea Cervical Osteophytes DISH Cervical Pain.

668. Trans-Oral Endoscopic Cerclage Pharyngoplasty for Treatment of Velopharyngeal Insufficiency

Mohammed Rashed, Nader Naguib and Mosaad Abdel-Aziz

International Journal of Pediatric Otorhinolaryngology, 78: 934-937 (2014) IF: 1.319

Objectives: Velopharyngeal insufficiency (VPI) is a common problem after cleft palate repair, it leads to speech distortion with consequent affection of speech intelligibility. Many techniques have been used in the treatment of VPI with varying results and complications. The aim of this study was to evaluate the efficacy of trans-oral endoscopic cerclage pharyngoplasty in the treatment of VPI.

Methods: Eighteen patients with hypernasality after palatoplasty were subjected to trans-oral endoscopic cerclage pharyngoplasty. Pre and postoperative evaluation of velopharyngeal function were performed by using auditory perceptual assessment, nasometric assessment, and flexible nasopharyngoscopy.

Results: Significant postoperative improvement of speech parameters measured with auditory perceptual assessment were achieved, and the overall postoperative nasalance score was improved significantly for nasal and oral sentences. Also, flexible nasopharyngoscopy showed significant improvement of velopharyngeal closure. No marked postoperative complications were reported apart from throat pain and dysphagia that disappeared with time.

Conclusions: Trans-oral endoscopic cerclage pharyngoplasty is an effective method for the treatment of VPI.

Keywords: Velopharyngeal insufficiency; Cleft palate; Pharyngoplasty; Hypernasality.

669. Eosinophilic Granuloma of the Temporal Bone in Children

Abdel-Aziz M, Rashed M, Khalifa B, Talaat A and Nassar A.

The Journal of Craniofacial Surgery, 25(3): 1076-1078 (2014) *IF*: 0.676

Eosinophilic granuloma (EG) is a bony destructive disease that frequently occurs in children; it is a subtype of Langerhans cell histiocytosis. The aims of this study were to detect the presenting features of temporal bone lesions in children and to evaluate the efficacy of surgery combined with radiotherapy in treatment of the disease. A retrospective study on 12 children with EG of the temporal bone was done. Computed tomography and hearing assessment were performed for all patients. All patients were treated with cortical mastoidectomy followed by postoperative radiotherapy. Follow-up was carried out for at least 2 years. The patients' presenting symptoms were external ear canal mass in 10 patients (83.3%), postauricular swelling in 8 patients (66.7%), and persistent otorrhea in 4 patients (33.3%). Ten patients (83.3%) showed conductive hearing loss, whereas 2 patients (16.7%) showed mixed hearing loss on the affected side. Computed tomography showed osteolytic defects without sclerotic margins filled with soft tissue masses involving the mastoid bone. Histopathologic examination showed eosinophils and Langerhans cells that were immune reactive for CD1 antigen and S-100 protein. Postoperative follow-up showed complete cure of the disease in 10 children (83.3%), with recurrence detected in 2 patients (16.7%) who needed second surgical intervention. We concluded that temporal bone EG in children may present with features that mimic the features of chronic suppurative otitis media. However, computed tomography and histopathologic examination are diagnostic. Cortical mastoidectomy together with postoperative radiotherapy is an achievable treatment in most cases.

Keywords: Eosinophilic granuloma; Temporal bone; Corticalmastoidectomy; Otorrhe.

Dept. of Endemic

670. Effectiveness and Cost-Effectiveness of Immediate Versus Delayed Treatment of Hepatitis C Virus-Infected Patients in A Country With Limited Resources: the Case of Egypt

Obach D, Deuffic-Burban S, Esmat G, Anwar WA, Dewedar S, Canva V, Cousien A, Doss W, Mostafa A, Pol S, Buti M, Siebert U, Fontanet A, Mohamed MK and Yazdanpanah Y.

Lancet Global Health, 58 (8): 1064-1071 (2014) IF: 9.416

Background: Because of logistical and economic issues, in Egypt, as in other resource-limited settings, decision makers should determine for which patients hepatitis C virus (HCV) treatment should be prioritized. We assessed the effectiveness and cost-effectiveness of different treatment initiation strategies.

Methods: Using a Markov model, we simulated HCV disease in chronically infected patients in Egypt, to compare lifetime costs, quality-adjusted life expectancy (QALE), and the incremental cost-effectiveness ratio (ICER) of different treatment initiation strategies.

Results: Immediate treatment of patients at stages F1/F2/F3 was less expensive and more effective than delaying treatment until more severe stages or not providing treatment (in patients diagnosed at F1: QALE = 18.32 years if treatment at F1 vs 18.22 if treatment at F2). Treatment of F4 patients was more effective than no treatment at all (QALE = 10.33 years vs 8.77 years) and was cost-effective (ICER = \$1915/quality-adjusted life-year [QALY]). When considering that affordable triple therapies, including new direct-acting antivirals, will be available starting in 2016, delaying treatment until stage F2, then treating all patients regardless of their disease stage after 2016, was found to be costeffective (ICER = \$33/QALY).

Conclusions: In Egypt, immediate treatment of patients with fibrosis stage F1-F3 who present to care is less expensive and more effective than delaying treatment. However, immediate treatment at stage F1 is only slightly more effective than waiting for disease to progress to stage F2 before starting treatment and is sensitive to the forthcoming availability of new treatments. Treating patients at stage F4 is highly effective and cost-effective.
In Egypt, decision makers should prioritize treatment for F4 patients and delay treatment for F1 patients who present to care. **Keywords:** HCV; Cost-Effectiveness; Resource-Limited Countries; Egypt; Antiviral Treatment.

671. Peginterferon Alpha-2A Versus Peginterferon Alpha-2B for Chronic Hepatitis C (Review)

Goran Hauser, Tahany Awad, Kristian Thorlund, Davor Štimac, Mahasen Mabrouk and Christian Gluud

Cochrane Database Systematic Review, 28 (2): (2014) IF: 5.939

Background A combination of weekly pegylated interferon (peginterferon) alpha and daily ribavirin still represents standard treatment of chronic hepatitis C infection in the majority of patients. However, it is not established which of the two licensed peginterferon products, peginterferon alpha-2a or peginterferon alpha-2b, is the most effective and has a better safety profile.

Objectives To systematically evaluate the benefits and harms of peginterferon alpha-2a versus peginterferon alpha-2b in head-to-head randomized clinical trials in patients with chronic hepatitis C.

Search methods We searched the Cochrane Hepato-Biliary Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library, MEDLINE, EMBASE, Science Citation Index Expanded, and LILACS until October 2013. We also searched conference abstracts, journals, and grey literature.

Selection criteria We included randomised clinical trials comparing peginterferon alpha-2a versus peginterferon alpha-2b given with or without cointervention(s) (for example, ribavirin) for chronic hepatitis C. Quasi-randomised studies and observational studies as identified by the searches were also considered for assessment of harms. Our primary outcomes were all-cause mortality, liver-related morbidity, serious adverse events, adverse events leading to treatment discontinuation, other adverse events, and quality of life. The secondary outcome was sustained virological response in the blood serum.

Data collection and analysis Two authors independently used a standardised data collection form. We meta-analysed data with both the fixed-effect and the randomeffects models. For each outcome we calculated the relative risk (RR) with 95% confidence interval (CI) based on intention-to-treat analysis. We used domains of the trials to assess the risk of systematic errors (bias) and trial sequential analyses to assess the risks of random errors (play of chance). Intervention effects on the outcomes were assessed according to GRADE.

Main results We included 17 randomised clinical trials which compared peginterferon alpha-2a plus ribavirin versus peginterferon alpha-2b plus ribavirin in 5847 patients. All trials had a high risk of bias. Very few trials reported data on very few patients for the patient-relevant outcomes all-cause mortality, liver-related morbidity, serious adverse events, and quality of life. Accordingly, we were unable to conduct meta-analyses on allcause mortality, liver-related morbidity, and quality of life. Twelve trials reported on adverse events leading to discontinuation of treatment without clear evidence of a difference between the two peginterferons (197/2171 (9.1%) versus 311/3169 (9.9%); RR 0.84, 95% CI 0.57 to 1.22; I 2= 44%; low quality evidence). A trial sequential analysis showed that we could exclude a relative risk reduction of 20% or more on this outcome. Peginterferon alpha-2a significantly increased the number of patients who achieved a sustained virological response

in the blood serum compared with peginterferon alpha-2b (1069/2099 (51%) versus 1327/3075 (43%); RR 1.12, 95% CI 1.06 to 1.18; I 2 = 0%, 12 trials; moderate quality evidence). Trial sequential analyses supported this result. Subgroup analyses based on risk of bias, viral genotype, and treatment history yielded similar results. Trial sequential analyses supported the results in patients with genotypes 1 and 4, but not in patients with genotypes 2 and 3.

Authors' conclusions There is lack of evidence on patientimportant outcomes and paucity of evidence on adverse events. Moderate quality evidence suggests that peginterferon alpha-2a is associated with a higher sustained virological response in serum than with peginterferon alpha-2b. This finding may be affected by the high risk of bias of the included studies. The clinical consequences of peginterferon alpha-2a versus peginterferon alpha-2b are unknown, and we cannot translate an effect on sustained virological response into comparable clinical effects because sustained virological response is still an unvalidated surrogate outcome for patient-important outcomes. The lack of evidence on patient-important outcomes and the paucity of evidence on adverse events means that we are unable to draw any conclusions about the effects of one peginterferon over the other. Keywords: Peginterferon Alpha-2A - Peginterferon Alpha-2B-Chronic Hepatitis C.

672. Peginterferon Plus Ribavirin Versus Interferon Plus Ribavirin for Chronic Hepatitis C

Hauser G, Awad T, Brok J, Thorlund K, Štimac D, Mabrouk M, Gluud C and Gluud LL.

Cochrane Database Systematic Review -the Cochrane Library -Hepato-Biliary Group, 28 (2): (2014) IF: 5.939

Background: Pegylated interferon (peginterferon) plus ribavirin is the recommended treatment for patients with chronic hepatitis C, but systematic assessment of the effect of this treatment compared with interferon plus ribavirin is needed.

Objectives: To systematically evaluate the benefits and harms of peginterferon plus ribavirin versus interferon plus ribavirin for patients with chronic hepatitis C.

Search Methods: We searched the Cochrane Hepato-Biliary Group Controlled Trials Register, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, Science Citation Index-Expanded, and LILACS. We also searched conference abstracts, journals, and grey literature. The last searches were conducted in September 2013.

Selection Criteria: We included randomised clinical trials comparing peginterferon plus ribavirin versus interferon plus ribavirin with or without co-intervention(s) (e.g., other antiviral drugs) for chronic hepatitis C. Quasi-randomised and observational studies retrieved through the searches for randomised clinical trials were also considered for reports of harms. Our primary outcomes were liver-related morbidity, all-cause mortality, serious adverse events, adverse events leading to treatment discontinuation, other adverse events, and quality of life. Our secondary outcome was sustained virological response in serum, that is, undetectable hepatitis C virus RNA in serum by sensitive tests six months after the end of treatment.

Data Collection and Analysis: Two review authors independently used a standardised data collection form. We metaanalysed data with both fixed-effect and random-effects models. For each outcome, we calculated the odds ratio (OR) (for liverrelated morbidity or all-cause mortality) or the risk ratio (RR) along with 95% confidence interval (CI) based on intention-totreat analysis. We used domains of the trials to assess the risk of systematic errors (bias) and trial sequential analyses to assess the risk of random errors (play of chance).For each outcome, we calculated the RR with 95% CI based on intention-to-treat analysis. Effects of interventions on outcomes were assessed according to GRADE.

Main Results: We included 27 randomised trials with 5938 participants. All trials had high risk of bias. We considered that the risk of bias did not impact on the quality of evidence for liverrelated mortality and adverse event outcomes, but it did for virological response. All trials compared peginterferon alpha-2a or peginterferon alpha-2b plus ribavirin versus interferon plus ribavirin for participants with chronic hepatitis C. Three trials administered co-interventions (amantadine hydrochloride 200 mg daily to both intervention groups), and 24 trials were conducted without co-interventions. The effect observed between the two intervention groups regarding liver-related morbidity plus allcause mortality (5/907 (0.55%) versus 4/882 (0.45%) was imprecise: OR 1.14 (95% CI 0.38 to 3.42; five trials; low quality of evidence), as was the risk of adverse events leading to treatment discontinuation (332/2692 (12.3%) versus 409/2176 (18.8%); RR 0.86, 95% CI 0.68 to 1.09; 15 trials; low quality of evidence) or regarding adverse events leading to treatment discontinuation (332/2692 (12.3%) versus 409/2176 (18.8%); RR 0.86, 95% CI 0.66 to 1.12; 17 trials; low quality of evidence). However, peginterferon plus ribavirin versus interferon plus ribavirin significantly increased the risk of neutropenia (332/2202 (15.1%) versus 117/1653 (7.1%); RR 2.15, 95% CI 1.76 to 2.61; 13 trials), thrombocytopenia (65/1113 (5.8%) versus 23/1082 (2.1%); RR 2.63, 95% CI 1.68 to 4.11; 10 trials), arthralgia (517/1740 (29.7%) versus 282/1194 (23.6%); RR 1.19, 95% CI 1.05 to 1.35; four trials), injection site reaction (627/1168 (53.7%) versus 186/649 (28.7%); RR 1.71, 95% CI 1.50 to 1.93; four trials), and nausea (606/1784 (34.0%) versus 354/1239 (28.6%); RR 1.13, 95% CI 1.01 to 1.26; four trials). The most frequent adverse event was fatigue, which occurred in 57% of participants (2024/3608). No significant difference was noted between peginterferon plus ribavirin versus interferon plus ribavirin in terms of fatigue (1177/2062 (57.1%) versus 847/1546 (54.8%); RR 1.01, 95% CI 0.96 to 1.07; 12 trials). No significant differences were reported between the two treatment groups regarding anaemia, headache, rigours, myalgia, pyrexia, weight loss, asthenia, depression, insomnia, irritability, alopecia, pruritus, skin rash, thyroid malfunction, decreased appetite, or diarrhoea. We were unable to identify any data on quality of life. Peginterferon plus ribavirin versus interferon plus ribavirin seemed to significantly increase the number of participants achieving sustained virological response (1673/3300 participants (50.7%) versus 1081/2804 patients (36.7%); RR 1.39, 95% CI 1.25 to 1.56; I2 = 64%; 27 trials; very low quality of evidence). However, the risk of bias in the 13/27 (48.1%) trials reporting on this outcome was high and was considered only 'lower' in the remainder. Because the conventional meta-analysis did not reach its required information size (n = 14,486 participants), we used trial sequential analysis to control for risks of random errors. Again, in this analysis, the estimated effect was statistically significant in favour of peginterferon. Subgroup analyses according to risk of bias, viral genotype, baseline viral load, past treatment history, and type of intervention yielded similarly significant results favouring peginterferon over interferon on the outcome of sustained virological response.

Authors' Conclusions: Peginterferon plus ribavirin versus interferon plus ribavirin seems to significantly increase the

proportion of patients with sustained virological response, as well as the risk of certain adverse events. However, we have insufficient evidence to recommend or reject peginterferon plus ribavirin for liver-related morbidity plus all-cause mortality compared with interferon plus ribavirin. The clinical consequences of achieved sustained virological response are unknown, as sustained virological response is still an unvalidated surrogate outcome. We found no evidence of the potential benefits on quality of life in patients with achieved sustained virological response. Further high-quality research is likely to have an important impact on our confidence in the estimate of patient-relevant outcomes and is likely to change our estimates. There is very low quality evidence that peginterferon plus ribavirin increases the proportion of patients with sustained virological response in comparison with interferon plus ribavirin. There is evidence that it also increases the risk of certain adverse events.

Keywords: Peginterferon; Ribavirin; Interferon; Chronic hepatitis C.

673. Nitazoxanide Plus Pegylated Interferon and Ribavirin in theTreatment of Genotype 4 Chronic Hepatitis C, A Randomized Controlled Trial

Shehab HM, Elbaz TM and Deraz DM.

Liver International, 34: 259-265 (2014) IF: 4.447

Background and Aims: Nitazoxanide has been proposed as a novel therapeutic agent for chronic hepatitis C virus (HCV) potentiating the effect of interferon and improving sustained virological response rates to up to 80% in genotype 4. This is an independent randomized trial to confirm the efficacy of nitazoxanide in the treatment of chronic hepatitis C genotype 4.

Methods: This was an open-label trial. Treatment-naive genotype 4 HCV patients were recruited: Group 1 received weekly subcutaneous pegylated interferon 160 μ g in addition to weight-based ribavirin (1200 mg if \geq 75 kg and 1000 mg if <75 kg) for 48 weeks, Group 2 received 4 weeks lead-in therapy by nitazoxanide alone (500 mg bid) followed by triple therapy including nitazoxanide, pegylated interferon and ribavirin for a further 48 weeks.

Results: Fifty patients were recruited in each group. Baseline characteristics were similar except for a higher BMI in group 1 (28.5 vs. 26.5, P = 0.01). SVR rates were similar (24/50 (48%) vs. 25/50 (50%) in groups 1 and 2 respectively, P: 0.84). RVR, cEVR and ETR rates were also similar (61% vs. 53% - P:0.4, 70% vs. 72% - P:0.8 and 62% vs. 58% - P:0.6 in groups 1 and 2 respectively). Biochemical response at week 12 was also similar (57% vs. 46% in groups 1 and 2 respectively, P:0.26). Complications were similar except for a higher rate of dyspepsia in the group receiving nitazoxanide (32% vs. 14%, P:0.03).

Conclusion: The addition of nitazoxanide to pegylated interferon and ribavirin does not improve the virological or biochemical response rates in chronic HCV genotype 4.

Keywords: Nitazoxanide; Interferon; HCV.

674. Optimizing Treatment for HCV Genotype 4: PEG-IFN Alfa 2A Vs. PEG-IFN Alfa 2B; theDebate Continues

Esmat G, El Kassas M, Hassany M, Gamil M and El Raziky M.

Liver International, 34(1): 24-28 (2014) IF: 4.447

Hepatitis C virus (HCV) remains one of the leading causes of morbidity and mortality worldwide. Combined therapy with pegylated interferon (PEG-IFN) and ribavirin is the current standard of care treatment for HCV genotype 4. Two types of PEG-IFN are commercially available. The limited number of trials that were conducted for HCV genotype 4 and the few head to head comparisons make it impossible to know which is the best option? In this article we review all available PEG-IFN trials performed worldwide for HCV genotype 4 since 2004. Unless another molecule is developed as a standalone for the treatment of HCV, PEG-IFN will continue to be a source of debate.

Keywords: HCV genotype 4; PEG-IFN alfa-2a; PEG-IFN alfa-2b.

675. The Efficacy of A Hansenula-Derived 20 KDa **Pegylated Interferon Alpha-2A in the Treatment of** Genotype 4 Chronic Hepatitis C

Shehab H, Elbaz T, Deraz D, Hafez A and Elattar I.

Journal of Interferon & Cytokine Research, 34: 727-733 (2014) IF: 3.899

Pending the emergence and approval of an effective interferonfree regimen, pegylated interferon will remain an integral part of the treatment of genotype 4 hepatitis C virus (HCV). A new 20 kDa pegylated interferon has been developed in a cost-saving fungal-based system and is commercialized in Egypt at a quarter to a third of the price of conventional pegylated interferon. We hereby test the efficacy and safety of this novel cost-saving interferon. One hundred ninety-three consecutive treatment-naive patients with genotype 4 HCV were treated using the following regimen: subcutaneous 20 kDa pegylated interferon 160 µg once weekly plus oral ribavirin 1,000 or 1,200 mg daily (based on body weight <75 kg or ≥75 kg, respectively) for 48 weeks. A sustained virological response (SVR) of 51% was achieved. Interim responses included rapid virological response (RVR): 54%, early virological response (EVR): 78% (complete EVR: 71%, partial EVR: 7%), and end of treatment response: 63%. The most common adverse events were flu-like symptoms, dyspepsia, anorexia, and pruritus. Treatment-related serious adverse events were encountered in only 2 patients (1%). Discontinuation of treatment due to adverse events occurred in only 13 patients (7%). Multiple logistic regression analyses revealed the following factors as predictors of SVR: RVR (P<0.001), alphafetoprotein<upper limit of normal (ULN) (P=0.007), and early biochemical response (alanine aminotransferase <ULN at week 12, P=0.018). Hansenula-derived 20 kDa pegylated interferon alpha-2a is an effective and safe treatment for genotype 4 chronic HCV. These results highlight the presence of a less costly treatment for chronic HCV, pending the emergence of an effective inexpensive interferon-free regimen. A direct comparison with 40 kDa interferon remains essential to adequately compare the efficacy and safety.

Keywords: Interferon; HCV Hensenula.

676. Efficacy and Survival Analysis of Percutaneous **Radiofrequency Versus Microwave Ablation for** Hepatocellular Carcinoma: An Egyptian **Multidisciplinary Clinic Experience**

Abdelaziz A, Elbaz T, Shousha HI, Mahmoud S, Ibrahim M, Abdelmaksoud A and Nabeel M.

Surgical Endoscopy, 28(12):3429-3434 (2014) IF: 3.313

Background: Hepatocellular carcinoma (HCC) is a primary tumor of the liver with poor prognosis. For early stage HCC, treatment options include surgical resection, liver transplantation, and percutaneous ablation. Percutaneous ablative techniques (radiofrequency and microwave techniques) emerged as best therapeutic options for nonsurgical patients.

Aims: We aimed to determine the safety and efficacy of radiofrequency and microwave procedures for ablation of early stage HCC lesions and prospectively follow up our patients for survival analysis.

Patients and Methods: One Hundred and 11 patients with early HCC are managed in our multidisciplinary clinic using either radiofrequency or microwave ablation. Patients are assessed for efficacy and safety. Complete ablation rate, local recurrence, and overall survival analysis are compared between both procedures.

Results: Radiofrequency ablation group (n = 45) and microwave ablation group (n = 66) were nearly comparable as regards the tumor and patients characteristics. Complete ablation was achieved in 94.2 and 96.1% of patients managed by radiofrequency and microwave ablation techniques, respectively (p value 0.6) with a low rate of minor complications (11.1 and 3.2, respectively) including subcapsular hematoma, thigh burn, abdominal wall skin burn, and pleural effusion. Ablation rates did not differ between ablated lesions \leq 3 and 3-5 cm. A lower incidence of local recurrence was observed in microwave group (3.9 vs. 13.5% in radiofrequency group, p value 0.04). No difference between both groups as regards de novo lesions, portal vein thrombosis, and abdominal lymphadenopathy. The overall actuarial probability of survival was 91.6% at 1 year and 86.1% at 2 years with a higher survival rates noticed in microwave group but still without significant difference (p value 0.49).

Conclusion: Radiofrequency and microwave ablations led to safe and equivalent ablation and survival rates (with superiority for microwave ablation as regards the incidence of local recurrence).

677. CUFA Algorithm: Assessment of Liver Fibrosis **Using Routine Laboratory Data**

Shehab H, Elattar I, Elbaz T, Mohey M and Esmat G.

Journal of Viral Hepatitis, 21: 956-964 (2014) IF: 3.307

Staging of liver fibrosis is an integral part of the management of HCV. Liver biopsy is hampered by its invasiveness and possibility of sampling error. Current noninvasive methods are disadvantaged by their cost and complexity. In this study, we aimed at developing a noninvasive method for the staging of liver fibrosis based only on routine laboratory tests and clinical data. Basic clinical and laboratory data and liver biopsies were collected from 994 patients presenting for the evaluation of HCV. Logistic regression was used to create a model predictive of fibrosis stages. A sequential test was then developed by combining our new model with APRI. In the training set (497) a model was created by logistic regression for the prediction of significant fibrosis (≥F2), it included platelets, AST and age

(PLASA). The areas under the curve (AUC), sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were 0.753, 66.8, 71.4, 69.8, 68.4, respectively, while in the validation set (497), they were 0.777, 66.7, 72.8, 68.6 and 71, respectively. These were the best performance indicators when compared to APRI, FIB-4, King's score, platelets, fibrosis index, age-platelet index and Lok index in the same set of patients. A sequential test was then developed including APRI followed by PLASA [Cairo University Fibrosis Assessment (CUFA) algorithm], this allowed saving 20% and 34% of liver biopsies for patients being tested for significant fibrosis and cirrhosis, respectively. In conclusion, the CUFA algorithms at no cost allow saving a significant proportion of patients from performing a liver biopsy or a more complex costly test. These algorithms could be used as the first step in the assessment of liver fibrosis before embarking on the more costly advanced serum markers, Fibroscan or liver biopsy.

Keywords: CUFA algorithm; HCV; PLASA score.; chronic hepatitis C; fibrosis; liver; noninvasive.

678. World Gastroenterology Organisation Global Guidelines: Diagnosis, Management And Prevention Of Hepatitis C

Umar M, Khan AG, Abbas Z, Arora S, Asifabbas N, Elewaut A, Esmat G, Foster G, Fried M, Goh KL, Hamama TB, Imawari M, Isakov V, Krabshuis J, LaBrecque D, Lemair A, Malfertheiner P, Ryder S, Schiedermaier P, Stimac D, Tandon R, Villamil F, Zapata R and Ferenci P

Journal of Clinical Gastroenterology, 48 (3): 204-217 (2014) IF: 3.186

This guideline will be of interest to all health professionals in primary and secondary care involved in the management of people with hepatitis C infection in different countries of the world. It covers all stages of the disease management pathway: screening, testing, diagnosis, referral, treatment, care, and followup of children and adults with, or exposed to, hepatitis C virus (HCV) infection.

Numerous guidelines produced annually by prestigious medical bodies outline "gold standard" practices and are aimed at physicians in resource-rich environments. (See the full version of this guideline for links to the main international guidelines on the management of hepatitis C.) As such, they are inaccessible and irrelevant for many clinicians in developing countries. Any Western guidelines that fail to acknowledge this may be preventing the dissemination of knowledge and evidence to the full global audience. The WGO has developed the concept of "cascades" to make guidelines more applicable to differing resource environments, by providing a collection of related diagnostic and treatment options arranged hierarchically in terms of conditions and available resources.

Keywords: WGO Guidelines Include Alternatives for Clinicians.

679. Promotor Methylation: Does It Affect Response to Therapy in Chronic Hepatitis C (G4) Or Fibrosis?

N Zekri AR, Raafat AM, Elmasry S, Bahnassy AA, Saad Y, Dabaon HA, El-Kassas M, Shousha HI, Nassar AA, El-Dosouky MA and Hussein N.

Ann Hepatol., 13(5): 518-524 (2014) IF: 2.193

Background and Aim: DNA methylation plays a critical role in the control of important cellular processes. The present study assessed the impact of promoter methylation (PM) of some genes on the antiviral response to antiviral therapy and it's relation to the presence of fibrosis in HCV-4 infected patients from Egypt.

Material and Methods: Clinical, laboratory and histopathological data of 53 HCV-4 infected patients who were subjected to combined antiviral therapy were collected; patients were classified according to their response to treatment and the fibrosis status. The methylation profiles of the studied groups were determined using the following genes: APC, P14ARF, P73, DAPK, RASSF1A, and O6MGMT in patients' plasma.

Results: O6MGMT and P73 showed the highest methylation frequencies (64.2 and 50.9%) while P14 showed the lowest frequency (34%). Sustained virological response (SVR) was 54.7% with no significant difference in clinico-pathological or laboratory features between the studied groups. PM of O6MGM was significantly higher in non-responders (p value 0.045) while DAPK showed high methylation levels in responders with no significance (p value: 0.09) andPM of RASSF1A was significantly related to mild fibrosis (p value: 0.019). No significant relations were reported between PM of any of the studied genes and patients' features.

Conclusion: PM of some Tumor Suppressor genes increases in chronic active HCV-4. However, only 06MGMT can be used as a predictor of antiviral response and RASSF1A as a marker of marked fibrosis in this small set of patients. An extended study, including more patients is required to validate the results of this preliminary study.

Keywords: Promotor methylation; HCV.

680. Predictors of Disease Recurrence Post Living Donor Liver Transplantation in End Stage Chronic HCV Patients

Mostafa K. El Awady, Noha G. Bader El Din, Mahmoud Abdel Aziz Riad, Moataza H. Omran, Tawfeek H. Abdelhafez, Tamer Mahmoud Elbaz, Shereen Shoukry Hunter, Reham M. Dawood, and Ashraf O. Abdel Aziz

Disease Markers, 2014: 1-9 (2014) IF: 2.174

HCV recurrence represents a universal phenomenon after liver transplantation. In this study Fifty HCV patients who underwent living donor liver transplantation were enrolled and factors that may accelerate HCV reinfection of the allograft such as donor's age and degree of liver steatosis, recipient's age, gender, BMI, MELD score, liver functions, HCV viral load, type of immunosuppressive drug, and genetic polymorphisms of IL28B, OAS, and IL1B were studied. The results of disease-free survival (DFS) rates showed inverse correlation with the recipient's postoperative levels of ALT, AST, ALP (P < 0.001, < 0.001, and 0.006 resp.) as well as pre- and postoperative titers of HCV RNA (P< 0.003 and <0.001 resp.). Recipient's IL28B SNP was a significant factor in predicting postoperative DFS (p< 0.025). However, SNPs in OAS and IL1B genes had no apparent correlation with DFS. Cox proportional hazards model revealed that patients with elevated levels of ALT, preoperative viral titers, IL28B CT, and IL28B TT were 8.28, 4.22, 3.35, and 1.36 times, respectively, more likely to develop recurrence. In conclusion IL28B SNP, ALT level, and preoperative HCV titer besides proper choice of immunosuppressant are helpful for predicting posttransplant HCV recurrence and DFS.

Keywords: HCV; Transplantation; Recurrence.

681. Is Expert Opinion Reliable When Estimating Transition Probabilities? the Case of HCV-Related Cirrhosis in Egypt

Anthony Cousien, Dorothée Obach, Sylvie Deuffic-Burban, Aya Mostafa, Gamal Esmat, Valérie Canva, Mohamed El Kassas, Mohammad El-Sayed, Wagida A Anwar, Arnaud Fontanet, Mostafa K Mohamed and Yazdan Yazdanpanah

Bmc Medical Research Methodology, 14:39: 1-6 (2014) IF: 2.168

Background: Data on HCV-related cirrhosis progression are scarce in developing countries in general, and in Egypt in particular. The objective of this study was to estimate the probability of death and transition between different health stages of HCV (compensated cirrhosis, decompensated cirrhosis and hepatocellular carcinoma) for an Egyptian population of patients with HCV-related cirrhosis.

Methods: We used the "elicitation of expert opinions" method to obtain collective knowledge from a panel of 23 Egyptian experts (among whom 17 were hepatologists or gastroenterologists and 2 were infectiologists). The questionnaire was based on virtual medical cases and asked the experts to assess probability of death or probability of various cirrhosis complications. The design was a Delphi study: we attempted to obtain a consensus between experts via a series of questionnaires interspersed with group response feedback.

Results: We found substantial disparity between experts' answers, and no consensus was reached at the end of the process. Moreover, we obtained high death probability and high risk of hepatocellular carcinoma. The annual transition probability to death was estimated at between 10.1% and 61.5% and the annual probability of occurrence of hepatocellular carcinoma was estimated at between 16.8% and 58.9% (depending on age, gender, time spent in cirrhosis and cirrhosis severity).

Conclusions: Our results show that eliciting expert opinions is not suited for determining the natural history of diseases due to practitioners' difficulties in evaluating quantities. Cognitive bias occurring during this type of study might explain our results.

Keywords: Delphi method; Expert knowledge elicitation; Methodological bias; Risk perception; Cognitive bias; HCV in Egypt.

682. Impact of Nutritional Status of Egyptian Patients With End-Stage Liver Disease on Their Outcomes After Living Donor Liver Transplantation

Yosry A, Omran D, Said M, Fouad W and Fekry O.

Journal Of Digestive Diseases, 15: 321-326 (2014)

IF: 1.924

Objective: Malnutrition is prevalent among patients with endstage liver disease (ESLD) awaiting liver transplantation. Our aim was to examine prospectively the impact of patients' nutritional status on their outcomes after living donor liver transplantation (LDLT).

Methods: In all, 30 patients scheduled for LDLT were subjected to a preoperative nutritional status assessment through subjective global assessment (SGA), nutritional risk screening (NRS 2002) and anthropometric measurements. All patients were followed up for 3 months after LDLT for mortality, graft rejection, number of clinically significant infective episodes, time spent in hospital (ward and intensive care unit [ICU]) and graft failure or dysfunction.

Results: All patients were nutritionally compromised (evaluated by SGA and NRS 2002), and were divided into two groups: moderately and severely malnourished. Compared with moderately malnourished patients, severely malnourished patients showed significant postoperative hyperbilirubinemia, higher number of infective episodes and longer ICU stay. Preoperative triceps skinfold and mid-arm circumference were negatively correlated with the number of infective episodes (r -0.33, P = 0.03 and r = -0.377, P = 0.04, respectively). Moreover, skeletal muscle mass was negatively correlated with postoperative serum alanine aminotransferase level =(r -0.52, P = 0.003) and the number of postoperative infective episodes (r = -0.3, P = 0.04).

Conclusion: Poor nutritional status of Egyptian patients with ESLD negatively affects the patients' outcomes after LDLT.

Keywords: Anthropometry; End Stage Liver Disease; Liver Transplantation; Nutritional Risk Screening 2002; Subjective Global Assessment.

683. Survival and Prognostic Factors for Hepatocellular Carcinoma: An Egyptian Multidisciplinary Clinic Experience

Abdelaziz AO, Elbaz TM, Shousha HI, Ibrahim MM, Rahman El-Shazli MA, Abdelmaksoud AH, Aziz OA, Zaki HA, Elattar IA and Nabeel MM.

Asian Pacific Journal of Cancer Prevention, 15: 3915-3920 (2014) IF: 1.5

Background: Hepatocellular carcinoma (HCC) is a dismal tumor with a high incidence, prevalence and poor prognosis and survival. Management of HCC necessitates multidisciplinary clinics due to the wide heterogeneity in its presentation, different therapeutic options, variable biologic behavior and background presence of chronic liver disease. We studied the different prognostic factors that affected survival of our patients to improve future HCC management and patient survival.

Materials and Methods: This study is performed in a specialized multidisciplinary clinic for HCC in Kasr El Eini Hospital, Cairo University, Egypt. We retrospectively analyzed the different patient and tumor characteristics and the primary mode of management applied to our patients. Further analysis was performed using univariate and multivariate statistics.

Results: During the period February 2009 till February 2013, 290 HCC patients presented to our multidisciplinary clinic. They were predominantly males and the mean age was 56.5 ± 7.7 years. All cases developed HCC on top of cirrhosis that was mainly due to HCV (71%). Most of our patients were Child-Pugh A (50%) or B (36.9%) and commonly presented with small single lesions. Transarterial chemoembolization was the most common line of treatment used (32.4%). The overall survival was 79.9% at 6 months, 54.5% at 1 year and 22.4% at 2 years. Serum bilirubin, site of the tumor and type of treatment were the significant independent prognostic factors for survival.

Conclusions: Our main prognostic variables are the bilirubin level, the bilobar hepatic affection and the application of specific treatment (either curative or palliative). Multidisciplinary clinics enhance better HCC management.

Keywords: Hepatocellular Carcinoma; Multidisciplinary; Prognosis; Survival.

684. Fungal Infections in Liver Transplant Patients Admitted To theIntensive Care Unit

Marzaban R, Salah M, Mukhtar AM, Dwedar RA, Abdel-Latif W and Mahmoud I

Annals of Transplantation, 19: 667-673 (2014) IF: 1.43

Background: Fungal infections have a significant impact on patient survival after liver transplantation, mostly caused by Candida and Aspergillus. The clinical manifestations vary, and range from colonization, active local infection, to severe invasive form. A high degree of suspicion is required for the early diagnosis and, accordingly, the optimal management of these infections. This study aimed to evaluate fungal infection in the Intensive care Unit (ICU) in admitted liver transplant patients, focussing of etiologic agent, clinical/laboratory presentation (including mortality), and risk factors.

Material/Methods: This retrospective study included living related liver transplanted patients admitted to the ICU. Clinical data was collected, thorough clinical evaluation was done, and laboratory tests were performed. Microbiological examination detecting the presence of fungus in various samples, using cultures and serology, and imaging investigations were carried out in all patients.

Results: This study included 23 cases of ICU-admitted liver transplant patients who were diagnosed with fungal infection. Candida was the most common fungal infection and occurred at a mean of 2 months after transplantation; while Aspergillus was less common and occurred later with worse laboratory findings. Invasive fungal infection constituted 43% of the diagnosed cases. Difference in mortality between Aspergillus and Candida was insignificant, as was difference between patients with and without fungal infection.

Conclusions: Fungal infection among LT patients was common, including the invasive forms.

Keywords: Aspergillosis; Candida; Liver Transplantation.

685. Egy-Score as A Noninvasive Score for theAssessment of Hepatic Fibrosis in Chronic Hepatitis C: A Preliminary Approach

Mohamed Alboraie, Marwa Khairy, Aisha Elsharkawy, Marwa Elsharkawy, Noha Asem, Amany R. Abo El-Seoud, Fathy G. Elghamry and Gamal Esmat

The Saudi Journal of Gastroenterology, 20(3): 170-174 (2014) IF: 1.221

Background and Aims: Egy-Score is a new noninvasive score for prediction of severe hepatic fibrosis in patients with chronic liver diseases. The aim of this study was to validate Egy-Score as a noninvasive score for predicting stage of hepatic fibrosis in a group of Egyptian chronic hepatitis C patients.

Patients and Methods: One hundred Egyptian patients with chronic hepatitis C were enrolled. Mean age was 40.25 ± 9.39 years. They were subjected to CA19-9, alpha-2-macroglobulin, total bilirubin, platelet count and albumin, liver biopsy, and histopathological staging of hepatic fibrosis according to METAVIR scoring system as part of their assessment for treatment. Egy-Score was calculated according to the following formula: Egy-Score = $3.52 + 0.0063 \times CA19-9 + 0.0203 \times age + 0.4485 \times alpha-2-macroglobulin + 0.0303 \times bilirubin - 0.0048 \times platelet - 0.0462 \times albumin. Egy-Score results were correlated to the stage of hepatic fibrosis.$

Results: Egy-Score correlates positively with the stage of hepatic fibrosis (F0-F4). Egy-Score was able to differentiate significant hepatic fibrosis, severe hepatic fibrosis, and cirrhosis accurately. Cutoff values of Egy-Score were 2.91850 (for significant fibrosis), 3.28624 (for severe fibrosis), and 3.67570 (for cirrhosis). Sensitivity, specificity, and areas-under-ROC curve (AUROCs) were 75.8%, 68.42%, and 0.776 (for significant fibrosis ' \geq F2''), 91.67%, 77.63%, and 0.875 (for severe fibrosis " \geq F3''), and 81.82%, 86.52%, and 0.874 (for cirrhosis "F4"), respectively.

Conclusion: Egy-Score is a useful noninvasive panel of surrogate biomarkers that could accurately predict different stages of hepatic fibrosis in patients with chronic hepatitis C.

Keywords: Biomarkers; Cirrhosis; Fibrosis; HCV; Noninvasive.

686. Effect of Preventive and Curative Interventions on Hepatitis C Virus Transmission in Egypt (Anrs 1211): A Modelling Study

Romulus Breban, Naglaa Arafa, Sandrine Leroy, Aya Mostafa, Iman Bakr, Laura Tondeur, Mohamed Abdel-Hamid, Wahid Doss, Gamal Esmat, Mostafa K Mohamed, Arnaud Fontanet and Mohamed died

Lancet Global Health, 2 (9): 541-549 (2014)

Background: Most hepatitis C virus (HCV) transmission in Egypt is related to medical injections and procedures. To control the spread of HCV, the Egyptian Ministry of Health initiated awareness and education campaigns, strengthened infection control in health-care facilities, and subsidised anti-HCV treatment. We aimed to investigate the effect of these interventions on the spread of HCV by mathematical modelling.

Methods: We developed a mathematical model of HCV transmission in Zawyat Razin, a typical rural community. Our model assumes that each individual has two distinct types of medical procedures: injections and more invasive medical procedures. To quantify the severity of the spread of HCV, we used the notion of the basic reproduction number R₀, a standard threshold parameter signalling whether transmission of an infectious disease is self-sustained and maintains an epidemic. If R₀ is greater than 1, HCV is self-sustained; if R₀ is 1 or less, HCV transmission is not self-sustained. We investigated whether heterogeneity in the rate of injection or invasive medical procedures is the determinant factor for HCV transmission and whether most iatrogenic transmission is caused by a small group of individuals who receive health-care interventions frequently. We then assessed whether interventions targeted at this group could reduce the spread of HCV.

Findings: The R_0 of the spread of HCV without treatment was 3.54 (95% CI 1.28–6.18), suggesting a self-sustained spread. Furthermore, the present national treatment programme only decreased R_0 from 3.54 to 3.03 (95% CI 1.10–5.25). Individuals with high rates of medical injections seem to be responsible for the spread of HCV in Egypt; the R_0 of the spread of HCV without treatment would be 0.64 (95% CI 0.41–0.93) if everybody followed the average behaviour. The effect of treatment on HCV transmission is greatly enhanced if treatment is provided a mean of 2.5 years (95% CI 0.1–9.2) after chronic infection and with drug regimens with more than 80% efficacy. With these treatment parameters, preventive and curative interventions targeting individuals with high rates of medical injections might decrease R_0 below 1 for treatment coverage lower than 5%.

Interpretation: Targeting preventive and curative interventions to individuals with high rates of medical injections in Egypt would result in a greater reduction the spread of HCV than would untargeted allocation. Such an approach might prove beneficial in other resource-limited countries with health-care-driven epidemics.

Keywords: Inject Drugs; Risk-Factors; Infection; People; Epidemiology; Metaanalysis; Therapy; Spread.

Dept. of Internal Medicine

687. Effect of Sirolimus on Malignancy and Survival After Kidney Transplantation: Systematic Review and Meta-Analysis of Individual Patient Data

Rashad Sami Barsoum

British Medical Journal, 349 g6670: 1-14 (2014) IF: 16.378

Objective: To examine risk of malignancy and death in patients with kidney transplant who receive the immunosuppressive drug sirolimus. Design Systematic review and meta-analysis of individual patient data. Data sources Medline, Embase, and the Cochrane Central Register of Controlled Trials from inception to March 2013. Eligibility Randomized controlled trials comparing immunosuppressive regimens with and without sirolimus in recipients of kidney or combined pancreatic and renal transplant for which the author was willing to provide individual patient level data. Two reviewers independently screened titles/abstracts and full text reports of potentially eligible trials to identify studies for inclusion. All eligible trials reported data on malignancy or survival.

Results: The search yielded 2365 unique citations. Patient level data were available from 5876 patients from 21 randomized trials. Sirolimus was associated with a 40% reduction in the risk of malignancy (adjusted hazard ratio 0.60, 95% confidence interval 0.39 to 0.93) and a 56% reduction in the risk of non-melanoma skin cancer (0.44, 0.30 to 0.63) compared with controls. The most pronounced effect was seen in patients who converted to sirolimus from an established immunosuppressive regimen, resulting in a reduction in risk of malignancy (0.34, 0.28 to 0.41), non-melanoma skin cancer (0.32, 0.24 to 0.42), and other cancers (0.52, 0.38 to 0.69). Sirolimus was associated with an increased risk of death (1.43, 1.21 to 1.71) compared with controls.

Conclusions: Sirolimus was associated with a reduction in the risk of malignancy and non-melanoma skin cancer in transplant recipients. The benefit was most pronounced in patients who converted from an established immunosuppressive regimen to sirolimus. Given the risk of mortality, however, the use of this drug does not seem warranted for most patients with kidney transplant. Further research is needed to determine if different populations, such as those at high risk of cancer, might benefit from sirolimus.

Keywords: Sirolimus; Post-transplant Malignancy; Transplant mortality.

688. Prevalence of Photosensitivity in Chronic Hepatitis C Virus Patients and Its Relation to Serum and Urinary Porphyrins

Serag Esmat, Dina Elgendy, Mohamed Ali, Samia Esmat, Eman A. El-Nabarawy, Sara B. Mahmoud and Olfat Shaker

Liver International, Volume 34 / Issue 7: 1033-1039 (2014) IF: 4.447

Background & Aims: HCV is a major cause of chronic liver disease in Egypt. The aim was to study the prevalence of photosensitivity among asymptomatic HCV-infected patients and its possible relation to porphyrins levels and whether it can be considered an alarm for early diagnosis of the disease, which is the most important goal in the management. Methods: This study included 100 accidentally discovered HCV positive cases and 100 HCV negative healthy controls. All patients and controls were subjected to: Detailed history and clinical examination, dermatological examination including evaluation of reaction to solar exposure, measurement of serum AST, ALT, albumin, bilirubin, serum and urinary porphyrins levels.

Results: The prevalence of photosensitivity among HCV-positive cases (33%) was significantly higher compared to 10% in the control group. Serum porphyrins were positive in 46 cases (46%), twenty-three cases (23%) had positive urinary porphyrins, while only four controls (4%) showed positive serum porphyrins and one (1%) showed positive urinary porphyrins, the difference was statistically significant. Cases with photosensitivity showed significantly higher prevalence of serum and urinary porphyrins existence as well as serum porphyrins levels. Levels of viraemia showed statistically significant relation to levels of porphyrins.

Conclusion: Asymptomatic chronic HCV infection cases showed significantly high prevalence of photosensitivity, which is related to the associated disturbance of porphyrins metabolism. Photosensitivity can thus be considered an early marker of HCV infection. Patients discovered to have recently acquired photosensitivity should be screened for HCV infection especially in endemic areas like Egypt.

Keywords: Chronic Viral Hepatitis; Extrahepatic Manifestations Of Hcv; Photosensitivity; Porphyria Cutanea Tarda (PCT); Porphyrins metabolism.

689. Validation of the Classification Criteria for Cryoglobulinaemic Vasculitis

Quartuccio L, Isola M, Corazza L, Ramos-Casals M, Retamozo S, Ragab GM, Zoheir MN, El-Menyawi MA, Salem MN, Sansonno D, Ferraccioli G, Gremese E, Tzioufas A, Voulgarelis M, Vassilopoulos D, Scarpato S, Pipitone N, Salvarani C, Guillevin L, Terrier B, Cacoub P, Filippini D, Saccardo F, Gabrielli A, Fraticelli P, Sebastiani M, Tomsic M, Tavoni A, Mazzaro C, Pioltelli P, Nishimoto N, Scaini P, Zignego AL, Ferri C, Monti G, Pietrogrande M, Bombardieri S, Galli M and De Vita S

Rheumatology, 35(12): 262-267 (2014) IF: 4.435

Objective: The aim of this study was to validate the classification criteria for cryoglobulinaemic vasculitis (CV).

Methods: Twenty-three centres were involved. New patients with CV (group A) and controls, i.e. subjects with serum cryoglobulins but lacking CV based on the gold standard of clinical judgment (group B) and subjects without cryoglobulins but with clinical features that can be observed in the course of CV (group C), were studied. Positivity of serum cryoglobulins was necessary for CV classification. Sensitivity and specificity of the criteria were calculated by comparing group A vs group B. The group A vs group C comparison was done to demonstrate the possible diagnostic utility of the criteria.

Results: The study included 268 patients in group A, 182 controls in group B and 193 controls in group C (small vessel vasculitis, 51.8%). The questionnaire (at least 2/3 positive answers) showed 89.0% sensitivity and 93.4% specificity; the clinical item (at least 3/4 clinical involvement) showed 75.7% sensitivity and 89.0% specificity and the laboratory item (at least 2/3 laboratory data) showed 80.2% sensitivity and 62.4% specificity. The sensitivity and specificity of the classification criteria (at least 2/3 positive items) were 89.9% and 93.5%, respectively. The comparison of group A with group C demonstrated the clinical utility of the criteria in differentiating CV from CV mimickers.

Conclusion: Classification criteria for CV were validated in a second, large, international study confirming good sensitivity and specificity in a complex systemic disease.

Keywords: Cryoglobulinaemia; Hepatitis C; Classification; Vasculitis.

690. Epidemiological and Clinical Characteristics of Inflammatory Bowel Diseases in Cairo, Egypt

Serag Esmat, Mohamed El Nady, Mohamed Elfekki, Yehia Elsherif and Mazen Naga

World Journal of Gastroenterology, 20: 814-821 (2014) IF: 2.433

Aim: To study the natural history, patterns and clinical characteristics of inflammatory bowel diseases (IBD) in Egypt.

Methods: We designed a case-series study in the gastroenterology centre of the Internal Medicine department of Cairo University, which is a tertiary care referral centre in Egypt. We included all patients in whom the diagnosis of ulcerative colitis (UC) or Crohn's disease (CD) was confirmed by clinical, laboratory, endoscopic, histological and/or radiological criteria over the 15 year period from 1995 to 2009, and we studied their sociodemographic and clinical characteristics. Endoscopic examinations were performed by 2 senior experts. This hospital centre serves patients from Cairo, as well as patients referred from all other parts of Egypt. Our centre received 24156 patients over the described time period for gastro-intestinal consultations and/or interventions.

Results: A total of 157 patients with established IBD were included in this study. Of these, 135 patients were diagnosed with UC (86% of the total), and 22 patients, with CD (14% of the total). The mean ages at diagnosis were 27.3 and 29.7, respectively. Strikingly, we noticed a marked increase in the frequency of both UC and CD diagnoses during the most recent 10 years of the 15 year period studied. Regarding the gender distribution, the male:female ratio was 1:1.15 for UC and 2.6:1 for CD. The mean duration of follow up for patients with UC was 6.2 ± 5.18 years, while the mean duration of follow up for patients with UC we found no correlation between the severity of the disease and the presence of extraintestinal manifestations. Eleven patients had surgical interventions during the studied years: 4 cases of total colectomy and 7 cases of anal surgery.

Conclusion: We observed a ratio of 6:1 for UC to CD in our series. The incidence of IBD seems to be rising in Egypt.

Keywords: Natural History of Inflammatory Bowel Diseases; Epidemiology of Ulcerative Colitis; Epidemiology of Crohn'S Disease; Epidemiology of Inflammatory Bowel Diseases in Egypt; Inflammatory Bowel Diseases Prevalence; Incidence of Ulcerative Colitis; Incidence of Crohn'S Disease.

691. Multiple Myeloma: A Descriptive Study of 217 Egyptian Patients

Noha M. El Husseiny, Neemat Kasem, Hamdy Abd El Azeeim and Mervat W. Mattar

Ann Hematol, 93: 141-145 (2014) IF: 2.396

Multiple myeloma is a neoplasm of plasma cells that results in the overproduction of light and heavy chain monoclonal immunoglobulins. The incidence rate increases with age, particularly after 40 years, and is higher in men. To determine the clinical and laboratory characteristics and survival of diagnosed Egyptian multiple myeloma patients admitted to the Haemato-Oncology Department between 2000 and 2010. Records of all patients in whom multiple myeloma was diagnosed at the Kasr Al Aini Hospital between 2000 and 2010 were included in this retrospective study. The mean age of patients was 58.5 years (range, 27-80 years). Fifty-nine percent were males. The majority of patients (73 %) had an immunoglobulin G monoclonal band and 70 % were Kappa chain-positive. Mean overall survival was 37.5 months (range, 1-84 months). Survival analysis was statistically insignificant with respect to age, sex, International Staging System and type of treatment (p>0.05). Our records were largely comparable to those reported in Chinese studies but different from those noted in Western and Arabic countries. Keywords: Myeloma; Chemotherapy; Epidemiology.

692. P Selectins and Immunological Profiles in HCV and Schistosoma Mansoni Induced Chronic Liver Disease

Mahmoud M Kamel, Shawky A Fouad and Maha MA Basyony

BMC Gastroenterol, 14(132): 1-9 (2014) IF: 2.113

Background: Hepatitis C virus (HCV) and *Schistosoma mansoni* are major causes of chronic liver disease (CLD) in which immune alteration is common. Recent studies suggested that certain platelets and lymphocytes activation markers may have an impact on progression of CLD. This study aimed to evaluate the potential of platelets and lymphocytes activation molecules expression on the pathogenesis of CLD in distinct or concomitant chronic HCV and schistosomiasis *mansoni* infections.

Methods: The study populations were divided into group-I: patients with chronic schistosomiasis *mansoni*, group-II: HCV patients without cirrhosis, group-III: patients with combined liver diseases without cirrhosis, group-IV: patients with chronic HCV and liver cirrhosis and group-V: Age and sex matched healthy individuals as normal controls. All groups were subjected to full clinical evaluation, ELISA anti-HCV antibodies screening, parasitological examination for diagnosing *S. mansoni* and flow cytometry for lymphocyte (CD3, CD4, CD8, CD19, CD22, & CD56) and platelets activation (CD41, CD42 & CD62P (P-selectins)) markers.

Results: The platelet count was significantly decreased in HCV and/or *S. mansoni* patients. The total T-lymphocytes and T-helper cells were significantly reduced, while T-cytotoxics were increased. The patients possessed a significantly higher platelets activation marker; CD62P (P-selectins) and higher mean fluorescent intensity (MFI) positivity. There were considerable correlations between platelets count and both of CD62P and MFI. **Conclusion**: Our Findings suggest an increased expression of certain platelets and lymphocytes activation markers in chronic HCV and *S. mansoni* induced CLD that may have a role in disease progression.

Keywords: HCV; Schistosomiasis Mansoni; Activated Platelets; Cd62; Lymphocyte Activation.

693. Molecular Identification of Giardia Intestinalis in Patients With Dyspepsia

Shawky A. Fouad, Serag Esmat, Maha M.A. Basyoni, Marwa Salah Farhan and Mohamed H. Kobaisi

Digestion, Vol. 90, No. 1: 63-71 (2014) IF: 2.032

Background/Aims: Giardia intestinalis triggers symptoms of functional dyspepsia. The aim of this study was to distinguish genotypes of G. intestinalis isolated from dyspeptic patients to evaluate their correlation with dyspeptic symptoms. Methods: In total, 120 dyspeptic subjects were investigated by upper endoscopy, including gastric and duodenal biopsies for histopathological examination, and parasitological examination of their stools and duodenal aspirates was performed. The patients were classified into five groups: group I (G. intestinalis) included 19 patients, group II (Helicobacter pylori) included 36 patients, group III (coeliac disease) included 3 patients, group IV (mixed G. intestinalis and H. pylori infection) included 4 patients, and group V (unexplained aetiology) included 58 patients. Genotyping of G. intestinalis was performed for groups I and IV using PCR-RFLP. The urease test was performed for H. pylori. Serum anti-gliadin, anti-endomysial and anti-transglutaminase antibody estimation was performed for the diagnosis of coeliac disease. Results: Genotype A of G. intestinalis was detected in the stool samples of 68.42% (13/19) and the duodenal aspirates of 42.1% (8/19) of dyspeptic patients harbouring the parasite. Genotype B was detected in 31.58% (6/19) of cases in stool samples and in 3 cases in duodenal aspirates. Conclusions:H. pylori, G. intestinalis and coeliac disease are common causes of dyspepsia. G. intestinalis genotype A demonstrated a greater association with dyspeptic symptoms.

Keywords: Giardia intestinalis; Giardia intestinalis genotypes; Dyspeptic symptoms.

694. Diagnostic Value of Serum Level of Soluble Tumor Necrosis Factor Receptor lla in Egyptian Patients With Chronic Hepatitis C Virus Infection and Hepatocellular Carcinoma

Fouad SA, Elsaaid NH, Mohamed NA and Abutaleb OM

Hepatitis Monthly, (2014) IF: 1.796

Background: The prognosis of hepatocellular carcinoma (HCC) is unfavorable and needs serum markers that could detect it early to start therapy at a potentially curable phase.

Objectives: The aim of this study was to determine the value of serum soluble tumor necrosis factor (TNF) receptor-IIa (sTNFR-IIa) in diagnosis of HCC in patients with chronic hepatitis C virus (HCV) infection.

Patients and Methods: The study was performed on 110 subjects who were classified into five groups. Group I included 20 patients with chronic noncirrhotic HCV infection and persistently normal transaminases for =6 months. Group II included 20 patients with chronic noncirrhotic HCV infection and elevated transaminases. Group III included 20 patients with Chronic HCV infection and liver cirrhosis. Group IV included 20 patients with chronic HCV infection and liver cirrhosis. Group IV included 20 patients with chronic HCV infection and liver cirrhosis and HCC. Group V included 30 healthy age and sex-matched controls. Medical history was taken from all participants and they underwent clinical examination and abdominal ultrasonography. in addition, the following laboratory tests were requested: liver function tests, complete blood count,

HBsAg, anti-HCVAb, HCV-RNA by qualitative PCR, and serum levels of a-fetoprotein (AFP) and sTNFR-IIa.

Results: The serum level of sTNFR-IIa was significantly higher in patients with HCC in comparison to the other groups. A positive correlation was found between the serum levels of sTNFR-IIa and AST and ALT in patients of group-II. Diagnosis of HCC among patients with HCV infection and cirrhosis could be ascertained when sTNFR-IIa is assessed at a cutoff value of = 250 pg/mL.

Conclusions: Serum sTNFR-IIa could be used as a potential serum marker in diagnosing HCC among patients with HCV infection.

Keywords: Liver Cirrhosis; Hepatocellular Carcinoma; Hepatitis C Virus; S TNF-RII.

695. A Study of Hepcidin and Monocyte Chemoattractant Protein-1in Egyptian Females With Systemic Lupus Erythematosus

Mohammed MF, Belal D, Bakry S, Marie MA, Rashed L, Eldin RE and El-Hamid SA.

J. of Clinical Laboratory Analysis, 28: 306-309 (2014) IF: 1.144

Background: Lupus nephritis is one of the most serious manifestations of systemic lupus erythematosus (SLE). Novel biomarkers are necessary to enhance the diagnostic accuracy, prognostic stratification, monitoring of treatment response, and detection of early renal flares.

Methods: Our study was conducted on 90 participants. They were divided into three groups, group I (controls) encompassed 30 ages and sex-matched healthy personnel. Group II included 30 non-nephritic SLE patients and finally group III included 30 SLE nephritic patients. Urinary monocyte chemoattractant protein-1 (UMCP-1) and hepcidin were evaluated by ELISA technique, compared and correlated in different groups, with each other and with other routine variables and with renal biopsy done to study group (III).

Results: Both UMCP-1 and hepcidin in group III showed significant increase compared to other two groups (controls and group II) (468 ± 128 , 111 ± 12 , 252 ± 56 pg/ml, respectively, for UMCP-1 and 40 ± 12 , 11 ± 2 , 20 ± 5 ng/ml, respectively, for hepcidin, P < 0.01). Also both UMCP-1 and hepcidin in group III showed significant increase in diffuse proliferative subgroup compared to focal proliferative and mesangioproliferative subgroups (580 ± 43 , 502 ± 46 , and 352.6 ± 100 pg/ml, respectively, for UMCP-1 and 47.8 ± 9.5 , 41.4 ± 6 , and 32.9 ± 10.8 ng/ml, respectively, for urinary hepcidin, P < 0.05).

Conclusion: UMCP-1 and hepcidin could be associated with the susceptibility of lupus nephritis.

Keywords: Lupus nephritis; Urinary biomarkers; Monocyte chemoattractant Protein-1.

696. New Insights on Iron Study in Myelodysplasia

Noha M. El Husseiny, Dina Ahmed Mehaney and Mohamed Abd El Kader Morad

Turk J. Haemato, 31: 394-398 (2014) IF: 0.34

Objective: Hepcidin plays a pivotal role in iron homeostasis. It is predominantly produced by hepatocytes and inhibits iron release from macrophages and iron uptake by intestinal epithelial cells. Competitive ELISA is the current method of choice for the quantification of serum hepcidin because of its lower detection

limit, low costs, and high throughput. This study aims to discuss the role of hepcidin in the pathogenesis of iron overload in recently diagnosed myelodysplasia (MDS) cases.

Materials and Methods: The study included 21 recently diagnosed MDS patients and 13 healthy controls. Ferritin, hepcidin, and soluble transferrin receptor (sTFR) were measured in all subjects.

Results: There were 7 cases of hypocellular MDS, 8 cases of refractory cytopenia with multilineage dysplasia, and 6 cases of refractory anemia with excess blasts. No difference was observed among the 3 MDS subtypes in terms of hepcidin, sTFR, and ferritin levels (p>0.05). Mean hepcidin levels in the MDS and control groups were 55.8±21.5 ng/mL and 19.9±2.6 ng/ mL, respectively. Mean sTFR was 45.7±8.8 nmol/L in MDS patients and 31.1±5.6 nmol/L in the controls. Mean ferritin levels were significantly higher in MDS patients than in controls (539.14±83.5 ng/mL vs. 104.6±42.9 ng/mL, p<0.005). There was a statistically significant correlation between hepcidin and sTFR (r=0.45, p=0.039). No difference in hepcidin levels between males and females was observed, although it was lower in males in comparison to females (47.9±27.6 vs. 66.7±35.7, p>0.05). Conclusion: Hepcidin may not be the main cause of iron overload in MDS. Further studies are required to test failure of production or peripheral unresponsiveness to hepcidin in MDS cases. Keywords: Hepcidin; Myelodysplasia; Iron overload.

Dept. of Medical Biochemistry and Molecular Biology

697. Impairment of Nitric Oxide Synthase But Not Heme Oxygenase Accounts for Baroreflex Dysfunction Caused By Chronic Nicotine in Female Rats

Mohamed A. Fouda, Hanan M. El-Gowelli, Sahar M. El-Gowilly, Laila Rashed and Mahmoud M. El-Mas

Plos One., (2014) IF: 3.534

We recently reported that chronic nicotine impairs reflex chronotropic activity in female rats. Here, we sought evidence to implicate nitric oxide synthase (NOS) and/or heme oxygenase (HO) in the nicotine-baroreflex interaction. Baroreflex curves relating changes in heart rate to increases (phenylephrine) or decreases (sodium nitroprusside) in blood pressure were generated in conscious female rats treated with nicotine or saline in absence and presence of pharmacological modulators of NOS or HO activity. Compared with saline-treated rats, nicotine (2 mg/kg/day i.p., for 14 days) significantly reduced the slopes of baroreflex curves, a measure of baroreflex sensitivity (BRS). Findings that favor the involvement of NOS inhibition in the nicotine effect were (i) NOS inhibition (N_{00} -Nitro-L-arginine methyl ester, L-NAME) reduced BRS in control rats but failed to do so in nicotine-treated rats, (ii) L-arginine, NO donor, reversed the BRS inhibitory effect of nicotine. Alternatively, HO inhibition (zinc protoporphyrin IX, ZnPP) had no effect on BRS in nicotineor control rats and failed to reverse the beneficial effect of Larginine on nicotine-BRS interaction. Similar to female rats, BRS was reduced by L-NAME, but not ZnPP, in male rats and the L-NAME effect was not accentuated after concomitant administration of nicotine. Baroreflex dysfunction caused by nicotine in female rats was blunted after supplementation with hemin (HO inducer) but not tricarbonyldichlororuthenium(II) dimer (CORM-2), a carbon monoxide (CO) releasing molecule, or bilirubin, the breakdown product of heme catabolism. The

facilitatory effect of hemin was abolished upon simultaneous treatment with L-NAME or 1H-[1], [2], [4] oxadiazolo[4,3-a] quinoxalin-1-one (inhibitor of soluble guanylate cyclase, sGC). The activities of HO and NOS in brainstem tissues were also significantly increased by hemin. Thus, the inhibition of NOS, but not HO, accounts for the baroreflex depressant of chronic nicotine. Further, hemin alleviates the nicotine effect through a mechanism that is NOS/sGC but not CO or bilirubin-dependent **Keywords**: Baroreflex dysfunction; Nitric oxide; Hemeoxygenase.

698. Occupational Exposure to Aluminum and its Amyloidogenic Link With Cognitive Functions

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Journal of Inorganic Biochemistry, 139: 57-64 (2014) IF: 3.274

As many other metals, aluminum is a widely recognized neurotoxicant and its link with neurodegenerative disorders has been the subject of scientific debate. One proposal focuses on amyloid β deposition (amyloidogenesis) as the key player in triggering neuronal dysfunction the so-called amyloid cascade hypothesis. We undertook this study first to investigate the cognition status of workers exposed to Al dust in an Al factory in Southern Cairo, second, to evaluate serum amyloid precursor protein (APP) and cathepsin D (CD) enzyme activity to study the possible role of Al in amyloidogenesis, and finally to explore the relation between these potential biomarkers and cognitive functions. The study was conducted on 54 exposed workers and 51 matched controls. They were subjected to questionnaire, neurological examination and a cognitive test battery, Addenbrooke's Cognitive Examination - Revised (ACE-R). Serum Al, APP and CD enzyme activity were measured. A significant increase of serum Al was found in the exposed workers with an associated increase in serum APP and decrement in CD activity. The exposed workers displayed poor performance on the ACE-R test. No significant correlation was detected between ACE-R test total score and either APP or CD activity. We concluded that occupational exposure to Al is associated with cognitive impairment. The effect of occupational Al exposure on the serum levels of APP and CD activity may be regarded as a possible mechanism of Al in amyloidogenesis. However, our findings do not support the utility of serum APP and CD activity as screening markers for early or preclinical cognitive impairment.

Keywords: Aluminum; Occupational Exposure; Amyloidogenesis; Amyloid Precursor Protein; Cathepsin D Activity; ACE; R Test.

699. Dose-Dependent Bioavailability Indicators for Curcumin and Two of Its Novel Derivatives

Mohamed Abd el Aziz, Mohamed El-Asmer, Ameen Rezq, Abdulrahman Al-Malki, Taha Kumosani, Hanan Fouad, Hanan Ahmed, Fatma Taha, Amira Hassouna and Hafez Hafez

Biofactors, 40: 132-137 (2014) IF: 3

Novel water-soluble curcumin derivatives have been developed to overcome low in vivo bioavailability of curcumin. The aim of this work is to assess the potential utility of certain downstream targets as bioavailability indicators of systemic activity of pure curcumin and two novel water-soluble curcumin derivatives

(NCD) by constructing dose-dependent response curves and to prove whether this novel curcumin derivatives retained, improved, or abolished biological activity of pure curcumin when applied in vivo. Pure curcumin (CUR), curcumin-carboxy derivative (NCD-1), and curcumin protein conjugate (NCD-2) were administered orally to rats at escalating doses: 37, 74, 148, and 296 µM/kg body weight, respectively. Plasma levels of GST activity, cavernous tissue levels of cGMP, and enzymatic activity of both HO-1 and GST were assessed one and half and 24 hours after oral administration of curcumin formulae. This study showed that there was a progressive elevation of cavernous tissue levels of cGMP and enzymatic activity of both HO-1 and GST in a dose-dependent manner that was maintained for 24 h with CUR, NCD-1, and NCD-2. Plasma GST activity was decreased by the lowest doses on the curve. The three dose-dependent bioavailability indicators as surrogates of curcumin and two of its novel derivatives are valid in the studied range of concentration and extended time. The novel curcumin derivatives still conserve with improvement the biological activity of natural curcumin when applied in vivo.

Keywords: Bioavailability Curcumin Novel Derivatives.

700. Pilot Study On Molecular Quantitation and Sequencing of Endometrial Cytokines Gene Expression and Their Effect On theOutcome of in Vitro Fertilization (Ivf) Cycle.

Dina Sabry Abd El Fatah

Journal of Advanced Research, 5(5): 595-600 (2014) IF: 3

Human trophoblast invasion and differentiation are essential for successful pregnancy outcome. The molecular mechanisms, however, are poorly understood. Interleukin (IL)-11, a cytokine, regulates endometrial epithelial cell adhesion. Leukemia inhibitory factor (LIF) is one of the key cytokines in the embryo implantation regulation. The present study aimed to assess the levels of LIF, IL-11, and IL-11 a receptor gene expression in the endometrium of women undergoing IVF and correlate their levels with the IVF pregnancy outcome. Also, the study aimed to detect any mutation in these three genes among IVF pregnant and nonpregnant women versus control menstrual blood of fertile women. Endometrial tissue biopsies were taken from 15 women undergoing IVF on the day of oocyte retrieval. The quantitative expression of IL-11, IL-11Ra, and LIF genes was assessed by real-time PCR and PCR products were sequenced. Menstrual blood from 10 fertile women was used as control to compare the DNA sequence versus DNA sequence of the studied genes in endometrial biopsies. LH, FSH, and E2 were assessed for enrolled patients by ELISA. Endometrial thickness was also assessed by pelvic ultrasonography. No significant difference was detected between quantitative expression of the three studied genes and pregnancy IVF outcome. Although DNA sequence changes were found in IL-11 and LIF genes of women with negative pregnancy IVF outcome compared to women with positive pregnancy IVF outcome, no DNA sequence changes were detected for IL-11Ra. Other studied parameters (e.g., age, LH, FSH, E2, and endometrial thickness) showed no significant differences or correlation of quantitative expression of the three studied involved genes. Data suggested that there were no significant differences between quantitative expression of IL-11, IL-11Ra, and LIF genes and the IVF pregnancy outcome. The present study may reveal that changes in IL-11 and LIF genes sequence may contribute in pregnancy IVF outcome.

Keywords: Dna Sequence; E2; Estradiol 2; Fsh; Follicular stimulating hormone; II-11; Interleukin 11; II-11Ra; Interleukin receptor A; Ivf; Ivf, In Vitro Fertilization; Interleukin-11 (II-11); Interleukin-11 Receptor A (II-11Ra); Lh; Luteinizing Hormone; Lif; Leukemia inhibitory factor; Leukemia inhibitory factor (Lif).

701. Expression of Tnf-α, April and BCMA in Behcet'S Disease

Olfat G. Shaker, Shereen O. Tawfic, Amira M. El-Tawdy, Mohamed H. M. El-Komy, Manal El Menyawi and Ahmed A. Heikal

Journal of Immunology Research, 380405: 1-6 (2014) IF: 2.934

Background: Tumor necrosis factor-alpha (TNF- α) is an important proinflammatory cytokine which plays an important role in the immunopathogenesis of Behcet's disease (BD). B cell activating factor (BAFF) and its homolog A proliferation inducing ligand (APRIL) are members of the tumor necrosis factor family. BAFF binds to 3 receptors, B cell activating factor receptor (BAFF-R), transmembrane activator and calcium modulator ligand interactor (TACI), and B cell maturation antigen (BCMA) that are expressed by B cells.

Objective: Estimation of the serum levels of TNF- α , APRIL, BAFF, and BCMA in patients with BD in an effort to evaluate their degree of involvement in the pathogenesis and development of BD.

Patients and Methods: This study included 30 male patients fulfilling the international study group criteria for the diagnosis of BD. Twenty age-matched healthy male volunteers served as control. Serum samples were used for quantification of TNF- α , APRIL, BCMA, BAFF, and hsCRP using ELISA techniques. **Results**: The mean serum levels of TNF- α , APRIL, BCMA, and BAFF were more elevated in cases than in controls in a statistically significant manner . Positive correlation was observed between hs-CRP and BDCAF (Behcet's disease current activity forum) index (r 0.68, . None of the TNF family members tested was affected by a positive pathergy test.

Conclusions: Patients have significantly higher levels of TNF family members' (TNF- α , BAFF, APRIL, and BCMA) compared to controls which might contribute to the pathogenesis of BD. **Keywords:** Tnf-A; Behcet'S Disease; Bdcaf.

702. Mesenchymal Stromal Cells Versus Betamethasone Can Dampen Disease Activity in theCollagen Arthritis Mouse Model

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Clin Exp Med, 14: 285-295 (2014) IF: 2.824

The objective of this study was to compare between the effects of mesenchymal stem cell (MSC) and betamethasone in the treatment of rheumatoid arthritis. Sixty male albino mice were divided equally into 2 models. They are MSC model, group 1: saline control group, group 2: collagen-induced arthritis (CIA), group 3: induced arthritis mice that received intravenous injection of MSCs. Betamethasone model, group 1: phosphate buffer saline, group 2: CIA, group 3: induced arthritis mice that received intravenous injection of betamethasone. Mice arthritis models were assessed by clinical paw edema and X-rays, at the proper time of sacrefaction, tissues were collected and examined using real-time PCR, and synovial tissue was examined for interleukin-10, tumor necrosis factor a, cartilage oligomeric matrix protein

and matrix metalloproteinase 3. While serum levels of rheumatoid factor and C-reactive protein were detected by enzyme-linked immunosorbent assay kits. Also blood erythrocyte sedimentation rate was detected. Histopathological, paw edema and PCR results showed improvement in the groups that received MSC compared with the diseased group and the groups which received betamethasone. MSC significantly enhanced the effect of collagen-induced arthritis treatment, which is superior to betamethasone treatment, likely through the modulation of the expression of various cytokines.

Keywords: Collagen-Induced Arthritis Stromal Cell Corticosteroid Rheumatoid Arthritis.

703. Potential Therapeutic Utility of Mesenchymal Stem Cells in Inflammatory Bowel Disease in Mice

Abdel Salam AG, Ata HM, Salman TM, Rashed LA, Sabry D and Schaalan MF

Int. Immunopharmacology, 22(2): 515-521 (2014) IF: 2.711

Mesenchymal stem cells (MSCs) were found to provide an effective therapeutic role in inflammatory diseases by modulating inflammatory responses and tissue regeneration by their differentiation ability. The present work sought to demonstrate the potential therapeutic use of MSCs in treating chronic inflammatory bowel disease (IBD) in mice. A new model to induce chronic IBD based on alternative administration periods of Dextran Sodium Sulfate (DSS) was established. Mice were divided into 2 groups; one was treated with MSCs and the other was treated with phosphate-buffered saline (PBS). Assessment of therapeutic efficacy of MSCs was by measuring weight, stool scoring, histopathological examination, and measuring the gene expression of inflammatory markers: Interleukin-23 (IL-23), Tumor necrosis factor-a (TNF-a), Interferon- γ (IFN- γ), and Intercellular adhesion molecule-1 (ICAM-1). The results showed that DSS administration causes bloody and watery stool, weight loss, and altered histopathologic picture. MSC treated mice showed a significant improvement in stool condition, weight gain, and normal histopathologic picture compared to the PBS treated mice. Moreover, gene expressions of inflammatory markers in the intestines of the MSC treated mice were also significantly lower than those of the PBS treated mice. In conclusion, the data here showed that MSCs have a clear potential efficacy in the treatment for IBD, as their immune modulation effects include inhibition in the expression of key inflammatory markers that each plays an important role in the pathogenesis of IBD.

Keywords: Bone Marrow Derived Mesenchymal Stem Cell Transplantation; Dss Induced Colitis; Immunomodulation.

704. Molecular Detection of Monocyte Chemotactic Protein-1 Polymorphism in Spontaneous Bacterial Peritonitis Patients

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World Journal of Gastroenterology, 20(33): 11793-11799 (2014) IF: 2.433

Aim: To investigate the association of the functional monocyte chemotactic protein-1 (MCP-1) promoter polymorphism (A-2518G) with spontaneous bacterial peritonitis (SBP).

Methods: Fifty patients with post-hepatitis C liver cirrhosis and ascites were categorized into two groups; group I included 25 patients with SBP and group II included 25 patients free from SBP. In addition, a group of 20 healthy volunteers were included. We assessed the MCP-1 gene polymorphism and gene expression as well as IL-10 levels in both blood and ascitic fluid.

Results: A significant MCP-1 gene polymorphism was detected in groups I and II (P = 0.001 and 0.02 respectively). Group II was associated with a significantly higher frequency of AG genotype [control 8 (40%) vs SBP 19 (76.0%), P < 0.001], and group II was associated with a significantly higher frequency of GG genotype when compared to healthy volunteers [control 1 (5%) vs cirrhotic 16 (64%), P < 0.001]. Accordingly, the frequency of G allele was significantly higher in both groups (I and II) [control 10 (25%) vs SBP 27 (54%), P < 0.001 and vs cirrhotic 37 (74.0%), P < 0.001, respectively]. The total blood and ascetic fluid levels of IL-10 and MCP-1 gene expression were significant reductions in the levels of MCP-1 gene expression and IL-10 in the whole blood and ascetic fluid after therapy.

Conclusion: MCP-1 GG genotype and G allele may predispose HCV infected patients to a more progressive disease course, while AG genotype may increase the susceptibility to SBP. Patients carrying these genotypes should be under supervision to prevent or restrict further complications.

Keywords: Monocyte Chemotactic Protein-1; Genotype;

Spontaneous Bacterial Peritonitis; Liver Cirrhosis; Ascites; Gene Expression; Interleukin-10.

705. Effects of A Novel Curcumin Derivative on Insulin Synthesis and Secretion in Streptozotocin-Treated Rat Pancreatic Islets in Vitro

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Chinese Medicine, 9: 2-12 (2014) IF: 2.343

Background: Hyperglycemia induces activation of the c-Jun Nterminal kinase (JNK) pathway, which suppresses insulin gene expression and reduces DNA binding of pancreatic and duodenal homeobox factor (PDX)-1. This study aims to investigate the effects of a novel curcumin derivative (NCD) on JNK signaling pathway on insulin synthesis and secretion in streptozotocin (STZ)-treated rat pancreatic islets in vitro.

Methods: Isolated rat pancreatic islets were divided into five groups: untreated control group; group treated with NCD (10 μ M); group exposed to STZ (5 mM); group treated with NCD (10 μ M) and then exposed to STZ (5 mM); and group exposed to STZ (5 mM) and then treated with NCD (10 μ M). The pancreatic islets from all groups were used for DNA fragmentation assays and quantitative assessments of the JNK, Pdx1, glucose transporter-2 (GLUT2), heme oxygenase (HO)-1, transcription factor 7-like 2 (TCF7L2), and glucagon-like peptide (GLP)-1 gene expression levels. The intracellular calcium, zinc, and the phosphorylated and total JNK protein levels were assessed. The insulin (secreted/total) and C-peptide levels were examined in islet culture medium.

Results: NCD protected pancreatic islets against STZ-induced DNA damage, improved total insulin (P=0.001), secreted insulin (P=0.001), and C-peptide levels (P=0.001), normalized mRNA

expressions of insulin, Pdx1, and GLUT ≥ 0 ($\oplus 001$), and significantly elevated calcium and zinc levels $\notin 0.0001$). All effects were significant when islets were treated with NCD before STZ (P=0.05). JNK gene overexpression and JNK protein levels induced by STZ were significantly inhibited after NCD treatment of islets (P=0.0001). NCD -treated islets showed significantly elevated gene expressions of HO-1, TCF7L2, and GLP-1 (P=0.0001), and these upregulated gene expressions were more significantly elevated with NCD treatment before STZ than after STZ (P=0.05).

Conclusions: NCD improved insulin synthesis and secretion in vitro in isolated pancreatic islets treated with STZ through inhibition of the JNK pathway, up-regulation of the gene expressions of HO-1, TCF7L2, and GLP-1 and enhancing effects on calcium and zinc levels.

Keywords: Curcumin; Insulin; Synthesis; Secretion; Diabetes.

706. The Potential Impact of P53 and APO-1 Genetic Polymorphisms On Hepatitis C Genotype 4A Susceptibility

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Gene, 550: 40-45 (2014) IF: 2.082

The hepatitis C virus (HCV), the main cause of morbidity and mortality, is endemic worldwide. HCV causes cirrhosis and other complications that often lead to death. HCV is most common in underdeveloped nations, with the highest prevalence rates in Egypt. Tumor suppressor gene (P53) induces the expression of apoptotic antigen-1 gene (APO-1) by binding to its promoter for mediating apoptosis; an important mechanism for limiting viral replication. This study aims at investigating the impact of P53 72 Arg/Pro and APO-1 -670 A/G polymorphisms on HCV genotype 4a susceptibility. Two hundred and forty volunteers were enrolled in this study and divided into two major groups; 160 HCV infected patient group and 80 healthy control group. HCV patients were classified according to Metavir scoring system into two subgroups; 72 patients in F0/1-HCV subgroup (patients with no or mild fibrotic stages) and 38 patients in F3/4-HCV subgroup (patients with advanced fibrotic stages). Quantification of HCV-RNA by qRT-PCR and fibrotic scores as well as genotyping of HCV-RNA, P53 at 72 Arg/Pro, and APO-1 at -670 A/G were performed for all subjects. It was resulted that F0/1-HCV patients have significant differences of P53 at 72 (Pro/Pro and Arg/Arg) genotypes and dominant/recessive genetic models as well as APO-1 -670 A/A genotype and dominant genetic model as compared to F3/4-HCV patients. Moreover, HCV patients have significant differences of P53 at 72 (Pro/Pro) genotype and recessive genetic model as well as APO-1 -670 A/A genotype and dominant genetic model as compared to those of healthy individuals. Finally, it was concluded that P53 rs 1042522 (Pro/Pro and Arg/Arg) genotypes and APO-1 rs 1800682 A/A genotype may be potentially used as sensitive genetic markers for HCV genotype 4a susceptibility.

Keywords: P53 Arg72pro- Apo-1 -670A/G- Snps -Hcv Genotype 4A.

707. Association Between TNF Promoter -308 G>A and LTA 252 A>G Polymorphisms and Systemic Lupus Erythematosus

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Molecular Biology Reports, 41(4): 2029-2036 (2014) IF: 1.958

Tumor necrosis factor (TNF) and lymphotoxin alpha (LTA) are pivotal cytokines in the pathogenesis of systemic lupus erythematosus (SLE). To investigate the possible association of the polymorphism of the TNF promoter gene -308 and that of the LTA gene 252 with susceptibility to SLE and with phenotypic disease features in Egyptian patients. A case control study involving 100 SLE patients and 100 unrelated healthy controls. Polymerase chain reaction and restriction fragment length polymorphism methods were applied to detect genetic polymorphism. We found that TNF-308 genotype AA was significantly increase by 26 % in SLE patients compared to 10 % in the control group (p = 0.003; OR 3.16; CI 1.43-6.98) and the frequency of the A allele of the TNF promoter -308 was significantly higher in the SLE patients (42 %) than in the control subjects (24 %) (p < 0.001; OR 2.29; 95 % CI 1.49-3.52). Genotype LTA 252 GG showed a significant increase by 22 % in SLE patients compared to 6 % in the control group (p = 0.001; OR 4.42; 95 % CI 1.71-11.44), and the frequency of the G allele of the LTA was significantly higher in the SLE patients (38 %) than in the control subjects (21 %) (p < 0.001; OR 2.31; 95 % CI 1.48-3.6). Genotype (AA+GA) of TNF was significantly associated with clinical manifestations as malar rash, arthritis, oral ulcers, serositis and systemic lupus erythematosus disease activity index. Genotype (GG+GA) of LTA was significantly associated with arthritis. These results suggest that TNF and LTA genetic polymorphisms contribute to SLE susceptibility in the Egyptian population and are associated with disease characteristics. TNF-308 and LTA+252 polymorphic markers may be used for early diagnosis of SLE and early prediction of clinical manifestations, like arthritis.

Keywords: Sle; TNF; LTA; Arthritis and Sledai.

708. Bridging Defects in Chronic Spinal Cord Injury Using Peripheral Nerve Grafts Combined With A Chitosan-Laminin Scaffold and Enhancing Regeneration Through Them By Co-Transplantation With Bone-Marrow-Derived Mesenchymal Stem Cells: Case Series of 14 Patients

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J Spinal Cord Med, 37: 54-71 (2014) IF: 1.878

Objective: To investigate the effect of bridging defects in chronic spinal cord injury using peripheral nerve grafts combined with a chitosan-laminin scaffold and enhancing regeneration through them by co-transplantation with bone-marrow-derived mesenchymal stem cells.

Methods: In 14 patients with chronic paraplegia caused by spinal cord injury, cord defects were grafted and stem cells injected into the whole construct and contained using a chitosan-laminin paste. Patients were evaluated using the International Standards for Classification of Spinal Cord Injuries.

Results: Chitosan disintegration leading to post-operative seroma formation was a complication. Motor level improved four levels in 2 cases and two levels in 12 cases. Sensory-level improved six levels in two cases, five levels in five cases, four levels in three cases, and three levels in four cases. A four-level neurological improvement was recorded in 2 cases and a two-level neurological improvement occurred in 12 cases. The American Spinal Impairment Association (ASIA) impairment scale improved from A to C in 12 cases and from A to B in 2 cases. Although motor power improvement was recorded in the abdominal muscles (2 grades), hip flexors (3 grades), hip adductors (3 grades), knee extensors (2-3 grades), ankle dorsiflexors (1-2 grades), long toe extensors (1-2 grades), and plantar flexors (0-2 grades), this improvement was too low to enable them to stand erect and hold their knees extended while walking unaided.

Conclusion: Mesenchymal stem cell-derived neural stem cell-like cell transplantation enhances recovery in chronic spinal cord injuries with defects bridged by sural nerve grafts combined with a chitosan-laminin scaffold.

Keywords: Nerve Grafting; Neurorecovery; Paraplegia; Spinal Cord Injuries; Stem Cell Transplantation.

709. Vitamin D and IL28B Genotyping as Predictors for Antiviral Therapy: A Retrospective Study in Egyptian HCV Genotype 4a

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Tropical Journal of Pharmaceutic Al Research, 13 (10): 1725-1732 (2014) IF: 0.495

Purpose: To evaluate the role of pre-treatment vitamin D serum level and interleukin28B (IL28B) (rs 12979860) polymorphism in chronic hepatitis C (CHC) genotype 4a patients treated with pegylated interferon a2-A and ribavirin (peg IFN+RBV) as predictors of response.

Methods: A retrospective study of clinical and pathological data and stored blood samples of 150 naïve chronic hepatitis C (CHC) genotype 4a patients, treated with pegylated interferon and ribavirin for 48 weeks. Follow-up to detect sustained virological response (SVR) was carried out. Based on SVR, two groups were studied; group 1 consisted of 75 responder patients to pegylated IFN + RBV therapy while group 2 comprised of 75 non-responder patients to standard hepatitis C virus (HCV) therapy. Vitamin D serum levels were assessed using Enzyme Linked Immunoassay (ELISA), quantitative reverse transcriptase- polymerase chain reaction (qRT-PCR for HCV RNA), and IL28B gene polymorphism by Restriction Fragment Length Polymorphism Polymerase Cchain Reaction (RFLP-PCR).

Results: Pretreatment vitamin D level was significantly higher in group 1 than in group 2 (p < 0.001). The sensitivity and specificity of vitamin D level for prediction of SVR at a cutoff value of 29.75 ng/ml were 100 and 96 %, respectively, with area under the curve (AUC) of 0.995 (p < 0.001). A significant difference was detected between baseline vitamin D level for early versus advanced fibrosis stage (p = 0.01) in group 1. **Conclusion**: Pretreatment vitamin D serum level (at a cutoff value of 29.75 ng/ml), IL28B gene polymorphism and quantitative HCV RNA are independent trait predictors of SVR. **Keywords**: Vitamin D; Interleukin 28B; Chronic Hepatitis C; Sustained Virological Response (SVR); Antiviral; Genotyping. Dept. of Medical BioChemsitry

710. The Role of Bone Marrow Derived-Mesenchymal Stem Cells in Attenuation of Kidney Function in Rats With Diabetic Nephropathy

Abdel Aziz MT, Wassef MA, Ahmed HH, Rashed L, Mahfouz S, Aly MI, Hussein RE and Abdelaziz M.

Diabetology & Metabolic Syndrome, 1758-5996: 34-44 (2014) IF: 2.5

Background: Stem cell therapy holds a great promise for the repair of injured tissues and organs, including the kidney. We studied the effect of mesenchymal stem cells (MSC) on experimental diabetic nephropathy (DN) in rats and the possible paracrine signals that mediate their action.

Materials and Methods: Rats were divided into controls, DN rats, DN rats receiving MSCs. MSCs were given in a dose of (106cells) by intravenous injection. After 4 weeks, 24 h urinary albumin, serum urea and creatinine concentrations, transforming growth factor β (TGF β), tumor necrosis factor α (TNF α), B-cell lymphoma 2 (bcl2) and Bax gene expression and vascular endothelial growth factor (VEGF) were assessed. Histopathology staining was performed.

Results: MSC therapy significantly improved 24 h urinary albumin, serum urea and creatinine concentrations, increased angiogenic growth factor VEGF, and anti-apoptotic protein bcl2 while decreased the pro-inflammatory TNF- α , fibrogenic growth factor TGF β , and pro-apoptotic protein Bax. The histopathology examination showed patchy areas of minimal necrosis and degeneration in renal tubules.

Keywords: Stem Cells Therapy, Mesenchymal Stem Cells, Diabetic Nephropathy.

Dept. of Neurology

711. Global, Regional, and National Incidence and Mortality for HIV, Tuberculosis, and Malaria During 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013

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Lancet, 384: 1005-1070 (2014) IF: 39.207

Background: The Millennium Declaration in 2000 brought special global attention to HIV, tuberculosis, and malaria through the formulation of Millennium Development Goal (MDG) 6. The Global Burden of Disease 2013 study provides a consistent and comprehensive approach to disease estimation for between 1990 and 2013, and an opportunity to assess whether accelerated progress has occured since the Millennium Declaration.

Methods: To estimate incidence and mortality for HIV, we used the UNAIDS Spectrum model appropriately modified based on a systematic review of available studies of mortality with and without antiretroviral therapy (ART). For concentrated epidemics, we calibrated Spectrum models to fit vital registration data corrected for misclassification of HIV deaths. In generalised epidemics, we minimised a loss function to select epidemic curves most consistent with prevalence data and demographic data for all-cause mortality. We analysed counterfactual scenarios for HIV to assess years of life saved through prevention of mother-to-child transmission (PMTCT) and ART For tuberculosis, we analysed vital registration and verbal autopsy data to estimate mortality using cause of death ensemble modelling. We analysed data for corrected case-notifications, expert opinions on the case-detection rate, prevalence surveys, and estimated cause-specific mortality using Bayesian metaregression to generate consistent trends in all parameters. We analysed malaria mortality and incidence using an updated cause of death database, a systematic analysis of verbal autopsy validation studies for malaria, and recent studies (2010-13) of incidence, drug resistance, and coverage of insecticide-treated bednets.

Findings: Globally in 2013, there were 1.8 million new HIV infections (95% uncertainty interval 1.7 million to 2.1 million), 29.2 million prevalent HIV cases (28.1 to 31.7), and 1.3 million HIV deaths (1.3 to 1.5). At the peak of the epidemic in 2005, HIV caused 1.7 million deaths (1.6 million to 1.9 million). Concentrated epidemics in Latin America and eastern Europe are substantially smaller than previously estimated.

Through interventions including PMTCT and ART, $19 \cdot 1$ million life-years (16.6 million to $21 \cdot 5$ million) have been saved, $70 \cdot 3\%$ (65.4 to 76.1) in developing countries. From 2000 to 2011, the ratio of development assistance for health for HIV to years of life saved through intervention was US\$4498 in developing countries. Including in HIV-positive individuals, all-form tuberculosis incidence was 7.5 million (7.4 million to 7.7 million), prevalence was 11.9 million (11.6 million to 12.2 million), and number of deaths was 1.4 million (1.3 million to 1.5 million) in 2013. In the same year and in only individuals who were HIV-negative, all-form tuberculosis incidence was 7.1 million (6.9 million to 7.3 million), prevalence was 11.2 million (10.8 million to 11.6 million), and number of deaths was 1.3 million (1.2 million to 1.4 million).

Annualised rates of change (ARC) for incidence, prevalence, and death became negative after 2000. Tuberculosis in HIV-negative individuals disproportionately occurs in men and boys (versus women and girls); $64 \cdot 0\%$ of cases ($63 \cdot 6$ to $64 \cdot 3$) and $64 \cdot 7\%$ of deaths ($60 \cdot 8$ to $70 \cdot 3$). Globally, malaria cases and deaths grew rapidly from 1990 reaching a peak of 232 million cases (143 million to 387 million) in 2003 and $1 \cdot 2$ million deaths ($1 \cdot 1$ million to $1 \cdot 4$ million) in 2004. Since 2004, child deaths from malaria in sub-Saharan Africa have decreased by $31 \cdot 5\%$ ($15 \cdot 7$ to $44 \cdot 1$). Outside of Africa, malaria mortality has been steadily decreasing since 1990.

Interpretation: Our estimates of the number of people living with HIV are 18.7% smaller than UNAIDS's estimates in 2012. The number of people living with malaria is larger than estimated by WHO. Incidence rates for HIV, tuberculosis, and malaria have all decreased since 2000. At the global level, upward trends for malaria and HIV deaths have been reversed and declines in tuberculosis deaths have accelerated. 101 countries (74 of which are developing) still have increasing HIV incidence. Substantial progress since the Millennium Declaration is an encouraging sign of the effect of global action.

Keywords: Incidence HIV; Tuberculosis; Malaria; Systematic analysis.

712. Global, Regional, and National Levels and Causes of Maternal Mortality During 1990-2013: A Systematic Analysis for the Global Burden of Disease Study 2013

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Lancet, 384: 980-1004 (2014) IF: 39.207

Background: The fifth Millennium Development Goal (MDG 5) established the goal of a 75% reduction in the maternal mortality ratio (MMR; number of maternal deaths per 100000 livebirths) between 1990 and 2015. We aimed to measure levels and track trends in maternal mortality, the key causes contributing to maternal death, and timing of maternal death with respect to delivery.

Methods: We used robust statistical methods including the Cause of Death Ensemble model (CODEm) to analyse a database of data for 7065 site-years and estimate the number of maternal deaths from all causes in 188 countries between 1990 and 2013. We estimated the number of pregnancy-related deaths caused by HIV on the basis of a systematic review of the relative risk of dying during pregnancy for HIV-positive women compared with HIVnegative women. We also estimated the fraction of these deaths aggravated by pregnancy on the basis of a systematic review. To estimate the numbers of maternal deaths due to nine different causes, we identified 61 sources from a systematic review and 943 site-years of vital registration data. We also did a systematic review of reports about the timing of maternal death, identifying 142 sources to use in our analysis. We developed estimates for each country for 1990-2013 using Bayesian meta-regression. We estimated 95% uncertainty intervals (UIs) for all values.

Findings: 292 982 (95% UI 261 017–327 792) maternal deaths occurred in 2013, compared with 37034 (343 483 –407 574) in 1990. The global annual rate of change in the MMR was0.3% (–1·1 to 0·6) from 1990 to 2003, and–2·7% (–3·9 to –1·5) from 2003 to 2013, with evidence of continued acceleration. MMRs reduced consistently in south, east, and southeast Asia between 1990 and 2013, but maternal deaths increased in much of sub-Saharan Africa during the 1990s. 2070 (1290–2866) maternal deaths were related to HIV in 2013, 0·4% (0·2–0·6) of the global total. MMR was highest in the oldest age groups in both 1990 and 2013. In 2013, most deaths occurred intrapartum or postpartum. Causes varied by region and between 1990 and 2013. We recorded substantial variation in the MMR by country in 2013, from 956·8 (685·1–1262·8) in South Sudan to 2·4 (1·6–3·6) in Iceland.

Interpretation: Global rates of change suggest that only 16 countries will achieve the MDG 5 target by 2015. Accelerated reductions since the Millennium Declaration in 2000 coincide with increased development assistance for maternal, newborn, and child health. Setting of targets and associated interventions for after 2015 will need careful consideration of regions that are making slow progress, such as west and central Africa. **Keywords**: Maternal mortality; Systematic analysis.

713. Burden of Stroke in Egypt: Current Status and Opportunities

Foad Abd-Allah and Ramez Reda Moustafa

International Journal of Stroke, 9: 1105-1108 (2014) IF: 4.029

Middle East and North Africa (MENA) countries have a diversity of populations with similar life style, dietary habits, and vascular risk factors that may influence stroke risk, prevalence, types, and disease burden. Egypt is the most populated nation in the Middle East with an estimated 85.5 million people. In Egypt, according to recent estimates, the overall prevalence rate of stroke is high with a crude prevalence rate of 963/100.000 inhabitants. In spite of disease burden, yet there is a huge evidence practice gap. The recommended treatments for ischemic stroke that are guideline include systematic supportive care in a stroke unit or stroke center is still deficient. In addition, the frequency of thrombolysis in Egypt is very low for many reasons; the major one is that the health insurance system is not covering thrombolysis therapy in nonprivate sectors so patients must cover the costs using their own personal savings; otherwise, they will not receive treatment. Another important factor is the pronounced delay in prehospital and in hospital management of acute stroke. Improvement of stroke care in Egypt should be achieved through multi and interdisciplinary approach including public awareness, physicians' education, and synergistic approach to stroke care with Emergency Medical System.

Keywords: Egypt; Middle East; WHO; Burden Of Stroke; Opportunities; Stroke Facilities.

714. Prevalence of Intracranial Atherosclerosis Among Patients With Coronary Artery Disease: A 1-Year Hospital-Based Study

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European Neurology, 71: 326-330 (2014) IF: 1.362

Background: There are limited data on the prevalence of intracranial atherosclerotic disease (ICAD) in patients with coronary artery disease (CAD) worldwide and especially among Egyptians. The purpose of the present study was to determine the prevalence and correlates of ICAD in patients with CAD. **Methods**: From January 1, 2012 to January 1, 2013, we recruited 118 consecutive patients who had ischemic heart disease. All patients were assessed for vascular risk factors and the existence of stroke or transient ischemic attack (TIA) and were evaluated by extracranial and transcranial color-coded sonography. All patients underwent coronary angiography. Clinical, echocardiographic and angiographic variables were tested by univariate and multivariate analysis.

Results: Out of 118 consecutive patients with CAD, intracranial disease was detected in 14 patients (11.9%). Eight patients (6.8%) had stenosis >50%, while 6 patients (5.1%) had stenosis <50%. The univariate analysis showed that the strongest variables associated with ICAD were the presence of recent or old stroke or TIA, followed by moderate or severe extracranial stenosis, and multivessel or left main CAD.

Conclusion: We observed low prevalence (6.8%) of high-grade ICAD among Egyptian patients with CAD. Multivessel or left main CAD and moderate-to-severe extracranial carotid stenosis were the strongest predictors for the existence of ICAD among CAD patients.

Keywords: Intracranial atherosclerotic disease; Coronary artery disease; Transcranial color-coded sonography.

Dept. of NeuroSurgery

715. Free-Hand Placement of Occipital Condyle Screws: A Cadaveric Study

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European Spine Journal, 23: 2182-2188 (2014) IF: 2.473

Purpose: Cranio-vertebral junction fixation is challenging due to the complex topographical anatomy and the presence of important anatomical structures. There are several limitations to the traditional occipital squama fixation methods. The purpose of this work is to assess the safety and feasibility of a new optimum trajectory of occipital condyle (OC) screws for occipitocervical fixation via a free-hand technique.

Methods: Eight different parameters of OC morphology were studied in fifty adult skulls. Free-hand placement of OC screws was performed in five cadavers using 3.5-mm titanium polyaxial screws and a 3-mm rod construct (C0-C1-C2). Postoperative computed tomography was performed to determine the success of the screw placement and their angulation, length and effect on hypoglossal canal volume.

Results: The average length, width and height of the OC were 24.2 \pm 3.6, 14.2 \pm 1.9, and 10.7 \pm 2 mm, respectively. The average medio-lateral, hypoglossal canal and atlanto-occipital joint angles were 38.8° medially \pm 5°, 7.4° rostrally \pm 1.9° and 23.4° caudally \pm 3.5°, respectively. The ten screws were successfully inserted using a free-hand technique with bicortical purchase. There was no vertebral artery injury or breach of the hypoglossal canal in any specimen. The average screw length was 22.2 \pm 3.9 mm. The average medio-lateral angle was 30° medially \pm 6.7°. The average cranio-caudal angle was 4° caudally \pm 6.2°.

Conclusions: The free-hand technique of OC screw placement is a safe and viable option for occipitocervical fixation and may be a preferred alternative in selected cases. However, further studies are needed to compare its safety and reliability to other more established methods.

Keywords: Cranio-vertebral Junction; Occipitocervical fixation; Occipital condyle screws; Optimum trajectory.

716. Endoscopic Treatment of Intraparenchymal Arachnoid Cysts in Children

Nasser M. F. El-Ghandour

J Neurosurg Pediatrics, 14: 501-507 (2014) IF: 1.37

Object: Arachnoid cysts account for 1% of all intracranial lesions. They usually occur in the subarachnoid space of the major cerebral fissures and arachnoid cisterns. They are very rarely located within the brain parenchyma devoid of communication with the subarachnoid space. The author of this study evaluated the role of endoscopy in the treatment of intraparenchymal arachnoid cysts (IPACs), which have a paraventricular location noncontiguous with the basal cisterns.

Methods: The records of all patients who had undergone surgery performed by one neurosurgeon between March 2004 and October 2011 were retrospectively reviewed to find cases of arachnoid cysts with a paraventricular location noncontiguous with the basal cisterns that were treated with a purely endoscopic cystoventriculostomy. Data were collected, summarized, and analyzed as regards improvement in symptomatology, decrease in cyst size, improvement in hydrocephalus, incidence of complications, surgical failure, and incidence of recurrence.

Results: Twelve pediatric patients with symptomatic IPACs were included in this study. The group included 7 boys and 5 girls with a mean age of 5.2 years. All of the patients had undergone endoscopic cystoventriculostomy. In addition, endoscopic third ventriculostomy had been performed during the same operative session in 3 patients who had associated hydrocephalus. Significant clinical improvement occurred in 10 patients (83.3%). Postoperative imaging showed a reduction in the cyst size in 9 patients (75%), whereas the cyst size was unchanged in the remaining 3 patients (25%). A reduction in ventricle size occurred in 2 (66.7%) of the 3 patients who had hydrocephalus. A postoperative subdural hygroma occurred in 2 patients (16.7%) and required the insertion of a subduroperitoneal shunt in 1 patient. During the follow-up period (mean 42.5 months), 1 patient had a recurrence and required a repeat endoscopic procedure.

Conclusions: Endoscopic cystoventriculostomy is recommended in the treatment of symptomatic IPACs. It maintains the basic strategy of cyst fenestration into the lateral ventricle without either the invasiveness of open craniotomy or the implantation of shunt systems. The procedure is simple, effective, and minimally invasive. It saves operative and recovery times and is associated with low morbidity and mortality rates.

Keywords: Eeg = Electroencephalography; Etv = Endoscopic Third Ventriculostomy; Ipac = Intraparenchymal Arachnoid Cyst; Arachnoid Cyst; Congenital; Cystoventriculostomy; Endoscopy; Intraparenchymal

Dept. of Obstetrics and Gynecology

717. Gonadotropin-Releasing Hormone Agonist Versus HCG for Oocyte Triggering in Antagonist-Assisted Reproductive Technology

Youssef MAFM, Van der Veen F, Al-Inany HG, Mochtar MH, Griesinger G, Nagi Mohesen M, Aboulfoutouh I and van Wely M

Cochrane Database Syst Rev, 8: 1-59 (2014) IF: 5.939

Objectives: To evaluate the effectiveness and safety of GnRH agonists in comparison with HCG for triggering final oocyte maturation in IVF and ICSI for women undergoing COH in a GnRH antagonist protocol.

Search Methods: We searched databases including the Menstrual Disorders and Subfertility Group (MDSG) Specialised Register of Controlled Trials, the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, PsycINFO, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and trial registers for published and unpublished articles (in any language) on randomised controlled trials (RCTs) of gonadotropin-releasing hormone agonists versus HCG for oocyte triggering in GnRH antagonist IVF/ICSI treatment cycles. The search is current to 8 September 2014.

Selection Criteria: RCTs that compared the clinical outcomes of GnRH agonist triggers versus HCG for final oocyte maturation triggering in women undergoing GnRH antagonist IVF/ICSI treatment cycles were included.

Data Collection and Analysis: Two or more review authors independently selected studies, extracted data and assessed study risk of bias. Treatment effects were summarised using a fixed-effect model, and subgroup analyses were conducted to explore potential sources of heterogeneity. Treatment effects were expressed as mean differences (MDs) for continuous outcomes and as odds ratios (ORs) for dichotomous outcomes, together with 95% confidence intervals (CIs). Primary outcomes were live birth

and rate of ovarian hyperstimulation syndrome (OHSS) per women randomised. Grades of Recommendation, Assessment, Development and Evaluation (GRADE) methods were used to assess the quality of the evidence for each comparison.

Main Results: We included 17 RCTs (n = 1847), of which 13 studies assessed fresh autologous cycles and four studies assessed donor-recipient cycles. In fresh autologous cycles, GnRH agonists were associated with a lower live birth rate than was seen with HCG (OR 0.47, 95% CI 0.31 to 0.70; five RCTs, 532 women, I(2) = 56%, moderate-quality evidence). This suggests that for a woman with a 31% chance of achieving live birth with the use of HCG, the chance of a live birth with the use of an GnRH agonist would be between 12% and 24%. In women undergoing fresh autologous cycles, GnRH agonists were associated with a lower incidence of mild, moderate or severe OHSS than was HCG (OR 0.15, 95% CI 0.05 to 0.47; eight RCTs, 989 women, $I^2 = 42\%$, moderate-quality evidence). This suggests that for a woman with a 5% risk of mild, moderate or severe OHSS with the use of HCG, the risk of OHSS with the use of a GnRH agonist would be between nil and 2%.In women undergoing fresh autologous cycles, GnRH agonists were associated with a lower ongoing pregnancy rate than was seen with HCG (OR 0.70, 95% CI 0.54 to 0.91; 11 studies, 1198 women, I(2) = 59%, low-quality evidence) and a higher early miscarriage rate (OR 1.74, 95% CI 1.10 to 2.75; 11 RCTs, 1198 women, $I^2 = 1\%$, moderate-quality evidence). However, the effect was dependent on the type of luteal phase support provided (with or without luteinising hormone (LH) activity); the higher rate of pregnancies in the HCG group applied only to the group that received luteal phase support without LH activity (OR 0.36, 95% CI 0.21 to 0.62; I(2) = 73%, five RCTs, 370 women). No evidence was found of a difference between groups in risk of multiple pregnancy (OR 3.00, 95% CI 0.30 to 30.47; two RCTs, 62 women, I(2) = 0%, low-quality evidence). In women with donor-recipient cycles, no evidence suggested a difference between groups in live birth rate (OR 0.92, 95% CI 0.53 to 1.61; one RCT, 212 women) or ongoing pregnancy rate (OR 0.88, 95% CI 0.58 to 1.32; three RCTs, 372 women, $I^2 = 0\%$). We found evidence of a lower incidence of OHSS in the GnRH agonist group than in the HCG group (OR 0.05, 95% CI 0.01 to 0.28; three RCTs, 374 women, I² = 0%). The main limitation in the quality of the evidence was risk of bias associated with poor reporting of methods in the included studies.

Authors' Conclusions: Final oocyte maturation triggering with GnRH agonist instead of HCG in fresh autologous GnRH antagonist IVF/ICSI treatment cycles prevents OHSS to the detriment of the live birth rate. In donor-recipient cycles, use of GnRH agonists instead of HCG resulted in a lower incidence of OHSS, with no evidence of a difference in live birth rate.Evidence suggests that GnRH agonist as a final oocyte maturation trigger in fresh autologous cycles is associated with a lower live birth rate, a lower ongoing pregnancy rate (pregnancy beyond 12 weeks) and a higher rate of early miscarriage (less than 12 weeks). GnRH agonist as an oocyte maturation trigger could be useful for women who choose to avoid fresh transfers (for whatever reason), women who donate oocytes to recipients or women who wish to freeze their eggs for later use in the context of fertility preservation.

Keywords: Oocyte Trigger; Hcg; Ivf; Gnrh Antagonist.

718. Post-Embryo Transfer Interventions for Assisted Reproduction Technology Cycles

Abou-Setta AM, Peters LR, D'Angelo A, Sallam HN, Hart RJ and Al-Inany HG

Cochrane Database Syst Rev, 8: 1-32 (2014) IF: 5.939

Background: In women undergoing in vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI), embryos transferred into the uterine cavity can be expelled due to many factors including uterine peristalsis and contractions, low site of deposition and negative pressure generated when removing the transfer catheter. Techniques to reduce the risk of embryo loss following embryo transfer (ET) have been described but are not standard in all centres conducting ET.

Objectives: To evaluate the efficacy of interventions used to prevent post-transfer embryo expulsion in women undergoing IVF and ICSI.

Search Methods: We searched the Menstrual Disorders and Subfertility Group Specialised Register of controlled trials to June 2014 and PubMed, MEDLINE, EMBASE, CENTRAL, PsycINFO, CINAHL, World Health Organization ICTRP, and trial registers from inception to June 2014, with no language restrictions. Additionally, we handsearched reference lists of relevant articles, and ESHRE and ASRM conference abstracts.

Selection Criteria: We included randomised controlled trials (RCTs) of interventions used to prevent post-transfer embryo expulsion in women undergoing IVF and ICSI. Two review authors independently screened titles and abstracts and reviewed the full-texts of all potentially eligible citations to determine whether they met our inclusion criteria. Disagreements were resolved by consensus.

Data Collection and Analysis: Two review authors independently extracted data and assessed the risk of bias of included trials using standardised, piloted data extraction forms. Data were extracted to allow intention-to-treat analyses. Disagreements were resolved by consensus. The overall quality of the evidence was rated using GRADE methods.

Main Results: We included four RCTs (n = 1392 women) which administered the following interventions: bed rest (two trials), fibrin sealant (one trial), and mechanical closure of the cervix (one trial).

Our primary outcome, live birth rate, was not reported in any of the included trials; nor were the data available from the corresponding authors. For the ongoing pregnancy rate, two trials comparing more bed rest with less bed rest showed no evidence of a difference between groups (odds ratio (OR) 0.88; 95% confidence interval (CI) 0.60 to 1.31, 542 women, I(2) = 0%, low quality evidence).

Secondary outcomes were sporadically reported with the exception of the clinical pregnancy rate, which was reported in all of the included trials. There was no evidence of a difference in clinical pregnancy rate between more bed rest and less bed rest (OR 0.88; 95% CI 0.60 to 1.31, 542 women, I(2) = 0%, low quality evidence) or between fibrin sealant and usual care (OR 0.98; 95% CI 0.54 to 1.78, 211 women, very low quality evidence). However, mechanical closure of the cervix was associated with a higher clinical pregnancy rate than usual care (OR 1.92; 95% CI 1.40 to 2.63, very low quality evidence).

The quality of the evidence was rated as low or very low for all outcomes. The main limitations were failure to report live births, imprecision and risk of bias. Overall, the risk of bias of the included trials was high. The use of a proper method of randomisation and allocation concealment was fairly well reported, while only one trial clearly reported blinding. There was no evidence that any of the interventions had an effect on adverse event rates but data were too few to reach any conclusions.

Authors' Conclusions: There is insufficient evidence to support any specific length of time for women to remain recumbent, if at all, following embryo transfer, nor is there sufficient evidence to recommend the use of fibrin sealants added to the embryo transfer fluid. There is very limited evidence to support the use of mechanical pressure to close the cervical canal following embryo transfer. Further well-designed and powered studies are required to determine the true effectiveness and safety of these interventions.

Keywords: Et; Ivf; Icsi; Rest.

719. Prevalence of Coagulation Factor XIII and Plasminogen Activator Inhibitor-1 Gene Polymorphisms Among Egyptian Women Suffering from Unexplained Primary Recurrent Miscarriage

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Journal of Reproductive Immunology, 103: 18-22 (2014) IF: 2.373

Recurrent miscarriage (RM) is an obstetric challenge. Polymorphisms of factor XIII (FXIII) and plasminogen activator inhibitor-1 (PAI-1) may cause an imbalance between coagulation and fibrinolysis that can end in RM. The aim of the work was to determine the prevalence of FXIII Val34Leu and PAI-1 4G/5G gene polymorphisms in Egyptian women presenting with unexplained primary first trimester RM. Genotyping of 120 unexplained primary first trimester RM patients and 130 healthy controls by polymerase chain reaction (PCR) amplification of target genes followed by the allele-specific restriction enzyme digestion (RFLP technique). Among the cases, 67.5% of individuals had wild-type FXIII; 21.7% were heterozygous and 10.8% were homozygous for the FXIII Val34Leu polymorphism. Among controls, the proportions were 89.2%, 8.5% and 2.3% respectively. In addition, comparison between the two groups regarding Leu and 4G allele frequencies showed statistically significant differences (P values = 0.0001 and 0.027 respectively). RM is more frequent in women with combined polymorphisms than in women with a single gene polymorphism (RR = 3.91; OR = 4.51; 95% CI = 1.79-11.38; P = 0.002). FXIII Val34Leu and PAI-1 4G/5G polymorphisms are prevalent in Egyptian women, with unexplained primary first trimester RM and combined polymorphisms statistically increasing the risk.

Keywords: Recurrent miscarriage; Polymorphism; Plasminogen activator inhibitor-1; Coagulation factor XIII.

720. A Prospective Randomized Clinical Trial Comparing Immediate Versus Delayed Removal of Urinary Catheter Following Elective Cesarean Section

Akmal El-Mazny, Mohamed El-Sharkawy and Amr Hassan

European Journal of Obstetrics & Gynecology and Reproductive Biology, 181: 111-114 (2014) IF: 1.627

Objective: To compare immediate and 12h postoperative removal of urinary catheter after elective cesarean section.

Study Design: In a prospective clinical trial at a university teaching hospital, 300 eligible women admitted for primary or repeat elective cesarean section were randomized into two equal groups. In group A, the catheter was removed immediately after the procedure; whereas in group B, the catheter was removed 12h postoperatively.

Results: The incidence of postoperative significant bacteruria (p=0.020), dysuria (p=0.030), burning on micturition (p=0.016), urinary frequency (p=0.031), and urgency (p=0.011) were significantly lower in group A compared with group B. The mean postoperative ambulation time (p<0.001), time till the first voiding (p<0.001), and length of hospital stay (p<0.001) were also significantly shorter in group A. There were no significant differences between the two groups in the incidence of urinary retention necessitating recatheterization (p=0.371).

Conclusion: Immediate removal of urinary catheter after elective cesarean section is associated with lower risk of urinary infection and earlier postoperative ambulation.

Keywords: Cesarean section; Urinary catheter; Urinary infection.

721. Does Flushing the Endometrial Cavity With Follicular Fluid After Oocyte Retrieval Affect Pregnancy Rates in Subfertile Women Undergoing Intracytoplasmic Sperm Injection? A Randomized Controlled Trial

Hashish NM, Badway HS, Abdelmoty HI, Mowafy A and Youssef MA

The European Journal of Obstetrics and Gynecology And Reproductive Biology, (176): 153-157 (2014) IF: 1.627

Objective: Follicular fluid of mature oocytes is rich in growth factors and cytokines that may exert paracrine and autocrine effects on implantation. The aim of this study was to investigate if flushing the endometrial cavity with follicular fluid after oocyte retrieval improved pregnancy rates in subfertile women undergoing intracytoplasmic sperm injection (ICSI).

Study Design: One hundred subfertile women undergoing ICSI between April 2012 and September 2012 at the centre for reproductive medicine, Cairo University, Egypt were enrolled in this open label, parallel randomized controlled study. Patients were randomized into two groups at the start of treatment using a computer-generated programme and sealed opaque envelopes: the follicular fluid group (n=50) and the control group (n=50). Inclusion criteria were: age 20-38 years; basal follicle-stimulating hormone <10mIU/ml; body mass index <35kg/m(2); and ostradiol >1000pg/ml and <4000pg/ml on the day of human chorionic gonadotrophin administration. Exclusion criteria were: evidence of endometriosis; uterine myoma; hydrosalpinges; endocrinological disorders; history of implantation failure in previous in-vitro fertilization/ICSI cycles; and severe male factor infertility

Results: Clinical pregnancy and implantation rates were higher in the follicular fluid group compared with the control group [354% (17/48) vs 319% (15/47); p=0718] and (18.6% vs 11.3%; p=0.153), respectively. However, the difference was not statistically significant.

Conclusion: Flushing the endometrial cavity with follicular fluid after oocyte retrieval neither improved nor adversely affected clinical pregnancy and implantation rates in subfertile women undergoing ICSI.

Keywords: Follicular fluid; ICSI; Implantation rate.

722. A Randomized Controlled Trial of Uterine Exteriorization Versus in Siturepair of the Uterine Incision During Cesarean Delivery

Waleed El-Khayat, Mohamed Elsharkawi and Amr Hassan

International Journal of Gynecology and Obstetrics, 127: 163-166 (2014) IF: 1.563

Objective: To compare extra-abdominal repair of the uterine incision at cesarean delivery with in situ repair.

Methods: The present study was a double-blind randomized controlled trial conducted at a university hospital in Egypt during 2012–2013, and includedwomenwith an indication for cesarean delivery. Extra-abdominal repair was used in group 1 (n= 500) and in situ repair in group 2 (n= 500). The primary outcome measure was the surgery duration.

Results: Surgery duration was significantly longer in group 1 than group 2 (49.9 \pm 2.3 minutes vs 39.9 \pm 1.8 minutes; P b 0.001). More patients in group 1 than in group 2 had postoperative moderate-tosevere pain (165 [33.0%] vs 115 [23.0%]; P = 0.001) and needed additional postoperative analgesia (100 [20.0%] vs 50 [10.0%]; P b 0.001). Moreover, mean time to bowel movement was longer in group 1 than in group 2 (17.0 \pm 2.7 hours vs 14.0 \pm 1.9 hours; P b 0.001). **Conclusion:** In situ uterine closure is more advantageous than extra-abdominal repair in terms of surgery duration, postoperative pain and need for additional analgesia, and return of bowel movement.

Keywords: Cesarean delivery; Exteriorization; In situ repair; Uterine repair site.

723. A Review of theContemporary Evidence on Rescue Cervical Cerclage

Hatem Abu Hashim, Hesham Al-Inany and Zaid Kilani

International Journal of Gynecology & Obstetrics, 124: 198-203 (2014) IF: 1.563

Background: Rescue cervical cerclage (RCC) is essentially a salvage procedure to prolong pregnancy in women with advanced cervical changes and prolapsed membranes in the second trimester. However, its effectiveness and safety remain controversial.

Objectives: To provide a comprehensive review of the contemporary evidence on RCC and evaluate which treatment modalities can be offered to pregnant women based on the best available evidence.

Search Strategy: A PubMed search of published studies on RCC and perinatal outcome was conducted using defined keywords.

Selection Criteria: Clinical studies were included with priority for level I evidence (randomized controlled trials [RCTs]) followed by other evidence levels.

Data Collection and Analysis: Abstracts of 141 articles were screened and 40 articles were selected.

Main Results: Evidence from retrospective and nonrandomized prospective trials shows a benefit of RCC. It may prolong pregnancy by an average of 4-5 weeks, with a 2-fold reduction in the chance of preterm birth before 34 weeks. A higher chance of failure is expected if cervical dilatation exceeds 4 cm or if membranes are bulging into the vagina.

Conclusions: The decision for an RCC should be individualized after comprehensive counseling by a senior obstetrician. Further research in the form of robust RCTs is recommended.

Keywords: Emergency Cervical Cerclage; Emergent Cerclage; Perinatal Outcome; Rescue Cerclage.

724. Reproductive Health and HIV Awareness Among Newly Married Egyptian Couples Without Formal Education

Saleh WF, Gamaleldin SF, Abdelmoty HI, Raslan AN, Fouda UM, Mohesen MN and Youssef MA

International Journal Of Gynecology & Obstetrics, 126 (3): 209-212 (2014) IF: 1.563

Objective: To assess awareness of several reproductive health and HIV issues and to determine the sources of reproductive health knowledge.

Methods: A cross-sectional survey of 150 randomly recruited, newly married couples without formal education attending gynecology or andrology outpatient clinics in Cairo, Egypt, was conducted from January 2012 to January 2013. Participants were interviewed separately and asked to respond to a semi-structured questionnaire on reproductive health and HIV awareness.

Results: Most participants had not received premarital counseling or undergone premarital testing. Awareness about HIV was relatively high: 117 (78.0%) women and 128 (85.3%) men had heard of HIV and had some awareness of the modes of HIV transmission. Only 24 (16.0%) women had ever used a condom compared with 36 (24.0%) men. Only two men out of the 150 couples questioned were aware of the free HIV hotline. Television and friends were the main sources of reproductive health knowledge.

Conclusion: Routine premarital counseling and testing by reproductive health, gynecology, and andrology specialists need to be enforced. Mass media is an essential source of knowledge about HIV and reproductive health. Premarital, reproductive health, and HIV education programs need to be improved.

Keywords: Awareness; Egypt; HIV; Newly married; Premarital counseling; Premarital testing; Reproductive health.

725. Helicobacter Pylori Seropositivity in Patients With Hyperemesis Gravidarum

Mona M. Shaban, Hisham O. Kandil and Arwa H. Elshafei

The American Journal of the Medical Sciences, 347(2): 101-105 (2014) IF: 1.515

Background: Nausea and vomiting during pregnancy are the most common conditions affecting pregnancy, occurring in about 80% of all pregnancies and always disappearing on the 16th to 18th weeks of gestation. This may be mild and it does not affect the general condition of the patient (the condition is called emesis gravidarum), or it may be severe enough to affect the patient physically and psychologically, causing intractable vomiting, electrolyte imbalance, weight loss >5%, impairment of liver and kidney functions and dehydration. Helicobacter pylori is one of the most common bacterium affecting humans. It is a gramnegative helix-shaped microaerophilic bacterium transmitted by the oro-oral or feco-oral route. It is more prevalent in developing countries and affects young children. Acute infection manifests as acute gastritis and stomach pain, whereas chronic infection causes chronic gastritis and peptic ulcer, 2% of which may develop into stomach cancer. The authors tried to investigate the association between H pylori infection and hyperemesis gravidarum.

Methods: Fifty patients with hyperemesis gravidarum and 50 patients with normal pregnancy were included in the study. H pylori infection was determined using a 1-step H pylori test device (serum/plasma), which is a qualitative membrane-based immunoassay.

Results: Regarding maternal age, gestational age and socioeconomic status, there is no statistical difference between both groups. There is a marked statistical difference between both groups in terms of Helicobacter pylori seropositivity and frequency of vomiting.

Conclusions: There is a powerful correlation between H pylori and hyperemesis gravidarum.

Keywords: Hyperemesis gravidarum; Helicobacter pylori; Egyptian population.

726. Is Intracytoplasmic Sperm Injection (ICSI) Associated With Higher Incidence of Congenital Anomalies? A Single Center Prospective Controlled Study in Egypt

Yasmin Ahmed Bassiouny, Yomna Ali Bayoumi, Hisham Mohamed Gouda and Ayman Ahmed Hassan

The Journal of Maternal-Fetal & Neonatal Medicine, 27(3): 279-282 (2014) IF: 1.208

Objective: To compare the incidence of congenital anomalies by ultrasound in intracytoplasmic sperm injection (ICSI) pregnancies and in spontaneous pregnancies with correlation to the neonatal outcome.

Methods: This is a prospective comparative study carried out in Kasr Al Aini Hospital Cairo University from January 2010 to December 2012, comparing 739 pregnant women conceived through ICSI and 843 pregnant women conceived spontaneously as regard to incidence of congenital anomalies, multiple pregnancy, preterm labor, cesarean section and neonatal outcome. Results: The number of anomalies diagnosed by antenatal ultrasound in ICSI group was 14 (1.62%) while in spontaneous group was 13 (1.51%). The number of anomalies detected by postnatal examination in ICSI group was 20 (2.31%) while in spontaneous group was 16 (1.86%) (Odds ratio [OR] 1.438; 95% confidence interval [CI] 0.739-2.796). ICSI group was associated with higher incidence of twins 12.7% (p<0.001), preterm labor 3.8% (p 0.022), preterm premature rupture of membranes 4.6% (p 0.001), cesarean section 74.1% (p<0.001) and neonatal deaths 10.4% (p<0.001).

Conclusion: ICSI was associated with higher incidence of multiple pregnancy and cesarean section, with no difference in the incidence of congenital anomalies compared to spontaneous conception.

Keywords: Assisted reproduction; Congenital malformations; multiple pregnancies; Neonatal outcome; Rupture of membraneso spontaneous conception.

727. Comparative Study Between Different Biomarkers for Early Prediction of Gestational Diabetes Mellitus

Ahmed Mohamed Maged, Ghada Abdel Fattah Moety, Walaa Ahmed Mostafa and Dalia Ahmed Hamed

J Matern Fetal Neonatal Med, 27(11): 1108-1112 (2014) IF: 1.208

Objective: To study various biomarkers in prediction of gestational diabetes mellitus (GDM).

Patients and methods: Prospective observational study included 400 pregnant women. Maternal serum sex hormone binding globulin (SHBG), high-sensitive C-reactive protein (hs-CRP), uric acid, creatinine and albumin were measured before 15 weeks of gestation. Patients were followed-up for development of GDM. Results: A total of 269 women were eligible for analysis. GDM complicated 27 (10.03%) of pregnancies. Hs-CRP levels were significantly higher and SHBG levels were significantly lower among women who subsequently developed GDM compared with normoglycemics. Uric acid, albumin and creatinine levels were not significantly different between both groups. For prediction of GDM, hs-CRP at a cutoff value of 2.55 mg/l showed a sensitivity and a specificity of 89% and 55%, respectively. SHBG at a cutoff value of 211.5 nmol/l showed a sensitivity and a specificity of 85% and 37%, respectively. Low SHBG with high hs-CRP predicted GDM with a sensitivity and specificity of 74.07% and 75.62%, respectively with an overall accuracy of 75.46%.

Conclusion: Hs-CRP and SHBG are important early predictors of GDM. Adding SHBG to hs-CRP improves specificity and serves good overall accuracy. Uric acid, creatinine and albumin have no role in GDM prediction

Keywords: Albumin, C-Reactive Protein, Creatinine Gestational Diabetes Mellitus, Sex Hormonebinding Globulin, Uric Acid.

728. Fetal Middle Cerebral and Umbilical Artery Doppler After 40 Weeks Gestational Age

Ahmed M. Maged, Aly Abdelhafez, Walaa AI Mostafa and Wael Elsherbiny

J Matern Fetal Neonatal Med, 27(18): 1880-1885 (2014) IF: 1.208

Objective: To determine the value of fetal Doppler indices named middle cerebral artery (MCA)-PI, umbilical artery (UA)-PI and MCA-PI/UA-PI ratio, and amniotic fluid volume assessment in pregnancies 280–294 d and their correlation with the mode of delivery and perinatal outcome.

Study design: Prospective observational study conducted on 100 whose gestational age (GA) from 40 to 42 weeks. MCA and UA Doppler and MCA-PI/UA-PI ratio, amniotic fluid volume (AFV) were assessed. They were divided into two groups based on the presence or absence of adverse perinatal outcome.

Results: Women with adverse perinatal outcome showed lower MCA-PI (0.92 versus 1.29), MCA-PI:UA-PI ratio (1.04 versus 1.83), lower gestational age when assessed by ultrasound (37.82 versus 39.48 weeks), lower neonatal birth weight (2705 versus 3108 g), fetal biophysical profile (BPP) (4.55 versus 7.21) when compared to women with normal perinatal outcome. They also had higher cases with oligohydramnios (34 versus 5), and higher UA-PI (0.89 versus 0.72).

Conclusion: Women with adverse neonatal outcome had higher UA-PI and lower MCA-PI, MCA-PI:UA-PI ratio, GA (by US), AFV, BPP, estimated fetal weight, neonatal birth weight when compared to those with normal perinatal outcome. Women with adverse neonatal outcome had a higher rate of cesarean section mostly due to fetal distress and induced VD due to oligohydraminos compared to the normal outcome group.

Keywords: Amniotic Fluid Volume, Doppler Velocimetry Mode Of Delivery, Perinatal Outcome.

729. Measuring theRate of Fetal Urine Production Using Three-Dimensional Ultrasound During Normal Pregnancy and Pregnancy-Associated Diabetes

Ahmed M. Maged, Abdelsamie Abdelmoneim, Wessam Said and Walaa A. I. Mostafa

J Matern Fetal Neonatal Med, 27(17): 1790-1794 (2014) IF: 1.208

Objective: To establish a nomogram of fetal urine production according to gestational age as a predictor for fetal well-being in normal and diabetic women.

Study design: Prospective observational study included 180 pregnant women classified into two groups: Group I (120 women) without any medical complications and Group II (60 women) with gestational diabetes mellitus (GDM). The fetal bladder is measured by the virtual organ computer-aided analysis VOCAL 3D ultrasound scanner.

Results: There was a significant positive correlation between gestational age and fetal urine production rate (UPR) (the mean UPR rate in normal pregnancy at 25, 30, 35, 40 weeks were 12.3, 14.38, 56.13 and 90.73 ml/h, respectively). There was no significant difference regarding UPR ml/h between women with normal pregnancy and those with controlled GDM ($p^{1}40.9$). There was a statistically significant difference regarding UPR ml/h between women with normal pregnancy and those with controlled GDM ($p^{1}40.9$). There was a statistically significant difference regarding UPR ml/h between women with normal pregnancy and those with uncontrolled GDM ($p^{1}40.012$) and a statistically significant difference between women with controlled GDM and those with uncontrolled GDM ($p^{1}40.03$).

Conclusion: Fetal UPR is considered to be more reliable as an assessment method for fetal well-being and shows significant increase in patients with uncontrolled gestational DM.

Keywords: 3D Ultrasound, Bladder Volume, Fetal Urineproduction, Gestational Diabetes Mellitus.

730. Assessment of Endometrial Receptivity Using Doppler Ultrasonography in Infertile Women Undergoing Intrauterine Insemination

Riad ON and Hak AA

Gynecological Endocrinology, 73: 1-4 (2014) IF: 1.136

Objective: The aim of this study was assessment of subendometrial blood flow with Doppler ultrasonography as an indicator of endometrial receptivity in stimulated cycles for intrauterine insemination (IUI).

Patients and Methods: This prospective study enrolled 90 women scheduled for IUI after ovarian stimulation randomly assigned to one of the three equal groups; group (C) received Clomiphene citrate, group (H) received HMG and group (CH) received Clomiphene citrate in addition to HMG. All participants had ultrasound folliculometry starting on day 9, followed by transvaginal Doppler study of the subendometrial blood flow and perifollicular blood flow on the day of detecting at least one follicle418mm. Resistivity index (RI) and pulsatility index (PI) of subendometrial and perifollicular flow were measured. Endometrial thickness was measured on day of hCG injection. Results: Group (H) showed significantly higher frequency of subendometrial flow (80%) compared to the other two groups (p1/40.009). In cases of positive subendometrial flow, the RI and PI were significantly lower in group (H) compared to the other two groups (p1/40.007 and 0.012, respectively). Endometrial

thickness was significantly lower in group (C) compared to group (H) (p50.001) and group (CH) (p50.001). Successful intrauterine implantation was documented in a total of 16 women (17.8%); the highest frequency was in group (H) (23.3%) and the lowest in group (C), however, the difference between the three groups was not significant (p¼0.372). Subendometrial indices and perifollicular RI were significantly lower in cases of successful implantation, while endometrium was significantly thicker in these cases (p50.001).

Conclusion: The presence of subendometrial flow is associated with successful IUI in women under stimulated cycles undergoing IUI. HMG seems a superior option for induction of ovulation regarding success of implantation.

Keywords: Endometrium, Ovulation Induction, Pregnancy, Uterus.

731. Role of Ultrasonographic Markers of Ovarian Reserve in Prediction of IVF and ICSI Outcome

Mona Mohamed Shaban and Ghada Abdel Fattah Abdel Moety

Gynecol Endocrinol, 30(4): 290-293 (2014) IF: 1.136

The aim of the study was to assess correlation of ultrasonographic markers of ovarian reserve and IVF/ICSI outcome. Two-hundred twelve IVF/ICSI patients were included. Upon pituitary suppression confirmation, antral follicle count (AFC), ovarian volume (OV), and ovarian stromal indices [vascularization index (VI), flow index (FI), and vascularization flow index (VFI)] were assessed by three-dimensional (3D) and power Doppler (PD) ultrasound and correlated with the number of mature oocytes retrieved. The number of mature oocytes retrieved correlated strongly with AFC (r=0.832, p \leq 0.001) and OV (r=0.835, p \leq 0.001), but weakly with VI (r=0.166, p=0.016), FI (r=0.151, p=0.028), and VFI (r=0.14, p=0.041). AFC and OV correlate strongly with the number of mature oocytes retrieved in IVF/ICSI cycles, whereas 3D PD indices of the ovarian stromal vascularity have a weak correlation.

Keywords: Antral follicle count; IVF/ICSI Outcome; Ovarian stromal vascularity; Ovarian volume; Power doppler.

732. Body Mass Index and Labour Outcome in Egyptian Women

M. M. Shaban, Y. A. Bassiouny, I. M. Elzahaby and A. A. Hassan

Journal of Obstetrics and Gynaecology, 34(3): 248-250 (2014) IF: 0.604

We conducted a cross-sectional descriptive study to evaluate the impact of body mass index (BMI) on maternal medical disorders, progress of labour, mode of delivery and neonatal outcome in Cairo University hospital between September 2012 and March 2013. A total of 574 parturients were divided into two groups: group A with a BMI < 30 and group B with a BMI = 30. A statistically significant difference was found in favour of group B, regarding medical disorders, especially gestational hypertension and pre- eclampsia (p < 0.001), caesarean deliveries (p < 0.001) and neonatal birth weight (p = 0.001). There was no difference regarding gestational age at delivery, progress of labour (cervical dilatation, cervical effacement, duration of first and second stage of labour) and neonatal outcome (Apgar score at 1 and 5 min and neonatal deaths). Our conclusion is that increased maternal BMI is associated with an increased incidence of medical disorders during pregnancy, caesarean section rate and fatal macrosomia.

Keywords: Body mass index; Labour outcome.

Dept. of Occupational and Environmental Medicine Department

733. Angiotensin-Converting Enzyme Gene Polymorphisms and Hypertension in Occupational Noise Exposure in Egypt

Nermin Zawilla, Dalia Shaker, Amaal Abdelaal and Wael Aref

International Journal of Occupational and Environmental Health, 20: 194-206 (2014) IF: 1.099

Background: The gene–environment interaction in the pathogenesis of hypertension has not been extensively studied in occupational noise.

Objectives: The aim of this study was to determine the relationship between noise and hypertension in Egyptian workers, the interaction of angiotensin-converting enzyme (ACE) gene polymorphisms as modifiers, and the possible relationship between noise hearing impairment and hypertension.

Methods: Study subjects were divided into two groups depending on noise exposure level. The control group (n=161) was exposed to noise intensity <85 dB and the exposed group (n=217) was exposed to noise intensity \geq 85 dB. A polymerase chain reaction was used to differentiate the various genotypes of ACE insertion/deletion (I/D) and ACE G2350A.

Results: Noise significantly increased the likelihood of hypertension. Carriers of the genotypes AG, GG, and DD were vulnerable to hypertension on noise exposure. No association between hypertension and hearing impairment or noise-induced hearing loss (NIHL) was found.

Conclusion: Our results support the association between ACE gene polymorphisms and occurrence of hypertension in noise-exposed workers.

Keywords: Ace I/D Gene, Ace G2350a Gene, Genetic Susceptibility, Gene Polymorphism Occupational Noise, Hypertension.

734. Liver Functions in Silica-Exposed Workers in Egypt: Possible Role of Matrix Remodeling and Immunological Factors

Zawilla N, Taha F and Ibrahim Y.

International Journal of Occupational and Environmental Health, 20: 146-156 (2014) IF: 1.099

Background: Brick manufacturing constitutes an important industrial sector in Egypt with considerable exposure to silica.

Objectives: We aimed for evaluating hepatic functions in silicaexposed workers in the clay brick industry, and the possible role of matrix remodeling and immunological factors.

Methods: A case–control study, 87 workers as exposed and 45 as control subjects. Questionnaire, clinical examination, and laboratory investigations: liver functions, matrix metalloproteinase-9, immunoglobulins G and E, and anti-liver kidney microsomal antibody.

Results: In the exposed workers, mean levels of liver functions, matrix metalloproteinase-9 (MMP-9), and IgG and IgE were significantly higher. In the silicotic subgroup the mean level of GGT was almost twice the level in the non-silicotic subjects. Logistic regression showed that abnormal GGT and ALT were associated with production workers.

Conclusion: Workers in the clay brick industry showed evidence of liver disease that could be related to matrix remodeling. **Keywords**: Brick Workers, Silica, Liver Functions, Matrix Metalloproteinase-9, Immunoglobulins.

Dept. of Ophthalmology

735. Bimatoprost/Timolol Versus Travoprost/ Timolol Fixed Combinations in an Egyptian Population: A Hospital-Based Prospective Randomized Study

Tamer Ahmed Macky

Journal of Glaucoma, 23: 561-566 (2014) IF: 2.427

Purpose: To compare the efficacy of bimatoprost/timolol (BTFC) or travoprost/timolol (TTFC) fixed combinations on intraocular pressure (IOP) reduction in an Egyptian population.

Methods: Patients with primary open angle glaucoma were randomized to receive either BTFC or TTFC. IOPs were measured at baseline, 2 weeks, and 1, 2, 4, and 6 months. The primary outcome measure was the mean change in IOP from baseline at each visit. Secondary outcome measures included the incidence of adverse events.

Results: Eighty patients (80 eyes) were included finally: 40 eyes in each group. Baseline mean IOPs were 24.78 ± 3.53 and 25.26 ± 3.51 mm Hg for BTFC and TTFC, respectively (P=0.344). Both drops provided statistically significant IOP reductions from baseline at all visits (P<0.001). BTFC provided greater significant mean IOP reductions from baseline than TTFC at each visit (P<0.001). Mean IOP reductions were 11.34 and 6.42 mm Hg at 2 weeks (P=0.000), and 11.17 and 7.89 Hgmat 6 months

(P=0.001) for BTFC and TTFC, respectively. IOPs at 2 weeks were $\leq 18 \text{ mm Hg in } 36 (90.8\%)$ versus 22 (55%) eyes and $\leq 16 \text{ mm Hg in } 28 (70\%)$ versus 16 (40%) eyes (P<0.001), and at 6 months, $\leq 18 \text{ mm Hg in } 38 (95\%)$ versus 28 (70%) eyes and $\leq 16 \text{ mm Hg in } 30 (75\%)$ versus 18 (45%) eyes for BTFC and TTFC, respectively (P<0.001).

Conclusion: Both drops provided effective IOP reduction that was greater and patients were more likely to achieve lower target pressures with BTFC than with TTFC.

Keywords: Bimatoprost; Travoprost; Timolol; Glaucoma.

736. Surgically Induced Astigmatism Following Glaucoma Surgery in Egyptian Patients

El-Saied HM, Foad PH, Eldaly MA and Abdelhakim MA.

Journal of Glaucoma, 23: 190-193 (2014) IF: 2.427

Purpose: The altered visual function induced by changes in corneal curvature following filtration surgery is distressing to patients. The aim of this study was to evaluate surgically induced astigmatism following trabeculectomy in comparison with deep sclerectomy.

Methods: In a prospective interventional comparative study, patients with primary open-angle glaucoma were randomly allocated to either group A or B; deep sclerectomy with mitomycin C 0.2 mg/mL and trabeculectomy with mitomycin C 0.2 mg/mL, respectively. Keratometry was performed using Topcon KR-7000P autokerato-refractometer preoperatively and at 6 months postoperatively. Vector analysis was used to analyze the surgically induced astigmatism.

Results: Sixty eyes of 45 patients in group A, and 60 eyes of 42 patients in group B were enrolled for vector analysis. The mean preoperative astigmatic vector power was $0.49\pm1.65D$

and+0.47±2.18D in groups A and B, respectively. The mean postoperative astigmatic vector power was $1.14\pm1.55D$ in group A and $0.35\pm1.8D$ in group B. The mean change in astigmatic vector powers was $0.67\pm1.63D$ in group A and $0.82\pm2.0D$ in group B. When compared with preoperative data in either group, the differences were significant, P=0.001 & 0.007 in groups A and B respectively, whereas the postoperative difference between either group was insignificant (P=0.723). A total of 40% of corneas got flatter in group B compared with 25% in group A, P=0.057.

Conclusions: Both trabeculectomy and deep sclerectomy induced considerable postoperative astigmatism. A longer follow-up period is recommended to study the different patterns of astigmatism in either procedure.

Keywords: Trabeculectomy, Deep Sclerectomy, Keratometry, Astigmatic Vector.

737. Dexamethasone Intravitreous Implant Versus Bevacizumab for Central Retinal Vein Occlusionrelated Macular Oedema: A Prospective Randomized Comparison

Gado A.S. and T. A. Macky

Clinical and Experimental Ophthalmology, 42 (7): 650-655 (2014) IF: 1.953

Background: To compare the efficiency of dexamethasone implants to bevacizumab injections in macular oedema secondary to central retinal vein occlusion.

Design: Randomized clinical trial at Cairo University Hospitals. **Participants**: Sixty eyes of 60 newly diagnosed patients with macular oedema secondary to central retinal vein occlusion with best corrected visual acuity 0.3 logMAR (6/12) to counting fingers, no evidence of retinal ischaemia and/or neovascularization on fluorescein angiography and central subfield thickness \geq 300 µm on ocular coherence tomography.

Methods: Patients were randomly assigned (30 eyes each group) to either intravitreal dexamethasone implant or bevacizumab injections repeated whenever needed. Best corrected visual acuity and ocular coherence tomography were done at baseline and monthly for 6 months.

Main Outcome Measures: Comparing best corrected visual acuity and central foveal subfield thickness between both groups during the 6-month period.

Results: There was no significant difference in best corrected visual acuity between the two groups during the 6 months (P-values > 0.05). The bevacizumab group had a statistically significant thinner central subfield thickness at 1 month (P-value 0.006) and no statistically significant difference for the rest of the 6 months (P-values > 0.05). There was a statistically significant higher intraocular pressure for dexamethasone implant group (compared with bevacizumab) at 3-6 months (P-values < 0.05), respectively.

Conclusion: Both drugs provided effective best corrected visual acuity improvements and central subfield thickness reductions that showed no statistically significant difference between the two groups.

Keywords: Central Retinal Vein Occlusion; Dexamethasone Implant (Ozurdex); Intravitreal Bevacizumab (Avastin); Macular Oedema.

738. Orbital Epidermoid Cysts: A Diagnosis to Consider

Rania A. Ahmed and Rasha M. Eltanamly

Journal of Ophthalmology, (2014) IF: 1.935

Background: Orbital epidermoids forma rare pathological entity that is separate fromdermoid cysts. They have variable clinical and radiological presentations and they should be considered in the differential diagnosis of orbital cystic lesions. This work describes the various clinical and radiological presentations of 17 cases of epidermoid cysts and the surgical outcome. Method. A prospective interventional study was conducted on 17 patients diagnosed with epidermoid cysts. Patients' symptoms and signs were recorded; CT scan was done for all patients. All lesionswere removed through anterior orbitotomy and histopathological diagnosis confirmed.

Results: Mean age of patients was 16.3 years \pm 10.54. Main complaints were lid swelling, masses, ocular dissimilarity, chronic pain, and ocular protrusion. Clinical signs varied fromlid swelling andmasses in all cases to proptosis, globe displacement, limitation of ocular motility, and scars. Radiological findings ranged from homogenous hypodense masses (58.8%) to homogenous radiolucent (17.6%) and heterogenous masses (23.5%). No recurrences following surgeries were reported throughout the follow-up (mean 18.8 months \pm 0.72).

Conclusion: Deep orbital epidemoid cysts are a separate entity that can behave like deep orbital epidermoid; however, they usually present at a relatively older age. They can be associated with increased orbital volume but not necessarily related to bony sutures.

Keywords: Epidermoid Cyst; Orbit; Proptosis; CT Imaging.

739. Changes in Corneal Sensation Following 20 and 23G Vitrectomy in Diabetic and Nondiabetic Patients

MM Mahgoub and TA Macky

Eye, 28: 1286-1291 (2014) IF: 1.897

Purpose To evaluate the changes in corneal sensation (CS) following two different port sizes vitrectomy in diabetic and nondiabetic patients. Patients and Methods Patients prepared for pars plana vitrectomy were randomly assigned to four groups: diabetics to either 20G or 23G and non-diabetics to either 20G or 23G vitrectomy systems. CS was measured using the Cochet-Bonnet aesthesiometer at baseline preoperatively, and at 1 day, 1 week, and 1 month postoperative.

Results A total of 40 eyes of 40 patients were included in this study; 20 patients (20 eyes) in each of the 20-G and 23-G groups. The mean age was 55.51 ± 10 years and male/female ratio was 2:3. There were no significant difference between CS at baseline, and at 1 day, 1 week, and 1 month between both the 20-G and 23-G groups. There were significant drops in CSs at 1 day and 1 week for both groups (20G and 23 G) with incomplete recovery for the 20-G group and complete recovery for the 23-G group. Comparing the two diabetic subgroups (20G and 23G), there were no significant differences in CS between subgroups. Diabetics' eyes had lower CSs throughout the study period in the 20-G and 23-G groups, which was significant at day1 and week 1 postoperatively.

Conclusion The vitrectomy procedure showed reduction in CS in the postoperative period with minimal nonsignificant difference between 20G and 23G systems. However, diabetics' eyes showed compromised CS preoperatively and a further significant reduction for 1 month postoperatively compared with non-diabetics.

Keywords: Vitrectomy; Corneal sensation; Diabetic patients.

740. Intermittent Exotropia: Relation Between Age and Surgical Outcome: A Change-Point Analysis

A Awadein, RM Eltanamly and M Elshazly

Eye, 28: 587-593 (2014) IF: 1.897

Purpose To study the relationship between age and response to surgery in patients with intermittent exotropia and to identify change points in response to surgery.

Methods A retrospective analysis was conducted on 311 patients with intermittent exotropia who had bilateral lateral rectus recession using standard tables with minimum follow-up of 6 months. Data were analyzed using the change-point analysis software to identify cutoff points. A prospective pilot study was then performed on 171 consecutive patients with intermittent exotropia with the same clinical characteristics, in whom amount of recession was modified according to the identified cutoff points. In angles with two change points, 1-mm recession was

reduced from patients younger than the lower change point and 1.5-mm recession was added to those older than the upper change point. In angles with one change point, 1.5-mm recession was added to those older than the change point. Satisfactory alignment was defined as esophoria/tropia r5D to exophoria/tropia r8D.

Results: There was a negative correlation (Po0.01) between response to surgery and age at surgery for all angles. In younger patients (o7 years) in whom surgical dose was reduced, there was no significant change in success rate (77%), compared with those who had surgery using standard tables (75%). In older patients (412 years) in whom surgical dose was increased, there was a statistically significant increase in success rate (80% vs 41%). **Conclusions:** Modifying the surgical dose according to age can improve the success in patients with intermittent exotropia. **Keywords:** Intermittent exotropcia; Surgcery; Recession.

Dept. of Orthopaedic

741. Low-Intensity Pulsed Ultrasound Shortens theTreatment Time in Tibial Distraction Osteogenesis

Salem KH and Schmelz A.

International Orthopaedics, 38: 1477-1482 (2014) IF: 2.019

Purpose: Low-intensity pulsed ultrasound (LIPUS) has been used successfully to accelerate healing of fresh fractures and nonunions. It also improved callus maturation with distraction osteogenesis in animal trials. However, only few clinical studies are available to support its widespread use for the latter indication in humans.

Methods: Twenty-one patients undergoing callus distraction for posttraumatic tibial defects were randomized into two groups: the trial group (12 men; mean age 32 years) which received 20 minutes LIPUS daily during treatment and the control group (six men and three women; mean age 29 years) without LIPUS treatment. The Ilizarov ring fixator was used in all cases. Results were examined clinically and radiologically, analysing callus maturation with a computer-assisted measurement.

Results: Patients in the LIPUS group needed a mean of 33 days to consolidate every 1 cm of new bone in comparison to 45 days in the control group. The healing index was therefore shortened by 12 days/cm in the LIPUS group. This means that callus maturation was 27 % faster in the LIPUS group. The fixator time was shortened by 95 days in the LIPUS group. The overall daily increase in radiographic callus density was 33 % more in the LIPUS group.

Conclusions: LIPUS treatment is an effective non-invasive adjuvant method to enhance callus maturation in distraction osteogenesis. With the help of this treatment, the healing time and the duration of external fixation can be reliably shortened.

Keywords: Low-Intensity Pulsed Ultrasound; Ilizarov; Callus Distraction; Bone Defects.

742. Management of Neglected Bennett Fracture in Manual Laborers by Tension Fixation

Mahmoud M, El Shafie S, Menorca RM and Elfar JC

The Journal of Hand Surgery, 39: 1728-1733 (2014) IF: 1.655

Purpose: To report the results of open reduction and internal fixation (ORIF) of Bennett fractures in young, active patients using a K-wire and wire loop construct to achieve anatomical reduction and to allow return to manual labor.

Methods: In this prospective series, we treated 10 male manual laborers (mean age, 30 y; range, 20–44 y) with Bennett fractures diagnosed after a minimum of 12 weeks (mean, 16 wk; range, 12–18 wk). ORIF using 2 K-wires with a wire loop and a neutralizing transarticular K-wire was performed with direct articular visualization. Patients were evaluated for range of motion, grip strength, and pinch strength, and a visual analog scale score rated pain before surgery and 12 months later.

Results: The mean follow-up was 16 months (range, 12-36 mo). The average visual analog scale improved from 6 to 2, mean palmar abduction improved from 15° to 40° , mean radial abduction increased from 22° to 39° , average pinch strength improved from 9.9 kg to 15.5 kg, and average grip strength increased from 34 kg to 49 kg. Complications included transient irritation of the radial sensory nerve or lateral cutaneous nerve of the forearm in 3 patients, pin track granuloma formation in 2 patients, and marginal osteophyte formation in 2 patients. Union was achieved in all 10 patients, and 9 patients returned to their previous manual labor occupation.

Conclusions: Our results suggest that neglected Bennett fractures can be effectively managed by ORIF using K-wires and a wire loop without compromising strength or motion. This technique reliably restored the anatomy and provided adequate thumb motion and strength to allow a return to manual labor. Type of study/level of evidence Therapeutic IV.

Keywords: Internal Fixation; K-Wires; Manual Laborers; Neglected Bennett; Wire Loops.

Dept. of Parasitology

743. The Effect of Praziquantel and Carica Papaya Seeds on Hymenolepis Nana Infection in Mice Using Scanning Electron Microscope

Maha Mohamed Abou El-Magd Basyoni

Parasitology Research, 113: 2827-2836 (2014) IF: 2.327

Hymenolepis nana (H. nana) is the most common tapeworm infection worldwide. It is more prevalent in warm climates where

sanitation is poor, particularly among children. The effect and mechanism of action of praziquantel (PZQ), given at a dose of 25mg/kg BW, and Carica papaya dried seed crude aqueous extract (CAE), given at a dose of 1.2-g/kg BW, were assessed on H. nana worms in experimentally infected mice. Tegumental changes were studied using the scanning electron microscope (SEM) and different parasitological parameters were observed. Each group of infected mice was divided into two subgroups. The first subgroup received either treatment before the 4th day after infection to investigate their effects on the cysticercoid stage. The other subgroup received treatments after the development of the adult stage, confirmed by eggs detection in stool. Both PZQ and C. papaya dried seed CAE resulted in a significant reduction of worm burden, total egg output and viable egg count. Marked tegumental changes were evident in adult worms treated with either treatment including shrinkage of the scolex and neck region with rostellar edema and complete loss of its hooks. However, all previous effects were exerted more rapidly in the case of PZQ treatment. They both significantly reduced cysticercoid stage size. Nevertheless, C. papaya outstand PZQ in having a deforming effect on adults arising from treated cysticercoids. It was concluded that C. papaya has significant anti-cestodal properties that enable its seed extract to be a very effective alternative to PZO against H. nana.

Keywords: Hymenolepis Nana; Praziquantel; C; Papaya; Scanning Electron Microscope Introduction.

744. Molecular Copro-prevalence of Cryptosporidium in Egyptian Children and Evaluation of Three Diagnostic Methods

Mona M Fathy, Noha M Abdelrazek, Fayza A Hassan and Ayman A El-Badry

Indian Pediatrics, 51: 1144-1147 (2014) IF: 1.014

Objective: To determine molecular prevalence of Cryptosporidium in a cohort of Egyptian children and compare three diagnostic tests.

Methods: Stool samples from children with diarrhea and from apparently healthy children were examined for Cryptosporidium using microscopy, enzyme linked immuosorbant assay (ELISA) and polymerase chain reaction (PCR). Results: PCR detected Cryptosporidium in 22.4% of children. Acid–fast stain and ELISA showed false negativity but 100% specificity with PCR as gold standard.

Conclusion: Cryptosporidium is a common cause of diarrhea in children in Egypt.

Keywords: Diarrhea, Etiology, Elisa, Nested Pcr.

Dept. of Pathology

745. Lymphatic Obstruction: A Novel Etiologic Factor in theFormation of Antrochoanal Polyps

Mostafa HS, Fawzy TO, Jabri WR and Ayad E.

Annals of Otology, Rhinology & Laryngology, 2014, Vol. 123(6): 381-386 (2014) IF: 1.054

Objectives: Antrochoanal polyps (ACPs) originate from the inner wall of the maxillary sinus and either pass through the natural sinus ostia or cause pressure-induced destruction of the medial sinus wall. Eventually, they extend into the choanae and nasopharynx. Most authors who have studied the microstructure of ACPs, including the component stromal cells and surface epithelium, have not examined the transitional area between the sinus mucosa and the pedicle of the polyp. No explanation has been given for the absence of a cystic intrasinus portion of the polyp, in many cases refuting the therapy (most accepted) that polyps are caused by a mucous gland with a blocked acinus. We noted during endoscopic removal of the ACPs that the antral part of the polyp was cystic in only 5% of patients, and polypoid in 95%. The cystic intrasinus portion of the polyp is a cornerstone of the pathophysiology of ACPs, whether caused by inflammation, cicatrization, or allergy. This finding prompted us to examine the transitional area between the sinus mucosa and the pedicle of the polyp to verify the possibility that lymphatic obstruction--whether primary (areas of higher tissue pressure) or secondary (cicatrization or inflammation)-could be an etiologic factor in the formation of ACPs.

Methods: The study material consisted of 25 ACPs and 25 chronic maxillary sinusitis mucosal biopsy specimens (control group). The detection of lymphatic vessels was based on the identification of lymph vessel endothelial hyaluronic acid receptor I (LYVE-I) in the endothelial cells of the lymphatic capillaries. This was the first lymph-specific hyaluronic acid receptor to be characterized, and is a uniquely powerful marker for lymph vessels, differentiating them from (blood) capillaries.

Results: The density of the lymphatic vessels was marked in 22 of the 25 ACP specimens, ie, 88% of the ACP cases, compared with 16% of the control group.

Conclusions: This study resulted in two main findings. The first was the absence of intramaxillary cysts in the ACPs in 23 cases (92%). The second was the markedly high density of lymphatic vessels in the transitional area between the sinus mucosa and the pedicle of the ACPs, in comparison with the density in the control group. These two findings refute the "blocked acinus theory" and indicate that lymphatic obstruction, whether primary or secondary to chronic sinus infection, might play a leading role in the formation and further growth of ACPs.

Keywords: Acinous Mucous Gland, Antrochoanal Polyp,

Endoscopic Sinus Surgery, Functional Endoscopic Sinus Surgery, Killian Polyp, Lymphatic Capillary, Lyve-1, Maxillary Sinus, Maxillary Sinusitis Mucosal Biopsy, Nasal Polyp.

Dept. of Pediatrics

746. Exome Sequencing Links Corticospinal Motor Neuron Disease to Common Neurodegenerative Disorders

Novarino G, Fenstermaker AG, Zaki MS, Hofree M, Silhavy JL, Heiberg AD, Abdellateef M, Rosti B, Scott E, Mansour L, Masri A, Kayserili H, Al-Aama JY, Abdel-Salam GM, Karminejad A, Kara M, Kara B, Bozorgmehri B, Ben-Omran T, Mojahedi F, Mahmoud IG, Bouslam N, Bouhouche A, Benomar A, Hanein S, Raymond L, Forlani S, Mascaro M, Selim L, Shehata N, Al-Allawi N, Bindu PS, Azam M, Gunel M, Caglayan A, Bilguvar K, Tolun A, Issa MY, Schroth J, Spencer EG, Rosti RO, Akizu N, Vaux KK, Johansen A, Koh AA, Megahed H, Durr A, Brice A, Stevanin G, Gabriel SB, Ideker T and Gleeson JG.

Science, 343(6170): 506-511 (2014) IF: 31.477

Hereditary spastic paraplegias (HSPs) are neurodegenerative motor neuron diseases characterized by progressive agedependent loss of corticospinal motor tract function. Although the genetic basis is partly understood, only a fraction of cases can receive a genetic diagnosis, and a global view of HSP is lacking. By using whole-exome sequencing in combination with network analysis, we identified 18 previously unknown putative HSP genes and validated nearly all of these genes functionally or genetically. The pathways highlighted by these mutations link HSP to cellular transport, nucleotide metabolism, and synapse and axon development. Network analysis revealed a host of further candidate genes, of which three were mutated in our cohort. Our analysis links HSP to other neurodegenerative disorders and can facilitate gene discovery and mechanistic understanding of disease.

747. BCG Vaccination in Patients With Severe Combined Immunodeficiency: Complications, Risks, and Vaccination Policies

Marciano BE, Huang CY, Joshi G, Rezaei N, Carvalho BC, Allwood Z, Ikinciogullari A, Reda SM, Gennery A, Thon V, Espinosa-Rosales F, Al-Herz W, Porras O, Shcherbina A, Szaflarska A, Kiliç Ş, Franco JL, Gómez Raccio AC, Roxo P Jr, Esteves I, Galal N, Grumach AS, Al-Tamemi S, Yildiran A, Orellana JC, Yamada M, Morio T, Liberatore D, Ohtsuka Y, Lau YL, Nishikomori R, Torres-Lozano C, Mazzucchelli JT, Vilela MM, Tavares FS, Cunha L, Pinto JA, Espinosa-Padilla SE, Hernandez-Nieto L, Elfeky RA, Ariga T, Toshio H, Dogu F, Cipe F, Formankova R, Nuñez-Nuñez ME, Bezrodnik L, Marques JG, Pereira MI, Listello V, Slatter MA, Nademi Z, Kowalczyk D, Fleisher TA, Davies G, Neven B and Rosenzweig SD

The Journal of Allergy and Clinical Immunology, 133: 1134-1141 (2014) IF: 11.248

Background: Severe combined immunodeficiency (SCID) is a syndrome characterized by profound T-cell deficiency. BCG vaccine is contraindicated in patients with SCID. Because most countries encourage BCG vaccination at birth, a high percentage of patients with SCID are vaccinated before their immune defect is detected.

Objectives: We sought to describe the complications and risks associated with BCG vaccination in patients with SCID.

Methods: An extensive standardized questionnaire evaluating complications, therapeutics, and outcomes regarding BCG vaccination in patients given a diagnosis of SCID was widely distributed. Summary statistics and association analysis was performed.

Results: Data on 349 BCG-vaccinated patients with SCID from 28 centers in 17 countries were analyzed. Fifty-one percent of the patients had BCG-associated complications, 34% disseminated and 17% localized (a 33,000- and 400-fold increase, respectively, over the general population).

Patients receiving early vaccination (=1 month) showed an increased prevalence of complications (P = .006) and death caused by BCG-associated complications (P < .0001). The odds of experiencing complications among patients with T-cell numbers of 250/ μ L or less at diagnosis was 2.1 times higher (95% CI, 1.4-3.4 times higher; P = .001) than among those with T-cell numbers of greater than 250/ μ L. BCG-associated complications were reported in 2 of 78 patients who received antimycobacterial therapy while asymptomatic, and no deaths caused by BCG-associated complications occurred in this group. In contrast, 46 BCG-associated deaths were reported among 160 patients treated with antimycobacterial therapy for a symptomatic BCG infection (P < .0001).

Conclusions: BCG vaccine has a very high rate of complications in patients with SCID, which increase morbidity and mortality rates. Until safer and more efficient antituberculosis vaccines become available, delay in BCG vaccination should be considered to protect highly vulnerable populations from preventable complications.

Keywords: Primary immunodeficiency; Severe combined immunodeficiency; Vaccine; BCG; Mycobacteria; Newborn screening.

748. Clinical Picture and Treatment of 2212 Patients With Common Variable Immunodeficiency

Benjamin Gathmann, Nizar Mahlaoui, MPH, Laurence G_erard, Eric Oksenhendler, Klaus Warnatz, Ilka Schulze, Gerhard Kindle, Taco W. Kuijpers, Rachel T. van Beem, David Guzman, RN, MSc, Javier De Gracia, Torsten Witte, Reinhold E. Schmidt, Jiri Litzman, Eva Hlavackova, Vojtech Thon, Michael Borte, Stephan Borte, Dinakantha Kumararatne, Conleth Feighery, Hilary Longhurst, Matthew Helbert, Anna Szaflarska, Anna Sediva, Bernd H. Belohradsky, Alison Jones, Ulrich Baumann, Isabelle Meyts, Necil Kutukculer, Per W_agstr€om, Nermeen Mouftah Galal, Joachim Roesler, Evangelia Farmaki, Natalia Zinovieva, Peter Ciznar, Efimia Papadopoulou-Alataki, Kirsten Bienemann, Sirje Velbri, Zoya Panahloo and Bodo Grimbacher

The Journal of Allergy and Clinical Immunology, 134: 116-126 (2014) IF: 11.248

Background: Common variable immunodeficiency (CVID) is an antibody deficiency with an equal sex distribution and a high variability in clinical presentation. The main features include respiratory tract infections and their associated complications, enteropathy, autoimmunity, and lymphoproliferative disorders.

Objective: This study analyzes the clinical presentation, association between clinical features, and differences and effects of immunoglobulin treatment in Europe.

Methods: Data on 2212 patients with CVID from 28 medical centers contributing to the European Society for Immunodeficiencies Database were analyzed retrospectively.

Results: Early disease onset (<10 years) was very frequent in our cohort (33.7%), especially in male subjects (39.8%). Male subjects with early-onset CVID were more prone to pneumonia and less prone to other complications suggesting a distinct disease entity. The diagnostic delay of CVID ranges between 4 and 5 years in many countries and is particularly high in subjects with early-onset CVID. Enteropathy, autoimmunity, granulomas, and splenomegaly formed a set of interrelated features, whereas bronchiectasis was not associated with any other clinical feature. Patient survival in this cohort was associated with age at onset and age at diagnosis only. There were different treatment strategies in Europe, with considerable differences in immunoglobulin dosing, ranging from 130 up to 750 mg/kg/mo. Patients with very low trough levels of less than 4 g/L had poor clinical outcomes, whereas higher trough levels were associated with a reduced frequency of serious bacterial infections.

Conclusion: Patients with CVID are being managed differently throughout Europe, affecting various outcome measures. Clinically, CVID is a truly variable antibody deficiency syndrome.

Keywords: Common variable immunodeficiency; Autoimmunity; Enteropathy; Granulomas; Immunoglobulin replacement; Lymphadenopathy; Patient self-reported outcomes; Primary antibody deficiency; Quality of Life; Treatment.

749. A 1-Year Randomized Controlled Trial of Deferasirox Vs Deferoxamine for Myocardial Iron Removal in β-Thalassemia Major (CORDELIA)

Pennell DJ, Porter JB, Piga A, Lai Y, El-Beshlawy A, Belhoul KM, Elalfy M, Yesilipek A, Kilinç Y, Lawniczek T, Habr D, Weisskopf M, Zhang Y and Aydinok Y

Blood, 123, 10: 1447-1454 (2014) IF: 9.775

Randomized comparison data on the efficacy and safety of deferasirox for myocardial iron removal in transfusion dependent patients are lacking. CORDELIA was a prospective, randomized comparison of deferasirox (target dose 40 mg/kg per day) vs subcutaneous deferoxamine (50-60 mg/kg per day for 5-7 days/week) for myocardial iron removal in 197 b-thalassemia major patients withmyocardial siderosis (T2* 6-20milliseconds) and no signs of cardiac dysfunction (mean age, 19.8 years). Primary objective was to demonstrate noninferiority of deferasirox for myocardial iron removal, assessed by changes inmyocardial T2* after 1 year using a per-protocol analysis. Geometric mean (Gmean) myocardial T2* improved with deferasirox from 11.2 milliseconds at baseline to 12.6 milliseconds at 1 year (Gmeans ratio, 1.12) and with deferoxamine (11.6milliseconds to 12.3 milliseconds;Gmeans ratio, 1.07). The between-arm Gmeans ratio was 1.056 (95% confidence interval [CI], 0.998,1.133). The lower 95% CI boundary was greater than the prespecified margin of 0.9, establishing noninferiority of deferasirox vs deferoxamine (P5 .057 for superiority of deferasirox).

Left ventricular ejection fraction remained stable in both arms. Frequency of drug-related adverse events was comparable betweendeferasirox (35.4%) and deferoxamine (30.8%). CORDELIA demonstrated the noninferiority of deferasirox compared with deferoxamine for myocardial iron removal. This trial is registered at www.clinicaltrials.

Keywords: Deferasirox; Deferoxamine; B-thalassemia major, Cordelia.

750. Mutations in 12 Known Dominant Disease-Causing Genes Clarify Many Congenital Anomalies of The Kidney and Urinary Tract

Daw-Yang Hwang, Gabriel C. Dworschak, Stefan Kohl, Pawaree Saisawat, Asaf Vivante, Alina C. Hilger, Heiko M. Reutter, Neveen A. Soliman, Radovan Bogdanovic, Elijah O. Kehinde, Velibor Tasic and Friedhelm Hildebrandt

Kidney International, 85: 1429-1433 (2014) IF: 8.52

Congenital anomalies of the kidney and urinary tract (CAKUT) account for approximately half of children with chronic kidney disease. CAKUT can be caused by monogenic mutations; however, data are lacking on their frequency. Genetic diagnosis has been hampered by genetic heterogeneity and lack of genotype-phenotype correlation. To determine the percentage of cases with CAKUT that can be explained by mutations in known CAKUT genes, we analyzed the coding exons of the 17 known dominant CAKUT-causing genes in a cohort of 749 individuals from 650 families with CAKUT. The most common phenotypes in this CAKUT cohort were vesicoureteral reflux in 288 patients, renal hypodysplasia in 120 patients, and unilateral renal agenesis in 90 patients. We identified 37 different heterozygous mutations (33 novel) in 12 of the 17 known genes in 47 patients from 41 of the 650 families (6.3%). These mutations include (number of

families): BMP7 (1), CDC5L (1), CHD1L (5), EYA1 (3), GATA3 (2), HNF1B (6), PAX2 (5), RET (3), ROBO2 (4), SALL1 (9), SIX2 (1), and SIX5 (1). Furthermore, several mutations previously reported to be disease-causing are most likely benign variants. Thus, in a large cohort over 6% of families with isolated CAKUT are caused by a mutation in 12 of 17 dominant CAKUT genes. Our report represents one of the most in-depth diagnostic studies of monogenic causes of isolated CAKUT in children.

Keywords: Renal Agenesis, Renal Development, Genetic Renal Disease.

751. The Influence of Physiological Matrix Conditions on Permanent Culture of Induced Pluripotent Stem Cell-Derived Cardiomyocytes

Wael Ahmed Attia Taha Abdel Wahab

Biomaterials., 35: 7374-7385 (2014) IF: 8.312

Cardiomyocytes (CMs) from induced pluripotent stem (iPS) cells mark an important achievement in the development of in vitro pharmacological, toxicological and developmental assays and in the establishment of protocols for cardiac cell replacement therapy. Using CMs generated from murine embryonic stem cells and iPS cells we found increased cell-matrix interaction and more matured embryoid body (EB) structures in iPS cell-derived EBs. However, neither suspension-culture in form of purified cardiac clusters nor adherence-culture on traditional cell culture plastic allowed for extended culture of CMs. CMs grown for five weeks on polystyrene exhibit signs of massive mechanical stress as indicated by a-smooth muscle actin expression and loss of sarcomere integrity. Hydrogels from polyacrylamide allow adapting of the matrix stiffness to that of cardiac tissue. We were able to eliminate the bottleneck of low cell adhesion using 2,5-Dioxopyrrolidin-1-yl-6-acrylamidohexanoate as a crosslinker to immobilize matrix proteins on the gels surface. Finally we present an easy method to generate polyacrylamide gels with a physiological Young's modulus of 55 kPa and defined surface ligand, facilitating the culture of murine and human iPS-CMs, removing excess mechanical stresses and reducing the risk of tissue culture artifacts exerted by stiff substrates.

Keywords: Cardiomyocyte; Cell Adhesion; Cell Culture; Cell Viability; Cross-Linking; Hydrogel.

752. Serum Ferritin Level And Morbidity Risk in Transfusion-Independent Patients With B-Thalassemia Intermedia: the Orient Study

Khaled M. Musallam, Maria Domenica Cappellini, Shahina Daar, Mehran Karimi, Amal El-Beshlawy, Giovanna Graziadei, Matthew Magestro, Jerome Wulff, Guilhem Pietri and Ali T. Taher

Haematologica, 99 (11): e218-221: (2014) IF: 5.868

Similar to other forms of non-transfusion-dependent thalassemia, the diagnosis of β -thalassemia intermedia is associated with a state of iron overload.^{1–3} This occurs in the absence of regular transfusion therapy and is primarily attributed to increased intestinal iron absorption signaled by ineffective erythropoiesis and low serum hepcidin levels.⁴ Although iron accumulation in transfusion-independent β -thalassemia intermedia patients is slower than in regularly-transfused β -thalassemia major, recent evidence highlights that a considerable proportion of patients ultimately reach clinically significant levels that can cause serious morbidities after the age of ten years.¹⁻³ Accordingly, current management guidelines recommend initiating iron chelation therapy in β-thalassemia intermedia patients over ten years of age and in whom liver iron concentration has reached 5 mg Fe/g dry weight (dw) or over. $\frac{2.5.6}{10}$ This threshold was primarily selected in the light of its established association with morbidity in βthalassemia intermedia patients,^{7.8} as well as recent evidence on the efficacy and safety of iron chelation therapy in nontransfusion-dependent thalassemia (including β-thalassemia intermedia) patients for whom treatment was started at 5 mg Fe/g dw or over (THALASSA trial).^{9,10} A liver iron concentration of 3 mg Fe/g dw was also used and this was the recommended threshold at which to interrupt iron chelation therapy and avoid overchelation.^{2,5,6,9} When liver iron concentration measurement is unavailable, serum ferritin levels of 800 and 300 ng/mL can be used as an alternative to the 5 and 3 mg Fe/g dw liver iron concentration values, respectively, $\frac{2.5.6}{2}$ as established in the THALASSA trial through correlation analysis between both iron overload indices.^{11,12}

Keywords: Serum Ferritin; Transfusion-Independent; β -Thalassemia Intermedia.

753. PRRT2 Mutations: Exploring the Phenotypical Boundaries

Djémié T, Weckhuysen S, Holmgren P, Hardies K, Van Dyck T, Hendrickx R, Schoonjans AS, Van Paesschen W, Jansen AC, De Meirleir L, Selim LA, Girgis MY, Buyse G, Lagae L, Smets K, Smouts I, Claeys KG, Van den Bergh V, Grisar T, Blatt I, Shorer Z, Roelens F, Afawi Z, Helbig I, Ceulemans B, De Jonghe P and Suls A.

J Neurol Neurosurg Psychiatry, 85(4): 462-465 (2014) IF: 5.58

Background: Mutations in the proline-rich transmembrane protein 2 (PRRT2) gene have been identified in patients with benign (familial) infantile convulsions (B(F)IC), infantile convulsions with choreoathetosis (ICCA) and paroxysmal dyskinesias (PDs). However it remains unknown whether PRRT2 mutations are causal in other epilepsy syndromes. After we discovered a PRRT2 mutation in a large family with ICCA containing one individual with febrile seizures (FS) and one individual with West syndrome, we analysed PRRT2 in a heterogeneous cohort of patients with different types of infantile epilepsy.

Methods: We screened a cohort of 460 patients with B(F)IC or ICCA, fever related seizures or infantile epileptic encephalopathies. All patients were tested for point mutations using direct sequencing.

Results: We identified heterozygous mutations in 16 individuals: 10 familial and 6 sporadic cases. All patients were diagnosed with B(F)IC, ICCA or PD. We were not able to detect mutations in any of the other epilepsy syndromes. Several mutation carriers had learning disabilities and/or impaired fine motor skills later in life.

Conclusions: PRRT2 mutations do not seem to be involved in the aetiology of FS or infantile epileptic encephalopathies. Therefore B(F)IC, ICCA and PD remain the core phenotypes associated with PRRT2 mutations. The presence of learning disabilities or neuropsychiatric problems in several mutation carriers calls for additional clinical studies addressing this developmental aspect in more detail.

Keywords: Clinical Neurology; Epilepsy; Genetics; Neurogenetics.

754. Rapid Detection of Monogenic Causes of Childhood-Onset Steroid-Resistant Nephrotic Syndrome

Svjetlana Lovric, Humphrey Fang, Virginia Vega-Warner, Carolin E. Sadowski, Heon Yung Gee, Jan Halbritter, Shazia Ashraf, Pawaree Saisawat, Neveen A. Soliman, Jameela A. Kari, Edgar A. Otto and Friedhelm Hildebrandt

Clinical Journal of American Society of Nephrology, 9: 1109-1116 (2014) IF: 5.25

Background and Objectives: In steroid-resistant nephrotic syndrome (SRNS), >21 single-gene causes are known. However, mutation analysis of all known SRNS genes is time and cost intensive. This report describes a new high-throughput method of mutation analysis using a PCR-based microfluidic technology that allows rapid simultaneous mutation analysis of 21 single-gene causes of SRNS in a large number of individuals.

Design, Setting, Participants and Measurements: This study screened individuals with SRNS; samples were submitted for mutation analysis from international sources between 1996 and 2012. For proof of principle, a pilot cohort of 48 individuals who harbored known mutations in known SRNS genes was evaluated. After improvements to the method, 48 individuals with an unknown cause of SRNS were then examined in a subsequent diagnostic study. The analysis included 16 recessive SRNS genes and 5 dominant SRNS genes. A 10-fold primer multiplexing was applied, allowing PCR-based amplification of 474 amplicons in 21 genes for 48 DNA samples simultaneously. Forty-eight individuals were indexed in a barcode PCR, and high-throughput sequencing was performed. All disease-causing variants were confirmed via Sanger sequencing.

Results: The pilot study identified the genetic cause of disease in 42 of 48 (87.5%) of the affected individuals. The diagnostic study detected the genetic cause of disease in 16 of 48 (33%) of the affected individuals with a previously unknown cause of SRNS. Seven novel disease-causing mutations in PLCE1 (n=5), NPHS1 (n=1), and LAMB2 (n=1) were identified in <3 weeks. Use of this method could reduce costs to 1/29th of the cost of Sanger sequencing.

Conclusion: This highly parallel approach allows rapid (<3 weeks) mutation analysis of 21 genes known to cause SRNS at a greatly reduced cost (1/29th) compared with traditional mutation analysis techniques. It detects mutations in about 33% of childhood-onset SRNS cases.

Keywords: Nephrotic syndrome; Focal segmental glomerulosclerosis; Genetic renal disease; Human genetics; Molecular genetics.

755. Effect of Bosentan Therapy on Ventricular and Atrial Function in Adults With Eisenmenger Syndrome. A Prospective, Multicenter Study Using Conventional and Speckle Tracking Echocardiography

Mohamed Y. Abd El Rahman, Axel Rentzsch, Philipp Scherber; Siegrun Mebus; Oliver Miera; Günther Balling; Petra Böttler; Karl-Otto Dubowy; Birgit Farahwaschy; Alfred Hager; Joachim Kreuder; Brigitte Peters; Felix Berger; Ingram Schulze-Neick and Hashim Abdul-Khaliq

Clinical Research in Cardiology, 103: 701-710 (2014) IF: 4.167

Background The effect of bosentan on the ventricular and atrial performance in patients with Eisenmenger syndrome is unclear. In adult patients with Eisenmenger syndrome, we aimed to evaluate the midterm effect of bosentan on physical exercise, ventricular and atrial function, and pulmonary hemodynamics.

Methods Forty adult patients before and after 24 weeks bosentan therapy underwent 6 min walk test, two-dimensional speckle tracking echocardiography, plasma NTproBNP measurement and cardiac catheterization.

Results After 24 weeks, bosentan therapy an improvement was observed regarding the 6 min walk distance from a median (quartile 1–quartile 3) of 382.5 (312–430) to 450 (390–510) m (p = 0.0001), NT-proBNP from 527.5 (201–1,691.25) to 369 (179–1,246) pg/ml (p = 0.021), right ventricular mean longitudinal systolic strain from 18 (13–22) to 19 (14.5–25) % (p = 0.004), left ventricular mean longitudinal systolic strain from 16 (12–21) to 17 (16–22) % (p = 0.001), right atrial mean peak longitudinal strain from 26 (18–34) to 28 (22–34) % (p = 0.01) and right atrial mean peak contraction strain from 11 (8–16) to13 (11–16) % (p = 0.005). The invasively obtained Qp:Qs and Rp:Rs did not significantly change under bosentan therapy.

Conclusions In adult patients with Eisenmenger syndrome, bosentan therapy improves ventricular and atrial functions resulting in enhancement of physical exercise and reduction in the NT-proBNP level, while the pulmonary vascular resistance does not change substantially.

Keywords: Pulmonary arterial hypertension; Echocardiography myocardial contraction remodeling.

756. Analysis of the Gene Coding for Steroidogenic Factor 1 (SF1, NR5A1) in A Cohort of 50 Egyptian Patients With 46, XY Disorders of Sex Development

Sally Tantawy, Inas Mazen, Hala Soliman, Ghada Anwar, Abeer Atef, Mona El-Gammal, Ahmed El-Kotoury, Mona Mekkawy, Ahmad Torky, Agnes Rudolf, Pamela Schrumpf, Annette Grüters, Heiko Krude, Marie-Charlotte Dumargne, Rebekka Astudillo, Anu Bashamboo, Heike Biebermann and Birgit Köhler

European Journal of Endocrinology, 170: 759-767 (2014) IF: 3.686

Objective: Steroidogenic factor 1 (SF1, NR5A1) is a key transcriptional regulator of genes involved in the hypothalamic-pituitary-gonadal axis. Recently, SF1 mutations were found to be a frequent cause of 46,XY disorders of sex development (DSD) in humans. We investigate the frequency of NR5A1 mutations in an Egyptian cohort of XY DSD.

Design: Clinical assessment, endocrine evaluation and genetic analysis of 50 Egyptian XY DSD patients (without adrenal insufficiency) with a wide phenotypic spectrum.

Methods: Molecular analysis of NR5A1 gene by direct sequencing followed by in vitro functional analysis of the two novel missense mutations detected.

Results: Three novel heterozygous mutations of the coding region in patients with hypospadias were detected. p.Glu121AlafsX25 results in severely truncated protein, p.Arg62Cys lies in DNAbinding zinc finger, whereas p.Ala154Thr lies in the hinge region of SF1 protein. Transactivation assays using reporter constructs carrying promoters of anti-Müllerian hormone (AMH), CYP11A1 and TESCO core enhancer of Sox9 showed that p.Ala154Thr and p.Arg62Cys mutations result in aberrant biological activity of NR5A1. A total of 17 patients (34%) harboured the p.Gly146Ala polymorphism. **Conclusion**: We identified two novel NR5A1 mutations showing impaired function in 23 Egyptian XY DSD patients with hypospadias (8.5%). This is the first study searching for NR5A1 mutations in oriental patients from the Middle East and Arab region with XY DSD and no adrenal insufficiency, revealing a frequency similar to that in European patients (6.5-15%). We recommend screening of NR5A1 in patients with hypospadias and gonadal dysgenesis. Yearly follow-ups of gonadal function and early cryoconservation of sperms should be performed in XY DSD patients with NR5A1 mutations given the risk of future fertility problems due to early gonadal failure.

Keywords: Steroidogenic factor-1; 46 Xy disorder of sex development.

757. A Double-Blind, Placebo-Controlled Phase Ii Study of the Efficacy and Safety of 2,2-Dimethylbutyrate (HQK-1001), an Oral Fetal Globin Inducer, in Sickle Cell Disease

Reid ME, El Beshlawy A, Inati A, Kutlar A, Abboud MR, Haynes J Jr, Ward R, Sharon B, Taher AT, Smith W, Manwani D and Ghalie RG

American J. of Hematology, 89 (7): 709-713 (2014) IF: 3.477

This placebo-controlled phase II study evaluated the pharmacodynamics, efficacy and safety of 2,2-dimethylbutyrate (HQK-1001), a fetal globin gene-inducing short-chain fatty acid derivative, administered orally at 15 mg/kg twice daily for 48 weeks in 76 subjects with sickle cell disease (SCD). The median age was 26 years (range: 12–55 years) and 37 subjects (49%) were treated previously with hydroxycarbamide.

Sixty subjects (79%) had Hb SS and 16 (21%) had S/b0 thalassemia. The study was terminated after a planned interim analysis showed no significant increase in fetal hemoglobin (Hb F) and a trend for more pain crises in the HQK-1001 group. For 54 subjects with Week 24 data, the mean absolute increase in Hb F was 0.9% (95% confidence interval (CI): 0.1-1.6%) with HQK-1001 and 0.2% (95% CI: 20.7–1.1%) with placebo.

Absolute increases in Hb F greater than 3% were noted in 9 of 38 subjects (24%) administered HQK-1001 and 1 of 38 subjects (3%) administered placebo. The mean changes in hemoglobin at Week 24 were comparable between the two groups. The mean annualized rate of pain crises was 3.5 with HQK-1001 and 1.7 with placebo. The most common adverse events in the HQK-1001 group, usually graded as mild or moderate, consisted of nausea, headache, vomiting, abdominal pain, and fatigue. Additional studies of HQK-1001 at this dose and schedule are not recommended in SCD. Intermittent HQK-1001 administration, rather than a daily regimen, may be better tolerated and more effective, as shown previously with arginine butyrate, and warrants further evaluation.

Keywords: 2,2-Dimethylbutyrate, Globin Inducer, Sickle Cell Disease.

758. Multicenter Validation of Spin-Density Projection- Assisted R2-Mri for theNoninvasive Measurement of Liver Iron Concentration

St Pierre TG, El-Beshlawy A, Elalfy M, Al Jefri A, Al Zir K, Daar S, Habr D, Kriemler-Krahn U and Taher A.

Magnetic Resonance In Medicine, 71: 2215-2223 (2014) IF: 3.398

Purpose: Magnetic resonance imaging (MRI)-based techniques for assessing liver iron concentration (LIC) have been limited by single scanner calibration against biopsy. Here, the calibration of spin-density projection-assisted (SDPA) R2-MRI (FerriScanVR) in iron-overloaded b-thalassemia patients treated with the iron chelator, deferasirox, for 12 months is validated.

Methods: SDPA R2-MRI measurements and percutaneous needle liver biopsy samples were obtained from a subgroup of patients (n¹/4233) from the ESCALATOR trial. Five different makes and models of scanner were used in the study.

Results: LIC, derived from mean of MRI- and biopsy-derived values, ranged from 0.7 to 50.1mg Fe/g dry weight. Mean fractional differences between SDPA R2-MRI- and biopsymeasured LIC were not significantly different from zero. They were also not significantly different from zero when categorized for each of the Ishak stages of fibrosis and grades of necroinflammation, for subjects aged 3 to <8 versus _8 years, or for each scanner model. Upper and lower 95% limits of agreement between SDPA R2-MRI and biopsy LIC measurements were 74 and _71%.

Conclusion: The calibration curve appears independent of scanner type, patient age, stage of liver fibrosis, grade of necroinflammation, and use of deferasirox chelation therapy, confirming the clinical usefulness of SDPA R2-MRI for monitoring iron overload.

Keywords: Deferasirox; Iron Overload; B-Thalassemia; Escalator; Biopsy.

759. Evidence for Self-Maintaining Pluripotent Murine Stem Cells in Embryoid Bodies

Attia WA, Abd El Aziz OM, Spitkovsky D, Gaspar JA, Dröge P, Suhr F, Sabour D, Winkler J, Meganathan K, Jagtap S, Khalil M, Hescheler J, Konrad Brockmeier, Agapios Sachinidis and Kurt Pfannkuche.

Stem Cell Reviews and Reports, 10: 1-15 (2014) IF: 3.214

Pluripotent stem cells have great potential for regenerative medicine; however, their clinical use is associated with a risk of tumor formation. We utilized pluripotent cells expressing green fluorescent protein and puromycin resistance under control of the Oct4 promoter to study the persistence of potential pluripotent cells under embryoid body (EB) culture conditions, which are commonly used to obtain organotypic cells. We found that i.) OCT4-expressing cells dramatically decrease during the first week of differentiation, ii.) the number of OCT4-expressing cells recovers from day 7 on, iii.) the OCT4-expressing cells are similar to embryonic stem cells grown in the presence of leukemia inhibitory factor LIF but express several markers associated with germ cell formation, such as DAZL and STRA-8 and iv.) the persistence of potentially pluripotent cells is independent of supportive cells in EBs. Finally, OCT4-expressing cells, isolated from EBs after 2-month of culture, were further maintained under feeder-free conditions in absence of LIF and continued to express OCT4 in 95 % of the population for at least 36 days. These findings point to an alternative state of stable OCT4 expression. In the frame of the landscape model of differentiation two attractors of pluripotency might be defined based on their different characteristics.

Keywords: OCT4; Pluripotency; Self-Renewal; Stemcells; Embryoid Bodies; Landscapemodel.

760. CD4+ CD25+ Cells in Type 1 Diabetic Patients With Other Autoimmune Manifestations

Dalia S. Abd Elaziz, Mona H. Hafez, Nermeen M. Galal, Safa S. Meshaal and Aisha M. El Marsafy

Journal of Advanced Research, 5 (6): 647-655 (2014) IF: 3

The existence of multiple autoimmune disorders in diabetics may indicate underlying primary defects of immune regulation. The study aims at estimation of defects of CD4+ CD25+high cells diabetic children with multiple autoimmune among manifestations, and identification of disease characteristics in those children. Twenty-two cases with type 1 diabetes associated with other autoimmune diseases were recruited from the Diabetic Endocrine and Metabolic Pediatric Unit (DEMPU), Cairo University along with twenty-one normal subjects matched for age and sex as a control group. Their anthropometric measurements, diabetic profiles and glycemic control were recorded. Laboratory investigations included complete blood picture, glycosylated hemoglobin, antithyroid antibodies, celiac antibody panel and inflammatory bowel disease markers when indicated. Flow cytometric analysis of T-cell subpopulation was performed using anti-CD3, anti-CD4, anti-CD8, anti-CD25 monoclonal antibodies. Three cases revealed a proportion of CD4+ CD25+high below 0.1% and one case had zero counts. However, this observation did not mount to a significant statistical difference between the case and control groups neither in percentage nor absolute numbers. Significant statistical differences were observed between the case and the control groups regarding their height, weight centiles, as well as hemoglobin percentage, white cell counts and the absolute lymphocytic counts. We concluded that, derangements of CD4+ CD25+high cells may exist among diabetic children with multiple autoimmune manifestations indicating defects of immune controllers.

Keywords: CD4+ CD25+ Cells.

761. Profile of Cystic Fibrosis in A Single Referral Center in Egypt

Mona M. El-Falaki, Walaa A. Shahin, Noussa R. El-Basha, Aliaa A. Ali, Dina A. Mehaney and Mona M. El-Attar

Journal of Advanced Research, 5: 563-568 (2014) IF: 3

It was generally believed that Cystic fibrosis (CF) is rare among Arabs; however, the few studies available from Egypt and other Arabic countries suggested the presence of many undiagnosed patients. The aim of the present study was to determine the frequency of CF patients out of the referred cases in a single referral hospital in Egypt. A total of 100 patients clinically suspected of having CF were recruited from the CF clinic of the Allergy and Pulmonology Unit, Children's Hospital, Cairo University, Egypt, throughout a 2 year period. Sweat chloride testing was done for all patients using the Wescor macroduct system for collection of sweat. Quantitative analysis for chloride was then done by the thiocyanate colorimetric method. Patients positive for sweat chloride (>60 mmol/L) were tested for the ?F508 mutation using primer specific PCR for cystic fibrosis transmembrane conductance regulator (CFTR) gene. Thirty-six patients (36%) had a positive sweat chloride test. The main clinical presentations in patients were chronic cough in 32 (88.9%), failure to thrive in 27 (75%), steatorrhea in 24 (66.7%), and hepatobiliary involvement in 5 (13.9%). Positive consanguinity was reported in 50% of CF patients. Thirty-two patients were screened for Δ F508 mutation. Positive Δ F508 mutation was detected in 22 (68.8%) patients, 8 (25%) were homozygous, 14 (43.8%) were heterozygous, and 10 (31.3%) tested were negative. CF was diagnosed in more than third of patients suspected of having the disease on clinical grounds. This high frequency of CF among referred patients indicates that a high index of suspicion and an increasing availability of diagnostic tests lead to the identification of a higher number of affected individuals.

Keywords: CF; Children; Sweat Chloride; Δ F508 Mutation; Egypt.

762. MEFV Mutations in Egyptian Children With Systemic-Onset Juvenile Idiopathic Arthritis

Hala M. Lotfy, Manal E. Kandil, Marianne Samir Makboul Issac, Samia Salah, Nagwa Abdallah Ismail and Mohamed A. Abdel Mawla

Mol Diagn Ther, 18(5):: 549-557 (2014) IF: 2.589

Background and Objectives: Systemic-onset juvenile idiopathic arthritis (SoJIA) is a chronic auto-inflammatory disease of childhood, with a complex genetic trait, which is characterized by arthritis associated with systemic manifestations. Familial Mediterranean fever (FMF) is another auto-inflammatory disorder that is monogenic. There are speculations as to whether Mediterranean fever (MEFV) mutations are among the genetic determinants of SoJIA. Our aim was to explore the frequency and clinical significance of MEFV mutations in Egyptian SoJIA patients. A group of healthy children were assigned to the control group in an attempt to estimate the carrier rate of MEFV mutations in Egypt.

Methods: Eighty-four children were recruited in this study; 54 children, age (mean \pm standard deviation; 8.31 \pm 2.85 years), diagnosed as having SoJIA with no typical symptoms of FMF; 30 healthy age- and gender-matched children served as the control group. All recruited children were screened for 12 common MEFV mutations using a reverse hybridization assay of biotinylated PCR products.

Results: SoJIA patients had a significantly higher frequency of MEFV mutations (66.7 %) than in the healthy control population (16.7 %). V726A was the leading mutation in SoJIA patients, with an allelic frequency of 15.74 %, followed by E148Q, with an allelic frequency of 7.4 %. Children who were carriers of MEFV mutations had an 18 times higher risk of developing SoJIA than wild-type carriers [odds ratio 18.0 (95 % CI 5-69), P < 0.01]. E148Q was the leading mutation, present in 13.3 % of healthy controls.

Conclusion: These findings suggest that MEFV mutations may be responsible for auto-inflammatory diseases other than FMF, and patients with SoJIA, especially those with a positive family history of FMF or SoJIA, should be screened for MEFV mutations in countries where FMF is frequent.

Keywords: Systemic-Onset Juvenile Idiopathic Arthritis.

763. Applicability and Efficacy of A Model for Prevention of Perinatal Transmission of Hepatitis B Virus Infection: Singlecenter Study in Egypt

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World J. of Gastroenterology, 20(45): 17075-17083 (2014) IF: 2.433

Aim: To identify possible maternal risk factors for hepatitis B virus (HBV) acquisition and assess the efficacy of immunoprophylaxis given to infants born to hepatitis B virus surface antigen (HBsAg) positive mothers.

Methods: Screening of 2000 pregnant females was carried out using rapid test and confirmed by enzyme immunoassay. A questionnaire consisting of 20 questions about the possible risk factors for acquisition of HBV infection was filled for every pregnant HBsAg positive female in addition to at least 2 pregnant HBsAg negative females for each positive case. Infants of HBsAg positive women were offered passive and active

immunoprophylaxis within the 1st 48 h after birth, in addition to 2nd and 3rd doses of HBV vaccine after 1 and 6 mo respectively. Infants were tested for HBsAg and hepatitis B surface antibodies (HBsAb) at six months of age.

Results: HBsAg was confirmed positive in 1.2% of tested pregnant women. Risk factors significantly associated with HBV positivity were; history of injections (OR= 5.65), history of seeking medical advice in a clinic (OR= 7.02), history of hospitalization (OR = 6.82), history of surgery (OR = 4) and family history of hepatitis (OR= 3.89) (P < 0.05). Dropout rate was 28% for HBsAg women whose rapid test was not confirmed and could not be reached to provide immunoprophylaxis for their newborns. Immunoprophylaxis failure was detected in only one newborn (3.7%) who tested positive for HBsAg at 6 mo of age; and vaccine failure (seronegative to HBsAb after 4 doses of the vaccine) was detected in another one (3.7%). The success rate of the immunoprophylaxis regimen was 92.6%.

Conclusion: This pilot study shows that a successful national program for prevention of perinatal transmission of HBV needs to be preceded by an awareness campaign to avoid a high dropout rate.

Keywords: Egypt; Hepatitis B Virus; Hepatitis B Virussurface Antigen Positive Mothers;Immunoprophylaxis;Perinatal Transmission.

764. Safety and Efficacy of Hansenula -Derived Pegylated-Interferon Alpha-2A and Ribavirin Combination in Chronic Hepatitis Cegyptian Children

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World Journal Gastroenterol, 20(16): 4681-4691 (2014) IF: 2.433

Aim: To investigate the safety and efficacy of a Hansenuladerived PEGylated (polyethylene glycol) interferon (IFN)-alpha-2a (Reiferon Retard) plus ribavirin customized regimen in treatment-naïve and previously treated (non-responders and relapsers) Egyptian children with chronic hepatitis C infection.

Methods: Forty-six children with chronic hepatitis C virus (HCV) infection were selected from three tertiary pediatric hepatology centers. Clinical and laboratory evaluations were undertaken. Quantitative polymerase chain reaction (PCR) for HCV-RNA was performed before starting treatment, and again at 4, 12, 24, 48, 72 wk during treatment and 6 mo after treatment cessation. All patients were assigned to receive a weekly subcutaneous injection of PEG-IFN-alpha-2a plus daily oral ribavirin for 12 wk. Thirty-four patients were treatment-naïve and 12 had a previous

treatment trial. Patients were then divided according to PCR results into two groups. Group I included patients who continued treatment on a weekly basis (7-d schedule), while group II included patients who continued treatment on a 5-d schedule. Patients from either group who were PCR-negative at week 48, but had at least one PCRpositive test during therapy, were assigned to have an extended treatment course up to 72 wk. The occurrence of adverse effects was assessed during treatment and follow up. The study was registered at <u>www.ClinicalTrials</u>. gov (NCT02027493).

Results: Only 11 out of 46 (23.9%) patients showed a sustained virological response (SVR), two patients were responders at the end of treatment; however, they were lost to follow up at 6 mo post treatment. Breakthrough was seen in 18 (39.1%) patients, one patient (2.17%) showed relapse and 14 (30.4%) were nonresponders. Male gender, short duration of infection, low viral load, mild activity, and mild fibrosis were the factors related to a better response. On the other hand, patients with high viral load and absence of fibrosis failed to respond to treatment. Before treatment, liver transaminases were elevated. After commencing treatment, they were normalized in all patients at week 4 and were maintained normal in responders till the end of treatment, while they increased again significantly in non-responders (P = 0.007and 0.003 at week 24 and 72 respectively). The 5-d schedule did not affect the response rate (1/17 had SVR). Treatment duration (whether 48 wk or extended course to 72 wk) gave similar response rates (9/36 vs 2/8 respectively; P = 0.49). Type of previous treatment (short acting IFN vs PEG-IFN) did not affect the response to retreatment. On the other hand, SVR was significantly higher in previous relapsers than in previous nonresponders (P = 0.039). Only mild reversible adverse effects were observed and children tolerated the treatment well.

Conclusion: Reiferon Retard plus ribavirin combined therapy was safe. Our customized regimen did not influence SVR rates. Further trials on larger numbers of patients are warranted. **Keywords**: Children; Chronic Hepatitis C; Hansenula;Polymorpha ;Pegylated Interferon;Response

Rate;Ribavirin; Treatment.

765. Continuation of Deferiprone Therapy in Patients With Mild Neutropenia May Not Lead to A More Severe Drop in Neutrophil Count

El-Beshlawy AM, El-Alfy MS, Sari TT, Chan LL and Tricta F.

European Journal of Haematology, 92: 337-340 (2014) IF: 2.414

Approximately 6% of patients with thalassemia receiving deferiprone develop neutropenia. Present practice is to monitor absolute neutrophil count (ANC) weekly and to interrupt treatment at the first sign of neutropenia, lest continuation lead to progressive neutrophil reduction. In a 6-month study evaluating the safety and efficacy of a liquid form of deferiprone in 100 children, ANC was initially checked weekly for all patients. For individuals experiencing mild neutropenia, deferiprone was continued but monitoring was increased to daily until resolution. Therapy was to be suspended only if the episode was prolonged or if it worsened. Four patients experienced single episodes of mild neutropenia, and two others each experienced two episodes. All eight episodes resolved within 4-7 d despite continued therapy. (One patient later developed agranulocytosis and had treatment terminated.) This study showed that not all cases of mild neutropenia during deferiprone therapy develop into

agranulocytosis, and suggests that many may not be caused by deferiprone. Transient declines in ANC to levels defined as neutropenic are common even in healthy individuals, particularly children; and it could be that the frequent monitoring of ANC mandated during deferiprone therapy may reveal cases of transient neutropenia that would otherwise have gone undetected and resolved on their own without clinical consequences. In patients with thalassemia, several factors increase the probability of a transient fall in ANC. These findings raise the question of whether deferiprone should be routinely stopped in cases of mild neutropenia, provided that such patients have their ANC monitored more frequently during the neutropenic episode.

Keywords: Agranulocytosis; Deferiprone; Neutropenia; Thalassemia.

766. Low Prevalence of Cardiac Siderosis in Heavily Iron Loaded Egyptian Thalassemia Major Patients

El Beshlawy A, El Tagui M, Hamdy M, El Ghamrawy M, Azim KA, Salem D, Said F, Samir A, St Pierre T and Pennell DJ.

Annals of Hematology, Volume 93, Issue 3: 375-379 (2014) IF: 2.396

Myocardial siderosis in thalassemia major remains the leading cause of death in developing countries. Once heart failure develops, the outlook is usually poor with precipitous deterioration and death. Cardiovascular magnetic resonance (CMR) can measure cardiac iron deposition directly using the magnetic relaxation time T2*. This allows earlier diagnosis and treatment and helps to reduce mortality from this cardiac affection. This study aims to determine the prevalence of cardiac siderosis in Egyptian patients who are heavily iron loaded and its relation to liver iron concentration, serum ferritin, and left ventricular ejection fraction. Eighty-nine β-thalassemia patients receiving chelation therapy (mean age of 20.8 6.4 years) were recruited in this study. Tissue iron levels were determined by CMR with cardiac T2* and liver R2*. The mean ± standard deviation (range) of cardiac T2* was 28.5 11.7 ms (4.3 to 53.8 ms), the left ventricular ejection fraction (LVEF) was 67.≇4.7 % (55 to 78 %), and the liver iron concentration (LIC) was 26.1 ± 13.4 mg Fe/g dry weight (dw) (1.5 to 56 mg Fe/g dw). The mean serum ferritin was 4,5±02,847 ng/ml (533 to 22,360 ng/ml), and in 83.2 %, the serum ferritin was >2,500 ng/ml. The prevalence of myocardial siderosis (T2* of <20 ms) was 24.7 % (mean age 20.9 ± 7.5 years), with mean T2* of 12.7 ± 4.4 ms, mean LVEF of 68.6 \pm 5.8 %, mean LIC of 30.9 \pm 13 mg Fe/g dw, and median serum ferritin of 4,996 ng/ml. There was no correlation between T2* and age, LVEF, LIC, and serum ferritin (P = 0.65, P = 0.085, P = 0.99, and P = 0.63, respectively). Severe cardiac siderosis (T2* of <10 ms) was present in 7.9 %, with a mean age of 18.4±4.4 years. Although these patients had a mean T2* of 7.8 ± 1.7 ms, the LVEF was 65.1 ± 6.2 %, and only one patient had heart failure (T2* of 4.3 ms and LVEF of 55 %). LIC and serum ferritin results werel 7.029.8mg/g and $7,200 \pm 6,950$ ng/ml, respectively. In this group of severe cardiac

siderosis, T2* was also not correlated to age (PS), LVEF

(P = 0.14), LIC (P = 0.97), or serum ferritin (P = 0.82). There was a low prevalence of myocardial siderosis in the Egyptian thalassemia patients in spite of very high serum ferritin and high LIC. T2* is the best test that can identify at-risk patients who can be managed with optimization of their chelation therapy. The possibility of a genetic component for the resistance to cardiac iron loading in our population should be considered. **Keywords:** Thalassemia; Cardiac Siderosis; Cardiac Magnetic Resonance; Egypt; Liver Iron Concentration.

767. Response to Hydroxycarbamide in Pediatric β-Thalassemia Intermedia: 8 Years' Follow-Up in Egypt

El-Beshlawy A, El-Ghamrawy M, EL-Ela MA, Said F, Adolf S, Abdel-Razek AR, Magdy RI and Abdel-Salam A.

Annals of Hematology, 93: 2045-2050 (2014) IF: 2.396

Hydroxycarbamide (hydroxyurea or HU) has been shown to increase fetal hemoglobin (HbF) in patients with β-thalassemia intermedia (TI). The reported effects of HU in increasing the total hemoglobin (Hb) have been inconsistent. Studies of long-term therapy with HU in pediatric TI are rather uncommon. A retrospective observational study was carried out to evaluate the clinical responses to HU in Egyptian patients with β-TI. One hundred patients; children (n = 82, mean age 9.9 ± 4.1 years) and adults (n = 18) were studied for the mean Hb, HbF%, median serum ferritin, transfusion history, and splenic size before and after HU therapy (mean dose 20.0 ± 4.2 mg/kg/day, range 10-29 mg/kg/day) over a follow-up period 4 to 96 months (mean $35.4 \pm$ 19.2 months). Molecular studies were also done for group of patients (n = 42). The overall response rate to HU was 79 %; 46 % were minor responders (with a reduction in transfusion rate by 50 % or more and/or an increase in their total hemoglobin level by 1-2 g/dl) and 33 % major responders (becoming transfusionfree and/or having an increase in total hemoglobin level by >2g/dl). Mean hemoglobin increased among responders from 6.9 \pm 0.9 g/dl to 8.3 \pm 1.4 g/dl (p < 0.001). A significant rise in mean HbF (27.0 vs. 42.5 %; p < 0.011) and a decrease in median serum ferritin (800 vs. 644 ng/ml; p < 0.001) were also observed among responders (n = 45). Transfusions stopped in 44 % of pretreatment frequently transfused responders (n = 11/25). Splenic size decreased in 37 % of patients (n = 30/81). The predominant β -thalassemia mutation was 1-6 (T > C) in 32/42 (76 %) of studied patients; 28/32 were responders. Bivariate analysis showed no predictors of response as regards sex, pediatric and adult age, splenic status, or genotype. Hydroxycarbamide is a good therapeutic modality in the management of pediatric as in adult TI patients. It can minimize the need for blood transfusion, concomitant iron overload, and blood-born viral transmission especially in developing countries like Egypt.

Keywords: Hydroxycarbamide; Hydroxyurea; Thalassemia Intermedia (Ti); Children; Egypt.

768. The 6-Min Walk Test: an Independent Correlate of Elevated Tricuspid Regurgitant Jet Velocity in Children and Young Adult Sickle Cell Patients

Hala Agha, Mona El Tagui, Mona El Ghamrawy and Marwa Abdel Hady

Ann Hematol, 93: 1131-1138 (2014) IF: 2.396

Elevation of echocardiography-determined tricuspid regurgitant jet velocity (TRV) predicts high systolic pulmonary artery pressure. The present study tested the hypotheses that elevated tricuspid regurgitant jet velocity is associated with both hemolysis and hypoxia and abnormal 6-min walk test (6MWT) results. This study aims to correlate elevated TRV with different clinical laboratory findings and 6MWT and to find the independent predictors of increased TRV. A prospective study of 80 patients aged 5–25 years old with sickle cell disease (SCD) under basal conditions and 40 matched controls was conducted. Hemolytic analysis was assessed by the levels of lactate dehydrogenase, serum bilirubin, and reticulocyte count. Oxygen saturation determination using pulse oximeter and 6MWT were done. The overall prevalence of elevated TRV (=2.5 m/s) was 28.75 %. Associated risk factors were older age (r=0.28, p=0.01), longer duration of disease (r=0.25, p=0.025), higher reticulocytic count (r=0.344, p=0.002), lower O2 saturation (r=-0.574, p=0.0001), and shorter walked distance in 6MWT (r=-0.75, p=0.0001). By multivariate logistic analysis, only the distance walked during 6MWT was the independent correlate of elevated TRV (odds ratio=0.85; 95 % CI=0.74 to 0.98 p=0.033).

The study provides evidence for independent association of TRV with abnormal 6MWT results. The 6-min walk test can be used as noninvasive adjuvant tool for functional capacity assessment of SCD patients with elevated TRV.

Keywords: Sickle cell disease; Pulmonary hypertension; Hemolysis; Oxygen saturation; Tricuspid regurgitant jet velocity; 6-Min walk test.

769. Selective Screening for Inborn Errors of Metabolism by Tandem Mass 2 Spectrometry in Egyptian Children: A 5 Year Report

Selim LA, Hassan SA, Salem F, Orabi A, Hassan FA, El-Mougy F, Mahmoud IG, El-Badawy A, Girgis MY, Elmonem MA and Mehaney D

Clinical Biochemistry, 47(9): 823-828 (2014) IF: 2.229

Objective: In order to enhance awareness and promote registry for inborn errors of metabolism (IEMs) in Egypt, we aimed to evaluate the prevalence and main clinical findings of IEMs detectable by tandem mass spectrometry (MS/MS) among high risk pediatric patients presenting to our tertiary care facility at Cairo University Children's Hospital over a period of 5 years and to compare the disease burden in Egypt in the absence of a national screening program for inherited metabolic disorders with other populations.

Methods: During this period 3380 Egyptian children were suspected of having IEMs based on clinical/laboratory presentation and were analyzed by MS/MS. Confirmatory testing was performed according to flagged analyte by MS/MS using a different sample type such as plasma or urine or by a different technique such as GC/MS.

Results: A relatively high number of patients (203/3380 (6%)) were confirmed with 17 different types of IEMs. Averages for age at diagnosis for different disorders ranged from 2.5 months to 6.6 years with general developmental delay and irreversible neurological damage being the most common presenting features (75.9% and 65.5%, respectively). Amino acid disorders (127/203 (62.6%)), mainly phenylketonuria (100/203 (49.3%)), were the most encountered, followed by organic acidemias (69/203 (34%)), while fatty acid oxidation defects (7/203 (3.4%)) were relatively rare. 88% of patients were born to consanguineous parents.

Conclusions: The development of a nationwide screening program for IEMs is mandatory for early detection of these potentially treatable disorders, prompt and properly timed therapeutic intervention and prevention of the devastating neurological outcomes.

Keywords: Children; Inborn errors; Metabolic disorders; Selective screening; Tandem mass spectrometry.

770. Nesfatin-1 in Childhood and Adolescent Obesity and Its Association With Food Intake, Body Composition and Insulin Resistance.

Ghada M. Anwar, Gamal Yamamah, Amani Ibrahim, Dalia El-Lebedy, Tarek M. Farid and Rasha Mahmoud

Regulatory Peptides, 188: 21-24 (2014) IF: 2.014

Nesfatin-1 is an anorexigenic peptide that controls feeding behavior and glucose homeostasis. However, there is little data that exists regarding nesfatin-1 secretion in obese children and young adolescents. The aim of this study is to investigate serum nesfatin-1 in childhood and adolescent obesity and to study potential correlations with food intake, anthropometric indices, body composition and insulin resistance. Forty obese children and adolescents and 40 healthy control subjects were studied. Anthropometric measurements were assessed, dietary food intake was evaluated based on 3-days food record and body composition indices were evaluated using bioelectrical impedance analysis. Lipid profile, fasting blood sugar, fasting insulin and HOMA-IR were measured. Fasting serum nesfatin-1 was quantitatively assayed by ELISA. Serum nesfatin-1 was significantly higher in obese group (2.49±1.96 ng/ml) than in control group (0.70±0.81 ng/ml), P=0.001. Positive correlations with serum insulin (P=0.001), HOMA-IR (P=0.000), BMI-SDS (P=0.04), body fat % (P=0.000), fat mass (P=0.000), fat free mass (P=0.03), CHO % (P=0.000), and saturated fat % (P=0.01) were found. While significant negative correlation with protein % (P=0.000) was observed. In conclusion, our results denote that nesfatin-1 might have an important role in regulation of food intake and pathogenesis of insulin resistance in obese children and young adolescents.

Keywords: Body composition; Food intake; Insulin resistance; Nesfatin; Obesity.

771. Diagnosis of Gastrointestinal Basidiobolomycosis: A Mini-Review

Mortada Hassan Fakhri El-Shabrawi

Mycoses, 57: 138-143 (2014) IF: 1.805

Basidiobolus ranarum (Entomophthoromycotina) very rarely affects the gastrointestinal (GI) tract. To date, reported paediatric GI basidiobolomycosis cases are 27 worldwide; 19 from Saudi Arabia and 8 from other parts of the world. Often these cases present a diagnostic dilemma, are prone to misdiagnosis and lack of disease confirmation by proper molecular methodologies. The fungal mass removed by surgery is usually sent for conciliar histopathology, isolation by fungal cultures and final molecular basidiobolomycosis. testing for The incidence of basidiobolomycoses, their predisposing factors and the molecular diagnosis of the fungus causing the disease in combination with a phylogenetic framework are reviewed.

Keywords: 18S Rrna; Gastrointestinal basidiobolomycosis; Identification; Molecular typing; Splendore–hoeppli Phenomenon.

772. Entomophthoromycosis: A Challenging Emerging Disease

Mortada H. F. El-Shabrawi, Heba Arnaout, Lamiaa Madkour and Naglaa Mohamed Kamal

Mycoses, 57: 132-137 (2014) IF: 1.805

Entomophthoromycosis is a rare fungal infection that may affect immunocompetent hosts; predominantly in tropical and subtropical regions. Recently, the importance of this emerging mycosis has increased and the scope of its manifestations has been expanded. These manifestations; however, may masquerade as other clinical entities. Prompt diagnosis of this infection requires a high index of suspicion. Although histopathological examination and cultures are the gold standard diagnostic tools; molecular diagnosis is now available and started to play an important role. The cornerstone treatment is prolonged anti-fungal therapy along with surgical debridement. More awareness of this mycosis is warranted for definitive diagnosis and implementation of early proper therapeutic strategies.

Keywords: Entomophthoromycosis, Basidiobolomycosis, Condiobolomycosis, Zygomycosis, Emerging Disease, Fungal Infection.

773. Urinary 6-Sulphatoxymelatonin Levels and **Sleep Disorders in Children With Migraine**

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Journal of Child Neurology, 29: 947-951 (2014) IF: 1.666

We conducted the present study to assess melatonin secretion in a sample of children with migraine, to describe their sleep patterns and problems, and to examine the impact of sleep problems on migraine disability. The parents of 18 children with migraine completed the Children's Sleep Habits Questionnaire and Pediatric Migraine Disability Assessment Score in Arabic. The parents of 18 healthy controls also completed the Children's Sleep Habits Questionnaire. Urinary 6-sulphatoxymelatonin levels were determined with the enzyme-linked immunosorbent assay method. There was no significant difference in urinary 6sulphatoxymelatonin between the migraine and control groups (Z = -0.127, P = .889). There were no significant differences between groups in Children's Sleep Habits Questionnaire subscales or total scores. There were significant correlations between bedtime resistance, parasomnias subscales, and migraine disability. Our findings indicate that nocturnal production of melatonin is not reduced in children with migraine, and sleep disturbances impact the degree of migraine disability.

Keywords: 6-Sulphatoxymelatonin; Migraine; Sleep.

774. MEFV Gene Mutations in Egyptian Children With Henoch-Schonlein Purpura

Samia Salah, Samia Rizk, Hala M Lotfy, Salma EL Houchi, Huda Marzouk and Yomna Farag

Pediatric Rheumatology, 18 (5): 549-557 (2014) IF: 1.622

Background: Due to an increased frequency of vasculitis in FMF patients, many investigators have studied MEFV mutations in patients with HSP. The aim of the study is to investigate the frequency and clinical significance of MEFV mutations in Egyptian children with Henoch-Schonlein purpura (HSP). Investigating MEFV mutations in controls may help in estimating the prevalence of MEFV mutation carrier rate in Egyptian children.

Methods: The study enrolled 90 individuals, sixty children with Henoch-Schonlein purpura (HSP), together with 30 sex-and agematched apparently healthy controls. The entire study group was screened for 12 common MEFV

mutations using a reverse hybridization assay of biotinylated PCR products.

Results: Patients with HSP had a significantly higher frequency of MEFV mutations (61.7%), when compared to the apparently healthy control population (36.7%). V726A was the most frequent mutation with an allelic frequency of 10.8%. Ninety- one percent of patients with MEFV mutations were heterozygous for one mutation, while 8.1% had a compound heterozygous MEFV gene mutations. The mutation V726A, followed by E148Q, were the leading mutations, present in 16.6% and in 13.3% of controls.

Conclusions: MEFV mutations may be related to HSP susceptibility in children. The mutations were not associated with any clinical and laboratory manifestations. Screening for MEFV mutations in larger number of HSP children may be beneficial to evaluate any possible relationship between certain types of MEFV mutations and HSP, and compare the HSP MEFV mutations to the types of MEFV mutations associated with FMF.

Keywords: Familial Mediterranean Fever; Henoch-Schonlein Purpura (Hsp); Mefv; Mutations.

775. Altered Right Ventricular Function in the Long-**Term Follow-Up Evaluation of Patients After Delayed Aortic Reimplantation of the Anomalous** Left Coronary Artery from the Pulmonary Artery

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Pediatric Cardiology, 35: 530-535 (2014) IF: 1.55

This study aimed to evaluate regional and global ventricular functions in the long term after aortic reimplantation of the anomalous left coronary artery from the pulmonary artery (ALCAPA) and to assess whether the time of surgical repair influences ventricular performance.

The study examined 20 patients with a median age of 15 years (range 3-37 years) who had a correctedALCAPA and 20 agematched control subjects using echocardiography and tissue Doppler imaging (TDI). The median follow-up period after corrective surgery was 6 years(range 2.6-15 years). Seven patients underwent surgery before the age of 3 years (earlysurgery group), whereas 13 patients had surgery after that age (late-surgery group).

The TDI-derived myocardial strain of the interventricular septum (IVS), lateral wall of the left ventricle (LV), and lateral wall of the right ventricle (RV) in the basal and mid regions were examined, and a mean was calculated. The pulsed Dopplerderived Tei index was used to assess global left ventricular function.

No significant differences were found between the early-surgery group and the control group regarding the regionalmyocardial strain or theTei index. Compared with the early-surgery group, the late-surgery group had a significantly higher Tei index (mean 0.37; range 0.31-0.42 vs. mean 0.52; range 0.39-0.69; p\0.005), a lower strain percentage of the lateral wall of the LV (mean 29; range 17-30 vs.mean 9; range 7-23), IVS (mean 23; range 21-31 vs.mean 19; range 13-25), and lateral wall of the RV (mean 23;range 21-31 vs. mean 19; range 13-25). The age at operation correlated significantly with the Tei index (r = 0.84,p0.001) and inversely with the mean strain of the lateral wall of the LV (r = -0.53, p = 0.028), IVS (r = -0.68, p = 0.003), and lateralwall of the RV(r = -0.68, p = 0.003).

At the midterm follow-up evaluation after corrective surgery of ALCAPA,not only the left but also the right ventricular function seemed to be affected in patients with delayed diagnosis and late surgical repair but preserved among the younger patients with early diagnosis and corrective surgery.

Keywords: Aortic Reimplantation; Ventricular Function; anomalous left coronary artery from the pulmonary artery; ALCAPA; Tissue Doppler Imaging (TDI).

776. Pulmonary Functions Before and After Pediatric Cardiac Surgery

Agha H, El Heinady F, El Falaky M and Sobih A.

Pediatric Cardiology, 35: 542-549 (2014) IF: 1.55

This study aimed to assess pulmonary functions before and after cardiac surgery in infants with congenital heart diseases and pulmonary overflow and to clarify which echocardiographic parameter correlates best with lung mechanics. Between 2008 and 2009, 30 infants with leftto- right shunt congenital acyanotic heart diseases who had indications for reparative surgery of these lesions were assessed by echocardiography and infant pulmonary function tests before the operation and 6 months afterward.

Tests using baby body plethysmography were performed to assess the following infant pulmonary functions: tidal volume, respiratory rate, respiratory system compliance (Crs) and respiratory system resistance, functional residual capacity (FRC), and airway resistance. The mean age of the patients was 10.47 \pm 3.38 months, and their mean weight was 6.81 ± 1.67 kg. Ventricular septal defect and combined lesions were the predominant cardiac diseases (26.7 %). Comparison of the infant pulmonary function tests showed a highly significant improvement in all the parameters between the preoperative and 6-month postoperative visits (p\0.0001). Systolic pulmonary artery pressure had a statistically significant negative correlation with Crs (r = -0.493, p = 0.006) and a positive correlation with FRC (r = 0.450, p = 0.013). The findings showed that Crs had a statistically significant negative correlation with the pulmonary artery size (r = -0.398, p = 0.029) and the left atrium size (r = -0.395, p = 0.031), whereas the pulmonary artery size had a statistically positive correlation with effective resistance (r =0.416, p = 0.022) and specific effective resistance (r = 0.604, p =0.0001). Surgical correction of left-toright shunt congenital heart diseases had a positive impact on lung compliance, airway resistance, and FRC. Noninvasive echocardiographic parameters assessing pulmonary vascular engorgement and pulmonary artery pressure were closely related to these infant pulmonary function test indexes.

Keywords: Congenital Heart Diseases; Left-To-Right Shunt; Pulmonary Function Tests; Systolic Pulmonary Artery Pressure.

777. Clinical, Neuroimaging, and Genetic Characteristics of Megalencephalic Leukoencephalopathy With Subcortical Cysts in Egyptian Patients

Mahmoud IG, Mahmoud M, Refaat M, Girgis M, Waked N, El Badawy A, Selim L, Hassan S and Abdel Aleem AK

Pediatric Neurology, 50 (2): 140-148 (2014) IF: 1.504

Background: Megalencephalic leukoencephalopathy with subcortical cysts (MLC) is a rare and genetically heterogeneous cerebral white matter disease. Clinically, it is characterized by

macrocephaly, developmental delay, and seizures. We explore the clinical spectrum, neuroimaging characteristics, and gene involvement in the first patients with megalencephalic leukoencephalopathy with subcortical cysts described from Egypt.

Patients: Six patients were enrolled from three unrelated families. Patient inclusion criteria were macrocephaly, developmental delay, normal urinary organic acids, and brain imaging of diffuse cerebral white matter involvement. Direct sequencing of the MLC1 gene in patients' families and GliaCAM in one questionable case was performed using BigDye Terminator cycle sequencing.

Results: Clinical heterogeneity, both intra- and interfamilial, was clearly evident. Developmental delays ranged from globally severe or moderate to mild delay in achieving walking or speech. Head circumference above the ninety-seventh percentile was a constant feature. Neuroimaging featured variability in white matter involvement and subcortical cysts. However, findings of posterior fossa changes and brain stem atrophy were frequently (66.6%) identified in these Egyptian patients. Discrepancy between severe brain involvement and normal mental functions was evident, particularly in patients from the third family. MLC1 mutations were confirmed in all patients. Deletion/insertion mutation in exon 11 (c.908-918delinsGCA, p.Val303 Gly fsX96) was recurrent in two families, whereas a missense mutation in exon 10 (c.880 C > T, p.Pro294Ser) was identified in the third family.

Conclusions: This report extends our knowledge of the clinical and neuroimaging features of megalencephalic leukoencephalopathy with subcortical cysts. It confirms the apparent lack of selective disadvantage of MLC1 mutations on gamete conception and transmission as supported by the presence of multiple affected siblings in Egyptian families.

Keywords: GliaCAM gene; MLC1 gene; Van der Knaap disease; developmental delay; macrocephaly; megalencephalic leukodystrophy; subcortical cysts.

778. Neutrophil CD64 as A Diagnostic Marker of Sepsis in Neonates

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Journal of Investigative Medicine, 62: 644-649 (2014) IF: 1.503

Background: Sepsis in neonates hospitalized in the neonatal intensive care unit is a global problem and is a significant contributor to morbidity and mortality. Neutrophil surface CD64, the high-affinity Fc receptor, is quantitatively up-regulated during infection and sepsis.

Objective: Our goal in this prospective study was to measure the neutrophil CD64 in blood as an adjunct to our previously validated hematologic scoring system for detecting neonatal sepsis.

Methods: A prospective study enrolled newborns with documented sepsis (n = 25), clinical sepsis (n = 25), and control newborns (n = 25). C-reactive protein, neutrophil CD64, complete blood counts, and blood cultures were taken. Neutrophil CD64 was analyzed by flow cytometry.

Results: CD64 was significantly elevated in the groups with documented and clinical sepsis (P G 0.001). CD64 had a sensitivity of 96%, a specificity of 100%, a positive predictive value of 96.2%, and a negative predictive value of 100% with a
cutoff value of 45.8% and 46.0% in the confirmed and the clinical sepsis groups, respectively.

Conclusions: CD64 expression on neutrophils increases significantly in neonates with sepsis and can be considered a useful diagnostic marker for early diagnosis of neonatal infection as a single determination compared with other inflammatory markers.

Keywords: Neutrophil; CD64; Neonatal sepsis.

779. Soluble Adhesion Molecules as Markers of Native Arteriovenous Fistula Thrombosis in Children on Uremia

Fadel FI, Elshamaa MF, Nabhan MM, Essam RG, Kantoush N, El Sonbaty MM, Raafat M and Abd-El Haleem DA

Blood Coagulation and Fibrinolysis, 25: 675-682 (2014) IF: 1.38

Vascular access represents a lifeline for children undergoing hemodialysis. A failure of vascular access among patients receiving regular hemodialysis is associated with increased morbidity, mortality and costs. We assessed the possibility of using soluble adhesion molecules as reliable predictors of vascular access failure in children on hemodialysis. Moreover, we evaluated whether there is an association among the different studied adhesion molecules in hemodialysis patients with thrombosed and non-thrombosed arteriovenous fistula fistulas (AVFs). This study included 55 hemodialysis children, 36 with good access and 19 with access failure, and 20 healthy volunteers. Forty-four patients had native AVFs and 11 patients had tunneled permanent catheter (11with thrombosed and 33 with nonthrombosed AVFs). Serum-soluble vascular cell adhesion molecule-1 (sVCAM-1), soluble intercellular adhesion molecule-1 (sICAM-1), soluble E-selectin (sE-selectin) and soluble Pselectin (sP-selectin) were measured using ELISA technique. A significant increase was found in the levels of sVCAM-1, sICAM-1, sE-selectin and sP-selectin versus controls and all hemodialysis patients, hemodialysis patients with good access and hemodialysis patients with access failure (P=0.001 for sVCAM-1 and sICAM-1 and P=0.0001 for sE-selectin and sP-selectin). A significant increase was found in the levels of sVCAM-1, sEselectin and sP-selectin in both chronic hemodialysis patients with thrombosed and non-thrombosed native AVFs versus controls (P=0.0001 for all parameters). There was significant difference between both chronic hemodialysis patients with thrombosed and non-thrombosed native AVFs as regard to sVCAM-1 (54.64±30.82 versus 25.69±27.96ng/ml, P=0.04). Both sICAM-1 and sP-selectin were positively correlated with the erythropoietin (EPO) dose in hemodialysis children (r=0.31, P=0.04 and r=0.32, P=0.04, respectively). A significant positive association was found between E-selectin and sP-selectin in hemodialysis patients with thrombosed AVFs (r=0.83, P=0.04). There was a significant correlation between sVCAM-1 and EPO dose in thrombosed AVF group (r=0.84, P=0.01). The assessment of serum sVCAM-1 might be useful for the identification of the chronic hemodialysis patients at an increased risk for native AVFs thrombosis. The role of EPO in vascular access failure should be taken into consideration. The clinical relevance of these observations warrants further investigations.

Keywords: Adhesion Molecules; Hemodialysis; Native Arteriovenous Fistula.

780. Glutathione S Transferase Theta1 and Mu1 Gene Polymorphisms and Phenotypic Expression of Asthma in Egyptian Children: A Case–Control Study

Nihal El Rifai, Nadia Moustafa, Nelly Degheidy and Manal Wilson

Italian Journal of Pediatrics, 40: 1-6 (2014) IF: 1.236

Background: Asthma is the result of a complex interaction between environmental factors and genetic variants that confer susceptibility. The glutathione S-transferases (GSTT1 and GSTM1) are phase II enzymes thought to protect the airways from oxidative stress. Few and contradictory data are available on the association between asthma development and GSTT1 and GSTM1 polymorphisms in different ethnic groups. The current study aimed to investigate whether these polymorphisms are associated with asthma development in the Egyptian population.

Methods: The cross-sectional study was performed on 94 asthmatic children 6 -12 yrs and 90 matched healthy controls. Candidates were subjected to clinical evaluation and measurement of absolute blood eosinophilic count, total serum IgE, and GSTT1 and GSTM1 genotype by multiplex PCR technique.

Results: The results for GSTT1 null genotype were 87.2% and 97.2% for asthmatic children and controls respectively and showed to be significantly more in controls (P =0.007, OR:0.683, CI: 0.034 -0.715). The results for GSTM1 null genotype were 50% and 61.1% for asthmatic children and controls respectively and showed to be nonsignificant (p=0.130, OR: 1.000, CI: 0.54 - 1.86). Also, no association was detected between GSTT1 and GSTM1 polymorphisms and atopic conditions or asthma severity. **Conclusion**: The significant detection of GSTT1 null genotype more in controls than in asthmatics with no association with other atopic manifestations or asthma severity and the lack of association detected between GSTM1 polymorphism in relation to asthma, atopy or asthma severity confirm the uncertain role of those genes in the development of asthma.

Keywords: Asthma; Children; Egyptian; Glutathione S-Transferase; Polymorphism.

781. Outcome of Acute Kidney Injury in Pediatric Patients Admitted To theIntensive Care Unit

Shalaby M, Khathlan N, Safder O, Fadel F, Farag YM, Singh AK and Kari JA.

Clinical Nephrology, 82: 379-386 (2014) IF: 1.232

Background: Acute kidney injury (AKI) is common in the pediatric intensive care unit (PICU). We aimed to describe the etiology, clinical features, and outcome of AKI in pediatric patients and to determine the predictors for initiation of renal replacement and mortality.

Methods: A retrospective chart review was performed of the medical records for all patients who were admitted to the PICU at King Abdulaziz University Hospital between January 1 and December 31, 2011.

The pediatric-modified RIFLE criteria were used to classify AKI. **Results**: We included 102 children with AKI, aged 4 - 60 months. Oliguria (61.5%, p < 0.0001) and hypervolemic signs (38.5%, p = 0.03) were more common among patients with RIFLE class failure. They also had the highest mortality (53.9%, p = 0.01). Oliguric patients were ~ 23 times more likely than their non-oliguric counterparts to be initiated on renal replacement therapy (RRT) (RR = 23.38, 95% CI: 3.07 - 178.16). Diuretic infusion was also a strong predictor for RRT initiation (RR = 10.00, 95% CI: 2.77 - 36.12). Hypervolemic patients were twice more likely to die during hospitalization in both unadjusted and adjusted models (RR = 2.06, 95% CI: 1.09 - 3.90, and aRR = 2.45, 95% CI: 1.09 - 5.51, respectively). Mechanical ventilation and RRT initiation were associated with higher likelihood of death (ARR = 13.23, 95% CI: 1.90 - 92.04, and ARR = 2.20,95% CI: 1.18 - 4.12, respectively).

Patients with RIFLE class Failure were about thrice more likely than patients with RIFLE class Risk to die in both the unadjusted (RR = 2.76, 95% CI: 1.35 - 5.65), and adjusted models (ARR = 2.88, 95% CI: 1.38 - 6.04). Children with AKI had longer PICU stay (0.0003) and higher mortality (< 0.0001) than the non-AKI group.

Conclusion: Severe AKI predicted high mortality in critically ill children.

Keywords: Acute Kidney Injury – Intensive Care Unit – Pediatric Rifle.

782. Vitamin D Deficiency in Egyptian Mothers and Their Neonates and Possible Related Factors

El Rifai NM, Abdel Moety GA, Gaafar HM and Hamed DA

The Journal of Maternal Fetal and Neonatal Medicine, 27(10): 1-5 (2014) IF: 1.208

Objective: To correlate vitamin D level in Egyptian mothers with that of their newborns, and examine risk factors related to maternal vitamin D deficiency.

Methods: A cross-sectional study was carried out at the university teaching hospital in Cairo, Egypt. Serum 25(OH) D levels were measured by enzyme-linked immunosorbent assay in 135 pregnant women at \geq 37 weeks' gestation immediately before delivery and in cord blood of their newborns.

Results: The levels of serum 25(OH) D were 32.6 ± 21.4 ng/ml in mothers and 16.7 ± 10 ng/ml in their newborns. Maternal vitamin D level was strongly correlated with that of the newborns (r=0.7, p<0.0001). Maternal vitamin D deficiency/insufficiency and neonatal vitamin D deficiency/insufficiency were encountered in (40%, 28.9% and 60%, 32.6% respectively). Maternal vitamin D levels showed significant correlations with maternal body mass index (BMI; \neq -0.201, p=0.021), gestational age at delivery (r=0.315, p ≤0.0001), fish consumption (r=0.185, p=0.032), educational level =(θ .29, p=0.001), and skin exposure (r=0.247, p=0.004).

Conclusion: Maternal vitamin D levels strongly correlate with neonatal levels. Maternal vitamin D deficiency is a real problem in Egypt; this is generally related to high BMI, low fish consumption, low educational level, and limited skin exposure. **Keywords**: Mothers; Neonates; Vitamin D.

783. Role of Online Hemodiafiltration in Improvement of Inflammatory Status in Pediatric Patients With End-Stage Renal Disease

Morad AA, Bazaraa HM, Abdel Aziz RE, Abdel Halim DA, Shoman MG and Saleh ME.

Iranian Journal of Kidney Diseases, 8: 481-485 (2014) IF: 0.979

Introduction: Patients with end-stage renal disease are known to suffer from chronic inflammation as the result of an ongoing subacute cytokine induction, which may contribute considerably to dialysis-related long-term morbidity and mortality. In order to assess the inflammatory risk associated with online hemodiafiltration compared to conventional hemodialysis, we compared the cytokine induction profile of pediatric patients during treatment with each these modalities of dialysis.

Materials and Methods: Thirty pediatric patients on regular hemodialysis for at least 6 months were shifted to online hemodiafiltration. We collected serum samples before and 6 months after initiation of online hemodiafilration. The target proinflammatory cytokines selected were interleukin-6, tumor necrosis factor- α , and high-sensitivity C-reactive protein.

Results: High-sensitivity C-reactive protein decreased significantly on hemodiafiltration. The mean C-reactive protein level after 6 months was $3.41 \ \mu g/mL$ in the online hemodiafiltration as compared to $7.98 \ \mu g/mL$ in the hemodialysis group (P = .01). Plasma interleukin-6 and tumor necrosis factor- α and tumor necrosis factor- α also decreased significantly on hemodiafiltration and the values were 100.44 pg/mL versus 168.40 pg/mL (P = .002) and 11.45 pg/mL versus 15.70 pg/mL (P = .008), respectively, for the hemodiafiltration and hemodialysis groups.

Conclusions: Online hemodiafiltration is associated with dampened pro-inflammatory cytokine profile compared to conventional hemodialysis in children with end-stage renal disease.

Keywords: End-Stage Renal.

784. Acute Hemolytic Anemia as An Initial Presentation of Wilson Disease in Children

El Raziky MS, Ali A, El Shahawy A and Hamdy MM.

J Pediatr Hematol Oncol, 36.3: 173-178 (2014) IF: 0.956

Background: Wilson disease (WD) is an inherited disorder of copper metabolism. Hemolytic anemia in WD occurs in up to 17% of patients at some point during their illness.

Aim: To screen for WD among children presenting with hemolytic anemia.

Methodology: Twenty cases (mean age, 8.8 ± 3.9 y) with Coombs-negative hemolytic anemia, attending the hematology clinic of children hospital, Cairo University, were screened for WD by serum ceruloplasmin level, 24 hours urinary copper before and after D-penicillamine challenge test, and slit-lamp examination for detecting Kayser-Fleischer rings.

Results: No case had low ceruloplasmin, whereas bilateral Kayser-Fleischer rings was detected in 5% of our cases. Urinary copper was elevated in 5% before and in 40% after D-penicillamine challenge test. According to the scoring system used, 1 case had definite WD and 7 cases were likely to have WD. These 8 (40%) cases were referred to as group B. Group B had a significantly lower hemoglobin, mean corpuscular volume, mean corpuscular hemoglobin, and reticulocytes (P=0.04, 0.001, 0.04, and 0.04, respectively) and a significantly higher urinary copper after penicillamine (P=0.000) when compared with group A (unlikely WD).

Conclusion: WD is not uncommon in children with hemolytic anemia after exclusion of other common causes.

Keywords: Wilson Disease; Hemolytic Anemia; Screening.

785. Oxidant-Antioxidant Status in Egyptian Children With Sickle Cell Anemia: A Single Center Based Study

El-Ghamrawy MK, Hanna WM, Abdel-Salam A, El-Sonbaty MM, Youness ER and Adel A

Jornal De Pediatria, 90(3): 286-292 (2014) IF: 0.935

Objective: the present study was conducted to investigate the oxidant-antioxidant status in Egyptian children with sickle cell anemia.

Methods: the serum levels of total antioxidant capacity (TAO), paraoxonase (PON), vitamin E, nitrite, and malondialdehyde (MDA) were measured in 40 steady state children with homozygous sickle cell anemia (24 males and 16 females) and 20 apparently healthy age- and gender-matched controls.

Results: mean serum TAO, PON, vitamin E, and nitrite levels were significantly lower in the group with sickle cell anemia, whereas mean serum MDA was significantly higher in these children compared to controls. No significant differences in mean levels of TAO, PON, nitrite, vitamin E, and MDA were found in sickle cell anemia patients receiving hydroxyurea when compared with those not receiving hydroxyurea. A significant negative correlation between serum nitrite and the occurrence of vasoocclusive crises (VOC) was observed (r=-0.3, p=0.04). PON level was found to be positively correlated with patients' weight and BMI (r=-0.4, p=0.01; r=-0.7, p<0.001, respectively), but not with frequency of VOC. The area under the curve of serum nitrite in predicting occurrence of VOC was 0.782, versus 0.701 for PON, and 0.650 for TAO (p=0.006). Serum MDA was not correlated with nitrite, PON, TAO, or vitamin E levels. No significant correlations were detected between serum nitrite and hemoglobin or antioxidant enzymes.

Conclusion: children with sickle cell anemia have chronic oxidative stress that may result in increased VOC, and decreased serum nitrite may be associated with increases in VOC frequency. A novel finding in this study is the decrease in PON level in these patients, which is an interesting subject for further research.

Keywords: Anemia Falciforme; Antioxidantes; Antioxidants; Children; Crianças; Malondialdehyde; Malondialdeído; Nitrite; Nitrito; Paraoxonase; Sickle Cell Anemia.

786. Hypertrophic Cardiomyopathy: Prognostic Factors and Survival Analysis in 128 Egyptian Patients

El-Saiedi SA, Seliem ZS and Esmail RI

Cardiology In the Young, 24: 702-708 (2014) IF: 0.857

Background: Hypertrophic cardiomyopathy is an important cause of disability and death in patients of all ages. Egyptian children may differ from Western and Asian patients in the pattern of hypertrophy distribution, clinical manifestations, and risk factors.

Objectives: The aim of our study was to report the clinical characteristics and outcomes of Egyptian children with hypertrophic cardiomyopathy studied over a 7-year duration and to determine whether the reported adult risk factors for sudden cardiac death are predictive of the outcome in these affected children.

Study Design and Methods: This retrospective study included 128 hypertrophic cardiomyopathy children. The data included

personal history, family history, physical examination, baseline laboratory measurements, electrocardiogram, and Holter and echocardiographic results. Logistic regression analysis was used for the detection of risk factors of death.

Results: Fifty-one out of 128 patients died during the period of the study. Of the 51 deaths, 36 (70.5%) occurred in patients presenting before 1 year of age. Only eight patients had surgical intervention. Extreme left ventricular hypertrophy, that is, interventricular septal wall thickness or posterior wall thickness Z-score >6, sinus tachycardia, and supraventricular tachycardia were found to be independent risk factors for prediction of death in patients with hypertrophic cardiomyopathy.

Conclusions: At our Egyptian tertiary care centre, hypertrophic cardiomyopathy has a relatively worse prognosis when compared with reports from Western and Asian series. Infants have a worse outcome than children presenting after the age of 1 year. A poorer prognosis in childhood hypertrophic cardiomyopathy is predicted by an extreme left ventricular hypertrophy, the presence of sinus tachycardia, and supraventricular tachycardia.

Keywords: Hypertrophic Cardiomyopathy; Echocardiography; Children.

787. Influence of Iron Regulating Genes Mutations on Iron Status in Egyptian Patients With Sickle Cell Disease

Hala A. Abdel Rahman, Heba H. Abou-Elew, Reem M. El-Shorbagy, Rania Fawzy and Ilham Youssry

Annals of Clinical and Laboratory Science, 44(3): 304-309 (2014) IF: 0.839

Background: Mutations of HAMP gene encoding the major iron regulator peptide hepcidin and HFE gene encoding hemochromatosis protein have been implicated in iron overload. The aim of this work was first to analyze the frequency of G71D mutation of HAMP gene and H63D mutation of HFE gene in sickle cell disease (SCD) patients and secondly to study the relative contributions of these genetic variations on iron status.

Methods: This study was performed on a total of 92 Egyptian subjects: 47 SCD patients and 45age- and sex- matched healthy controls. Genotyping of G71D of HAMP and of H63D of HFE variants was performed by polymerase chain reaction-restriction fragment length polymorphism analysis. Estimation of iron overload was based on steady-state serum ferritin and transferrin saturation.

Results: Genotyping of HAMP-G71D and HFE-H63D variants in SCD patients revealed that 61.7% showed a wild type genetic profile in both genes, 14.9% had a variation in HAMP-G71D, 27.7% in HFE-H63D, and 4.3% in both. Patients with either HAMP-G71D or HFE-H63D variants did not show significant difference in iron overload parameters in relation to wild type patients. Multivariate regression analysis revealed that the number of mutations harbored by SCD patients affects serum ferritin level (p=0.054), albeit it was not statistically significant.

Conclusions: HAMP-G71D and HFE-H63D variants are not uncommon among the Egyptian SCD patients. Neither of them alone is a major determinant of iron overload, nevertheless, the number of harbored mutations may increase the probability of iron overload in these patients.

Keywords: HAMP; HFE; Sickle cell Disease; Iron overload.

788. Clinical and Ultrasonographical Characterization of Childhood Cystic Kidney Diseases in Egypt

Marwa Mohamed Ibrahim Nabhan

Renal Failure, 36: 694-700 (2014) IF: 0.775

Background: Renal cystic disorders (RCD) constitute an important and leading cause of end-stage renal disease (ESRD) in children. It can be acquired or inherited; isolated or associated with extrarenal manifestations. The precise diagnosis represents a difficult clinical challenge.

Methods: The aim of this study was to define the pattern of clinical phenotypes of children with renal cystic diseases in Pediatric Nephrology Center, Cairo University. We have studied the clinical phenotypes of 105 children with RCD [45 (43%) of them had extrarenal manifestations].

Results: The most common disorders were the presumably inherited renal cystic diseases (65.7%) mainly nephronophthisis and related ciliopathies (36.2%), as well as polycystic kidney diseases (29.5%). Moreover, multicystic dysplastic kidneys accounted for 18% of study cases. Interestingly, eight syndromic cases are described, yet unclassified as none had been previously reported in the literature.

Conclusion: RCD in this study had an expanded and complex spectrum and were largely due to presumably inherited/genetic disorders (65.7%). Moreover, we propose a modified algorithm for clinical and diagnostic approach to patients with RCD.

Keywords: Multicystic Dysplastic Kidneys; Nephronophthisis, Polycystic Kidney; Disease; Renal Ciliopathies; Ultrasonography.

789. Treatment of Hepatitis B and C in Children

El-Shabrawi M and Hassanin F.

Minerva Pediatrica, 66: 473-489 (2014) IF: 0.723

Chronic viral hepatitis B and C infections are highly prevalent and create a substantial burden to healthcare systems globally. These two chronic infections are the cause of significant global morbidity and mortality with approximately 1 million annual deaths attributable to them and their sequelae. Children are vulnerable to both infections. The availability of new drugs and new therapeutic strategies are increasing the complexity and individualizing the management of children with viral hepatitis. Therefore, it is extremely important to educate and advise pediatricians concerning the new lines of treatment. More than 350million persons worldwide are infected with HBV. Although its incidence has dramatically declined since the implementation of universal immunization programs in many countries, scores of children are still being infected each year. Despite its benign course, chronic hepatitis B (CHB) during childhood and adolescence, 3-5% and 0.01-0.03% of chronic carriers develop cirrhosis or hepatocellular carcinoma (HCC), respectively, before adulthood. Treatment of CHB in childhood has been hampered by the long delay in licensing new drugs for pediatric use. Safe and effective antiviral therapies are available in adults, but few are labeled for use in children, and an accurate selection of whom to treat and the identification of the right timing for treatment are needed to optimize response and reduce the risk of antiviral resistance. Although several guidelines on the management of adult patients with CHB have been published by major international societies, the clinical approach to infected children is still evolving, and is mostly based on the expert opinions. Standard interferon (IFN)-a is still the treatment of choice for most children with HBV infection. Licensing of highly-effective nucleoside/nucleotide analogues (NA) for older children and adolescents has opened new possibilities of treatment. However, the risk of emergence of drug resistant strains is a public health problem and a major long-term issue for young patients. Before starting a child on NAs, the risks of treatment should be carefully weighed against the possible benefits. As the management of special patient populations is problematic and not evidence-based, their referral to highly specialized centers is strongly recommended. The World Health Organization estimates that over 250 million people worldwide are chronically infected with HCV. In countries where adults have a high prevalence of HCV infection, an increased prevalence in children can also be expected. In Egypt, for example, approximately 1-2% of children are infected. The child infected with HCV must be over 2 years old in order to be treated by a licensed drug. The standard of care therapy is pegylated IFN-a plus ribavirin with success rates as similar in adults. The first-wave, first-generation oral direct acting anti-virals (DAAs) telaprevir and boceprevir were licensed by the FDA for use in HCV genotype 1 infection in adults in 2011. Telaprevir and boceprevir must be coadministered with pegylated IFN-a and ribavirin. Sofosbuvir, the second-wave DAA has been approved in adults in January 2014 and other DAAs are on the way of approval soon in adults. Some DAAs are being tested for children and the results are eagerly awaited.

Keywords: Hepatitis B - Hepatitis C - Child - Liver Diseases.

790. Pediatric Air Gun Shot Injury

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Saudi Medical Journal, 12: 1507-1509 (2014) IF: 0.554

Air guns (AGs) use air or another compressed gas to propel a projectile. Different injuries may occur in children due to their body structure, which is less-resistant with thin soft tissue coverage that can be easily penetrated by an AG shot. We present 3 cases of pediatric AG shot injury. The first-case had right lumber deep tissue penetration of AG pallet without internal damage, the second-case had a complex course of pellet into the perineum, and the third-case was shot in the left shoulder. All cases were accidentally shot. The shooters were all children, and relatives of the victims. All patients were generally stable on arrival. Two cases were operated, and one received conservative management. On follow up, no complications were noted. At first sight, AGs and air rifles may appear relatively harmless, but they are potentially lethal and children should not be allowed to play with them.

Keywords: Pediatric; Air Gun Shot; Injury.

791. Toe Tourniquet Syndrome

Naglaa M Kamal, Ubaid U. Khan, Shazia J. Mirza and Talal A. Al-Malki

Saudi Medical Journal, 35: 865-867 (2014) IF: 0.554

Toe tourniquet syndrome refers to external, mechanical, circumferential constriction of the toes. We report a series of 4 infants with toe tourniquet syndrome from Saudi Arabia who presented during wintertime with very similar symptoms (approximately 48 hours of inconsolable crying and irritability), similar involved region (toes), and similar constricting agent (hairs). Immediate removal of the hair fibers was carried out in all patients, fortunately followed by fast healing with no signs of

tissue necrosis. The prompt diagnosis and treatment of the condition were vital in attaining the good outcome and preventing ischemic complications.

Keywords: Toe Tourniquet Syndrome; Saudi; Pediatrics.

792. the Role of Intensive Phototherapy in Decreasing the Need for Exchange Transfusion in Neonatal Jaundice

Amira Abdel Fattah Edris, Eman Abdel Ghany Abdel Ghany, Abdel Rahman Ahmed Abdel Razek and Amany Mosad Zahran

J. of Pakistan Medical Associationz, 64: 5-8 (2014) IF: 0.403

Objectives: To assess the effectiveness of intensive phototherapy in reducing th eed for exchange transfusion and the duration of phototherapy.

Methods: The prospective study with historical controls was conducted at Cairo University Paediatric Hospital, from February to July 2012e n

, and comprised 360 newborns with indirect hyperbilirubinaemia. The 183 subjects were treated with Bilisphere 360 (Bilisphere group) compared with 177 who had been treated with conventional phototherapy (control group). Both groups were subjected to complete clinical evaluation and laboratory investigations.

Results: Bilisphere 360 decreased the need for exchange transfusion in 19 (10.4%) neonates of the Bilisphere group versus 130 (73.4%) of the control group (p<0.001); decreased the level of serum bilirubin as exchange transfusion (6.7 mg/dl [24.9%] in the subjects vs. 6.9 mg/dl [22.7%] in the controls); shortened the duration of phototherapy (2.7 days in the subjects, vs. 4.2 days in the controls; p<0.001).

Conclusion: The use of Bilisphere 360 in the treatment of indirect pathological hyperbilirubinaemia is as effective as exchange transfusion in lowering Total Serum Bilirubin when its level is within 2-3 mg/dl (34-51umol/l) of the exchange level. Bilisphere 360 is effective in reducing needs for exchange transfusion and duration of phototherapy.

Keywords: Intensive Phototherapy, Exchange Transfusion, Neonatal Jaundice.

793. Do Term Newborns Respond Similarly To Different Painful Procedures?

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Iranian Journal of Pediatrics, 24 (6): 679-684 (2014) IF: 0.334

Objective: Although many methods for pain assessment in newborns are available, none of them are widely accepted. Our aim was to answer the question: do newborns respond similarly to different painful procedures?

Methods: Sixty term newborns were involved in non-randomized prospective study. They were classified into 2 groups: Group A (n=30) who needed intubation and Group B (n=30) who necessitated umbilical vein catheterization. Close observation prior to and 10 minutes after the painful procedures was performed for recording of physiological and behavioral indicators. Plasma renin activity (PRA) was measured before and 10 minutes after the painful procedures.

Findings: There was statistically significant difference between the 2 groups as regards physiological and hormonal responses to pain (P<0.05). Apart from palmar sweating and crying, there was no significant difference in behavioral response (P>0.05). The median pre- and post-intubation levels of PRA were 3.04 and 12.05 ng/ml/hour, respectively. There was significant (P<0.001) increase of PRA after intubation. On the other hand, the median pre- and post-catheterization levels of PRA were 5.21 and 9.19 ng/ml/hour, respectively. There was significant (P<0.001) increase of PRA after umbilical vein catheterization. We found that PRA was the only indicator of pain in group A (P=0.047). On the other hand, we did not find any indicator of pain in group B. **Conclusion**: We concluded that full-term newborns vary in their physiological and hormonal responses to different painful procedures but their behavioral response is the same.

Keywords: Pain assessment; Newborns; Plasma renin activity; Intubation; Umbilical vein catheterization.

794. Mutation of Congenital Chloride Loosing Diarrhea in Saudi Children

Abdulla A. Alharthi, Naglaa M. Kamal, Samer E. Ismail, Gaber M. G. Shehab, Hamdi M. Youssef and Yousri M. Hussein

Wulfenia, 21: 234-242 (2014) IF: 0.294

Congenital Chloride Diarrhea (CLD) is a watery diarrhea with metabolic alkalosis and excess chloride in feces. It is an autosomal recessive inherited disease caused by mutations in SLC26A3 gene with higher incidence in Arab countries. Due to Arab consanguineous marriages, only one founder mutation (Glv187Ter)was reported in exon5.We sequenced exon5 to study the molecular background in 27 CLD children from Taif, Saudi Arabia. Interestingly, the mutation (NG_008046.1:g.17175G>T, ss904491498) was consistent in all children. These results will support developing CLD early detection kits and specific treatments. Adding it to the Saudi pre-marital check-up program would greatly decrease CLD burden. We are looking forward to include screening for the reported founder mutation in the Saudi pre-marital check-up program hoping to decrease the burden of this inherited lifelong disease and with the challenge of developing specific treatment

Keywords: Chloride Diarrhea (CLD); Congenital Chloride Loosing Diarrhea (CCD), SNP, Founder Mutation.

795. Ocular Manifestations in Egyptian Children and Young Adults With Sickle Cell Disease

Mona Kamal El-Ghamrawy, Hanan F. El Behairy, Amal El Menshawy, Seham A. Awad, Ahmed Ismail and Mohamed Salah Gabal

Indian Journal of Hematology and Blood Transfusion, 30(4): 275-280 (2014) IF: 0.234

In sickle cell disease (SCD), ocular lesions result from stasis and occlusion of small eye vessels by sickled erythrocytes. Vasoocclusive disease of the retina can be responsible for nonproliferative (NPR) and proliferative retinopathy (PR). Patients are often asymptomatic until serious complications arise as, vitreous hemorrhage and retinal detachment. This work aimed to study the frequency and pattern of ocular manifestations in Egyptian children and young adults with SCD. In this crosssectional study, 40 steady state patients (80 eyes) aged 2-28 years (30 children and 10 young adults) with established diagnosis of SCD (26 with homozygous SS and 14 with S/ β thalassemia underwent complete ophthalmic examination with dilated fundoscopy. Fluorescein angiography was performed for patients =12 years old. The overall frequency of retinal lesions was 47.5 % (46.2 and 50 % of SS and S/ β patients respectively). PR and NPR were evident in 32.5 and 27.5 % of all enrolled patients respectively (five patients having both). Peripheral retinal occlusion was a frequent ocular finding in both groups; the youngest patient showing PR was 15 years old. Older age, longer disease duration and splenectomy were significantly more prevalent among patients with PR. Despite lack of visual symptoms, children and young adults are at risk of PR. Frequency of retinal lesions was comparable in SS and S/ β patients. Periodic ophthalmologic examination starting at the age of 12 years is recommended for timely-identification of retinal lesions thus minimizing the risk of sight threatening retinopathy.

Keywords: Children; Ocular; Retinopathy; Sickle Cell Disease.

796. Nutritional Biomarkers in Children and Adolescents With Beta-Thalassemia-Major: an Egyptian Center Experience

Laila M. Sherief, Sanaa M. Abd El-Salam, Naglaa M. Kamal, Osama El safy, Mohamed A. A. Almalky, SehamF. Azab, Hemat M. Morsy and Amal F. Gharieb

Biomed Research International, 2014: 1-7 (2014)

Background and Aim: Trace elements and vitamins play a vital role in human body to perform its function properly. Thalassemic patients are at risk of micronutrient deficiency. This study estimated levels of vitamins A, C, E, B12, folic acid, total homocysteine (tHcy), and methylmalonic acid (MMA) along with trace elements, zinc, copper, and selenium in Beta-thalassemia-major patients.

Methods: This study included 108 patients with Betathalassemia-major and 60 age and sex matched healthy children. Serum levels of vitamin A, E, C, tHcy, and MMA were estimated by high pressure liquid chromatography while serum levels of folic acid and B12 were estimated by thin layer chromatography. Serum zinc, copper, and selenium were determined by atomic absorption spectrometry.

Results: There was a significant decrease of vitamins A, C, E, and B12 and trace elements zinc, copper, and selenium in thalassemic patients as compared to controls. tHcy and MMA were significantly elevated in patients. No significant correlations were found between the serum levels of the studied vitamins and trace elements as regards age, frequency of transfusion, duration of transfusion, and serum ferritin.

Conclusion: The level of various nutritional biomarkers (vitamins A, C, E, and B12 and trace elements zinc, copper, selenium) was reduced in chronically transfused Egyptian thalassemic patient. These patients should have periodic nutritional evaluation and supplementation. Multicenter studies are highly recommended.

Keywords: Nutritional Biomarkers; Children; Adolescents; Beta-Thalassemia-Major; Egyptian.

797. Rheumatic Heart Disease in Africa: the Mosi-O-Tunya Call to Action

Sahar Mohamed Shaker Abd El-fattah Sheta

The Lancet Global Health, 2 (8): e438-e439 (2014)

Rheumatic heart disease is a neglected post-infectious chronic disease of children and young adults that continues to maim and kill millions of people needlessly. Sub-Saharan Africa is the hotspot of the world, with a prevalence of 5.7 per 1000 in

children aged 5–14 years in 2005.1 This information galvanised the Pan African Society of Cardiology (PASCAR), together with the WHO Regional Office for Africa (WHO-AFRO), the World Heart Federation, and the South African National Department of Health to convene the first All-Africa Workshop on rheumatic fever and rheumatic heart disease on Oct 15–16, 2005, near Drakensberg in South Africa.

Keywords: Rheumatic heart disease; Rheumatic fever.

Dept. of Physiology

798. Effect of Ghrelin on Chronic Liver Injury and Fibrogenesis in Male Rats: Possible Role of Nitric Oxide

Kabil NN, Seddiek HA, Yassin NA and Gamal-Eldin MM

Peptides, 52: 90-97 (2014) IF: 2.614

Recent studies have revealed that ghrelin may be an antioxidant and anti-inflammatory agent in many organs, however its role in chronic liver injury (CLI) remains unclear. The role of nitric oxide (NO) in CLI is controversial as evidence suggests that NO is either a primary mediator of liver cell injury or exhibits a protective effect against injurious stimuli. Recent evidence demonstrated that the therapeutic potential for ghrelin was through eNOS activation and increase in NO production. However, its role on NO production in the liver has not been previously investigated. The aim of this study was to investigate the role of ghrelin in treatment of CLI, and whether this action is mediated through NO. Forty male rats were divided into four groups: Group I: Control; Group II: chronic liver injury (CLI); Group III: CLI+Ghrelin; and Group IV: CLI+Ghrelin+l-NAME. Liver enzymes and tumor necrosis factor alpha (TNF- α), were measured to assess hepatocellular injury. Liver tissue collagen content, malondialdehyde (MDA), gene expression of Bax, Bcl-2, and eNOS were assessed to determine the mechanism of ghrelin action. Results showed that ghrelin decreased serum liver enzymes and TNF-a levels. Ghrelin also reduced liver tissue collagen, MDA, and Bax gene expression, and increased Bcl-2 and eNOS gene expression. The effects on TNF- α , collagen, MDA, Bax, and eNOS were partially reversed in Group IV, suggesting that ghrelin's action could be through modulation of NO levels. Therefore, ghrelin's hepatoprotective effect is partially mediated by NO release.

Keywords: Liver Injury Fibrosis Thioacetamide Ghrelin Nitric Oxide.

799. Cognitive Effects of Acute Restraint Stress in Male Albino Rats and the Impact of Pretreatment With Quetiapine Versus Ghrelin

Amin SN, Gamal SM, Esmail RS, Aziz TM and Rashed LA

J Integr Neurosci, 13: 669-692 (2014) IF: 1.121

Stress is any condition that seriously affects the balance of the organism physiologically and psychologically. Stress activates the hypothalamic-pituitary-adrenal (HPA) releasing glucocorticoid hormones that produce generalized effects on different body systems including the nervous system. This study aimed to investigate the effect of acute restraint stress (ARS) on cognitive performance by measuring spatial working memory in Y-maze, behavior (anxiety and exploratory behavior) in open field test, expression of synaptophysin and glial fibrillary acidic protein

(GFAP) in the hippocampus by immunohistochemistry, dopaminergic receptors (D2) in the basal ganglia by gene expression and comparing the effect of ghrelin and quetiapine on the previous parameters. 36 adult male albino rats constituted the animal model of this work and have been divided into six groups: control group, control group exposed to ARS, quetiapine group, quetiapine group exposed to ARS, ghrelin group and ghrelin group exposed to ARS. We demonstrated more neuroprotective effect for quetiapine compared to ghrelin on stress response, anxiety behavior and working spatial memory impairment due to ARS.

Keywords: Acute Stress; D2 Dopaminergic Receptors; GFAP; Basal Ganglia; Hippocampus; Synaptophysin.

Dept. of Public Health

800. Genetic Polymorphisms in Nqo1 and Sod2: Interactions With Smoking, Schistosoma Infection, and Bladder Cancer Risk in Egypt

David Goerlitz, Sania Amr, Chiranjeev Dash, Doa'a A. Saleh, Mai El-Daly, Mohamed Abd El-Hamid, Sherif El-Kafrawy, Tamer Hifnawy, Sameera Ezzat, Mohamed A. Abd El-Aziz, Hussein Khaled, Yun-Ling Zheng, Nabiel Mikhail and Christopher A. Loffredo

Urologic Oncology Seminars and Original Investigations, : - (2014) IF: 3.363

Background: Bladder cancer is the most prevalent form of cancer in men among Egyptians, for whom tobacco smoke exposure and Schistosoma haematobium (SH) infection are the major risk factors. We hypothesized that functional polymorphisms in NAD(P)H: quinone oxidoreductase 1(NQO1) and superoxidedismutase2 (SOD2), modulators of the effect so fre active oxidative species, can influence an individual's susceptibility to these carcinogenic exposures and hence the risk of bladder cancer.

Methods: We assessed the effects of potential interactions between functional polymorphisms in the NQO1 and SOD2 genes and exposure to smoking and SH infection on bladder cancer risk among 902 cases and 804 population-based controls in Egypt. We used unconditional logistic regression to estimate the odds ratios(OR) and confidence intervals (CI) 95%.

Results: Water pipe and cigarette smoking were more strongly associated with cancer risk among individuals with the TT genotype for SOD2 (OR [CI95%] ¹/₄ 4.41 [1.86–10.42]) as compared with those with the CC genotype (OR[CI95%] ¹/₄ 2.26 [0.97–6.74]). Conversely, the risk associated with SH infection was higher among the latter (OR[CI95%] ¹/₄ 3.59 [2.21–5.84]) than among the former (OR[CI95%] ¹/₄ 1.86 [1.33–2.60]). Polymorphisms in NQO1 genotype showed a similar pattern, but to a much lesser extent. The highest odds for having bladder cancer following SH infection were observed among individuals with the CC genotypes for both NQO1 and SOD2 (OR [CI95%] ¹/₄ 4.41 [2.32–8.38]).

Conclusion: Our findings suggest that genetic polymorphisms in NQO1 and SOD2 play important roles in the etiology of bladder cancer by modulating the effects of known contributing factors such as smoking and SH infection.

Keywords: Nqo1; Sod2; Bladdercancer; Epidemiology; Smoking; Schistosomiasis.

801. Multiple Pregnancies, Hepatitis C, and Risk for Hepatocellular Carcinoma in Egyptian Women

Sania Amr, Emily A Iarocci, Ghada R Nasr, Doa'a Saleh, Jan Blancato, Kirti Shetty and Christopher A Loffredo

Bmc Cancer, 29: 893-897 (2014) IF: 3.319

Background: The reasons for the worldwide sex disparity in the incidence of hepatocellular carcinoma (HCC) remain elusive. We investigated the role of multiple pregnancies on the associations between viral hepatitis C (HCV) infection and HCC risk among Egyptian women.

Methods: We used data collected from blood specimens and questionnaires administered to female HCC cases and controls in Cairo, Egypt, from 1999 through 2009. HCV infection was defined as being sero-positive for either anti-HCV antibodies or HCV-RNA. Using logistic regression models we calculated odds ratios (OR) and 95% confidence intervals (CI) to estimate the associations between being HCV positive and HCC risk, and how it is modified by the number of pregnancies, after adjustment for other factors, including hepatitis B status.

Results: Among 132 confirmed female cases and 669 controls, the risk of HCV-related HCC increased with the number of pregnancies. Women infected with HCV had higher risk for HCC if they had more than five pregnancies, as compared to those who had five or fewer pregnancies (adjusted OR (95% CI): 2.33 (1.29-4.22)). The association of HCV infection with HCC risk was significantly greater among the former (21.42 (10.43-44.00)) than among the latter (6.57 (3.04-14.25)).

Conclusion: Having multiple pregnancies increases the risk of HCV-related HCC among Egyptian women, raising questions about the roles of estrogens and other pregnancy-related hormones in modulating HCV infection and its progression to HCC

Keywords: Hepatocellular Carcinoma; Hepatitis C; Epidemiology; Pregnancy; Women'S Health.

802. Knowledge Translation in Africa for 21St Century Integrative Biology: the"Know-Do Gap" in Family Planning With Contraceptive Use Among Somali Women

Ahmed A. Ahmed, Abdullahi A. Mohamed, Ibrahim A. Guled, Hayfa M. Elamin and Alaa H. Abou-Zeid

Omics A Journal of Integrative Biology, 18: 696-704 (2014) IF: 2.73

An emerging dimension of 21st century integrative biology is knowledge translation in global health. The maternal mortality rate in Somalia is amongst the highest in the world. We set out to study the "know-do" gap in family planning measures in Somalia, with a view to inform future interventions for knowledge integration between theory and practice. We interviewed 360 Somali females of reproductive age and compared universityeducated females to women with less or no education, using structured interviews, with a validated questionnaire. The mean age of marriage was 18 years, with 4.5 pregnancies per marriage. The mean for the desired family size was 9.3 and 10.5 children for the university-educated group and the less-educated group, respectively. Importantly, nearly 90% of the university-educated group knew about family planning, compared to 45.6% of the less-educated group. All of the less-educated group indicated that they would never use contraceptives, as compared to 43.5% of the

university-educated group. Prevalence of contraceptive use among ever-married women was 4.3%. In the less-educated group, 80.6% indicated that they would not recommend contraceptives to other women as compared to 66.0% of the university-educated group. There is a huge gap between knowledge and practice regarding family planning in Somalia. The attendant reasons for this gap, such as level of education, expressed personal religious beliefs and others, are examined here. For primary health care to gain traction in Africa, we need to address the existing "know-do" gaps that are endemic and adversely impacting on global health. This is the first independent research study examining the knowledge gaps for family planning in Somalia in the last 20 years, with a view to understanding knowledge integration in a global world. The results shall guide policy makers, donors, and implementers to develop a sound family planning policy and program to improve maternal and child health in 21st century primary healthcare.

Keywords: Family Planning Somalia Knowledge Translation Africa.

803. Translating Biotechnology to Knowledge-Based Innovation, Peace, and Development? Deploy A Science Peace Corps—An Open Letter to World Leaders

Hekim N, Coşkun Y, Sınav A, Abou-Zeid AH, Ağırbaşlı M, Akintola SO, Aynacıoğlu Ş, Bayram M, Bragazzi NL, Dandara C, Dereli T, Dove ES, Elbeyli L, Endrenyi L, Erciyas K, Faris J, Ferguson LR, Göğüş F, Güngör K, Gürsoy M, Gürsoy UK, Karaömerlioğlu MA, Kickbusch I, Kılıç T, Kılınç M, Kocagöz T, Lin B, LLerena A, Manolopoulos VG, Nair B, Özkan B, Pang T, Sardaş Ş, Srivastava S, Toraman C, Üstün K, Warnich L, Wonkam A, Yakıcıer MC, Yaşar Ü and Özdemir V.

Omics A Journal of Integrative Biology, 18: 415-420 (2014) IF: 2.73

Scholarship knows no geographical boundaries. This science diplomacy and biotechnology journalism article introduces an original concept and policy petition to innovate the global translational science, a Science Peace Corps. Service at the new Corps could entail volunteer work for a minimum of 6 weeks, and up to a maximum of 2 years, for translational research in any region of the world to build capacity manifestly for development and peace, instead of the narrow bench-to-bedside model of life science translation. Topics for translational research are envisioned to include all fields of life sciences and medicine, as long as they are linked to potential or concrete endpoints in development, foreign policy, conflict management, post-crisis capacity building, and/or peace scholarship domains. As a new instrument in the global science and technology governance toolbox, a Science Peace Corps could work effectively, for example, towards elucidating the emerging concept of "one health"-encompassing human, environmental, plant, microbial, ecosystem, and planet health-thus serving as an innovative crosscutting pillar of 21st century integrative biology. An interdisciplinary program of this caliber for development would link 21st century life sciences to foreign policy and peace, in ways that can benefit many nations despite their ideological differences. We note that a Science Peace Corps is timely. The Intergovernmental Panel on Climate Change (IPCC) of the United Nations released the Fifth Assessment Report on March 31, 2014. Worrisomely, the report underscores that no person or nation will remain untouched by the climate change, highlighting the shared pressing life sciences challenges for global society. To this end, we recall that President John F. Kennedy advocated for volunteer work that has enduring, transgenerational, and global impacts. This culminated in establishment of the Peace Corps in 1961. Earlier, President Abraham Lincoln aptly observed, "nearly all men can stand adversity, but if you want to test a man's character, give him power." We therefore petition President Barack Obama, other world leaders, and international development agencies in positions of power around the globe, to consider deploying a Science Peace Corps to cultivate the essential (and presently missing) ties among life sciences, foreign policy, development, and peace agendas. A Science Peace Corps requires support by a credible and independent intergovernmental organization or development agency for funding, and arbitration in the course of volunteer work when the global versus local (glocal) value-based priorities and human rights intersect in synergy or conflict. In all, Science Peace Corps is an invitation to a new pathway for competence in 21st century science that is locally productive and globally competitive. It can open up scientific institutions to broader considerations and broader inputs, and thus cultivate vital translational science in a world sorely in need of solidarity and sustainable responses to the challenges of 21st century science and society.

804. Knowledge and Perceptions of Hepatitis C Infection and Pesticides Use in Two Rural Villages in Egypt

Doa'a A Saleh, Sania Amr, Irene A Jillson, Judy Huei-yu Wang, Walaa A Khairy and Christopher A Loffredo

Bmc Public Health, 14 (1): 501-507 (2014) IF: 2.321

Background: Hepatocellular carcinoma (HCC), one of the most fatal types of malignancy, is increasing worldwide, and particularly in Egypt where there is a confluence of its contributing factors, including high prevalence of hepatitis C virus (HCV) infection, widespread use of pesticides, and diets that are contaminated by aflatoxin B1 (AFB1) in rural areas. We investigated knowledge, attitudes, and prevention practices related to HCV infection and pesticides use in rural Egypt, where over half of the population resides and agriculture is the predominant occupation.

Methods: From two rural villages we recruited 67 residents aged 18–80 years, who completed a 40-item survey that included questions about demographics, knowledge of and protective measures relevant to pesticides use in the home and in agriculture, awareness and perceptions of HCV infection and its treatment and prevention.

Results: Among the 67 study participants, gender distribution was equal, the mean age was 47.2, and one third never attended school. More than 50% reported using pesticides at home, but fewer reported having some knowledge about its health effects. Twelve participants were agricultural workers, and 11 of them applied pesticides in the field and knew about their toxicity; however only one person was correctly using the appropriate protective equipment. Among all the participants, 52 did not know what causes HCV infection, and 42 of those who knew it was a virus mentioned incorrect modes of transmission; and 30 did not know the disease manifestations.

Conclusion: In rural Egypt, there is a significant lack of knowledge of HCV infection and its transmission mode and limited use of protective measures against pesticides despite familiarity with these chemicals.

Keywords: HCV; Pesticides; Liver Cancer; Hepatocellular Carcinoma; Knowledge.

805. Agricultural Workers and Urinary Bladder Cancer Risk in Egypt

Sania Amr , Rebecca Dawson, Doa'a A. Saleh, Laurence S. Magder, Nabiel N. Mikhail, Diane Marie St. George, Katherine Squibb, Hussein Khaled and Christopher A. Loffredo

Archives of Environmental and Occupational Health, 69(1): 3-10 (2014) IF: 0.617

The authors examined the associations between farming and the risk for squamous cell (SCC) or urothelial cell (UC) carcinoma of the urinary bladder among Egyptians. The authors used data from a multicenter case-control study (1,525 male and 315 female cases, and 2,069 male and 547 female age- and residence-matched, population-based controls) to calculate adjusted odds ratios (AORs) and 95% confidence intervals (CIs). Men in farming and who never smoked had increased risk for either SCC or UC (AOR [95% CI]: 4.65 [2.59–8.36] and 6.22 [3.82–10.15], respectively). If they ever smoked, their risks were 2.27 (1.75–2.95) and 1.93 (1.58–2.35), respectively. Women in farmer households were at increased risk for SCC (1.40 [0.93–2.09] and UC [1.25 (0.82–1.89]), although not statistically significant. Occupational and environmental exposures to farming increased the risk for bladder cancer among Egyptians

Keywords: Agricultural Workers; Bladder Cancer; Egypt; Epidemiology; Tobacco Smoke Exposure.

Dept. of Rheumatology

806. Prevalence of Comorbidities in Rheumatoid Arthritis and Evaluation of Their Monitoring: Results of An International, Cross-Sectional Study (COMORA)

Dougados M, Soubrier M, Antunez A, Balint P, Balsa A, Buch MH, Casado G, Detert J, El-Zorkany B, Emery P, Hajjaj-Hassouni N, Harigai M, Luo SF, Kurucz R, Maciel G, Mola EM, Montecucco CM, McInnes I, Radner H, Smolen JS, Song YW, Vonkeman HE, Winthrop K and Kay J.

Annals of the Rheumatic Diseases, 73: 62-68 (2014) IF: 9.27

Background: PATIENTS with rheumatoid arthritis (RA) are at increased risk of developing comorbid conditions.

Objectives: To evaluate the prevalence of comorbidities and compare their management in RA patients from different countries worldwide.

Methods: Study Design: international, cross-sectional.

Patients: consecutive RA patients.

Data Collected: demographics, disease characteristics (activity, severity, treatment), comorbidities (cardiovascular, infections, cancer, gastrointestinal, pulmonary, osteoporosis and psychiatric disorders).

Results: Of 4586 patients recruited in 17 participating countries, 3920 were analysed (age, 56 ± 13 years; disease duration, 10 ± 9 years (mean \pm SD); female gender, 82%; DAS28 (Disease Activity Score using 28 joints)-erythrocyte sedimentation rate, 3.7 ± 1.6 (mean \pm SD); Health Assessment Questionnaire, 1.0 ± 0.7 (mean \pm SD); past or current methotrexate use, 89%; past or current use of biological agents, 39%. The most frequently associated diseases (past or current) were: depression, 15%; asthma, 6.6%; cardiovascular events (myocardial infarction,

stroke), 6%; solid malignancies (excluding basal cell carcinoma), 4.5%; chronic obstructive pulmonary disease, 3.5%. High intercountry variability was observed for both the prevalence of comorbidities and the proportion of subjects complying with recommendations for preventing and managing comorbidities. The systematic evaluation of comorbidities in this study detected abnormalities in vital signs, such as elevated blood pressure in 11.2%, and identified conditions that manifest as laboratory test abnormalities, such as hyperglycaemia in 3.3% and hyperlipidaemia in 8.3%.

Conclusions: Among RA patients, there is a high prevalence of comorbidities and their risk factors. In this multinational sample, variability among countries was wide, not only in prevalence but also in compliance with recommendations for preventing and managing these comorbidities. Systematic measurement of vital signs and laboratory testing detects otherwise unrecognised comorbid conditions.

Keywords: Objectives To Evaluate The Prevalence Of Comorbidities.

807. Polymorphisms of Interleukin 6 and Interleukin 10 in Egyptian People With Behcet''s Disease

Talaat RM, Ashour ME, Bassyouni IH and Raouf AA

Immunobiology, 219(8): 573-582 (2014) IF: 3.18

Cytokines play critical roles in the pathogenesis of Behcet's disease (BD). They mediated many of the effectors and regulatory functions of immune and inflammatory responses. Many studies have linked Interleukin-6 (IL-6) and Interleukin-10 (IL-10) pathologically to BD. Thus, this study aimed to investigate the associations between IL-6 and IL-10 promoter single-nucleotide polymorphisms (SNPs) and the susceptibility to BD and their implication on plasma levels. We genotyped IL-6 -174 G/C (rs1800795) using Mutagenically Separated Polymerase Chain Reaction PCR (MS-PCR) and IL-10 -1082 G/A (rs1800896) and -819 C/T (rs1800871) using Sequence Specific Primer PCR (SSP-PCR) in 87 Egyptian patients and 97 controls. The plasma levels of IL-6 and IL-10 were measured using Enzyme-linked Immunosorbent Assay (ELISA). Significant increase in the frequency of -1082 GG genotype (P<0.05, OR=2.25, 95%CI=1.03-4.91) and significant decrease in the frequency of -1082 GA genotype (P<0.05, OR=0.53, 95%CI=0.29-0.96) was demonstrated in BD patients compare to controls. Patients with genital ulcer had significantly lower frequency of -1082 GG (P<0.05, OR 0.2, 95% CI=0.04-0.99) and G allele (P<0.05, OR=0.28, 95%CI=0.08-0.93), while patients with ocular manifestations had significantly higher frequency of -1082 G allele (P<0.01, OR=2.28, 95%CI=1.19-4.36). BD patients had significantly higher level of IL-6 (P<0.001) and significantly lower level of IL-10 (P<0.001) compared to controls. The changes in the level of cytokines were independent of any genotype of IL-6 or any genotype/haplotype of IL-10. Patients with active disease state had significantly higher level of IL-6 compared to patients in remission (P<0.05). In conclusion, our preliminary study indicates that the polymorphism at IL-10 -1082 G/A may play a role in BD susceptibility. The significant increase in IL-6 level and the significant decrease in IL-10 level in BD patients were independent of any particular genotype in IL-6 or any particular genotype/haplotype in IL-10.

Keywords: Behçet's Disease; Cytokines; Il-10; Il-6; Polymorphism; Snp.

808. Autoantibodies Against Complement C1q in Patients With Behcet''s Disease: Association With Vascular Involvement

Bassyouni IH, Gamal S, Talaat RM and Siam I

Modern Rheumatology, 24(2): 316-320 (2014) IF: 2.206

The aim of our study was to determine the prevalence of anti-C1q antibodies and their possible association with clinical presentation in Behcet's disease (BD) patients with special emphasis for patients with vascular involvement.

Plasma anti-C1q Abs levels were measured using an enzymelinked immunosorbent assay in 51 BD patients and 25 age- and gender-matched healthy controls.

We found elevated concentrations of anti-C1q more frequently in patients with BD (18%) than in healthy controls (8%).

The highest prevalence was found in patients with vascular BD (42 %) which was significantly higher than patients without vascular BD and healthy controls (p = 0.025). Furthermore, patients with vascular BD had the highest mean anti-C1q levels when compared to BD patients without vascular involvement or healthy control subjects (p = 0.015).

We did not find significant differences in the prevalence of any other organ involvement between BD patients with elevated vs. normal anti-C1q ab levels. Anti-C1q ab levels positively correlated with ESR (r = 0.383, p = 0.006) and negatively with C4 (r = -0.304, p = 0.030).

In conclusion, we found an increased prevalence of anti-C1q autoantibodies in BD patients with vascular involvement. Further large scale longitudinal studies are required to assess and clarify the significance and the pathogenic role of anti-C1q antibodies in BD and other autoimmune diseases in which vasculitis is a component.

Keywords: Anti-C1q antibodies; Behcet'S disease; Complement; Vascular disease.

809. Subclinical Reduced G6PD Activity in Rheumatoid Arthritis and Sjögren's Syndrome Patients: Relation To Clinical Characteristics, Disease Activity and Metabolic Syndrome.

Gheita TA, Kenawy SA, El Sisi RW, Gheita HA and Khalil H.

Modern Rheumatology, 24: 612-617 (2014) IF: 2.206

Objective: Glucose-6-phosphate dehydrogenase (G6PD) is an important site of metabolic control in the pentose phosphate pathway. The purpose of this study was to investigate the enzyme activity of G6PD in Rheumatoid Arthritis (RA) and Sjögren's Syndrome (SS) patients not known to be deficient in this enzyme. It was also within the scope of the aim to find the relation of G6PD to the presence of metabolic syndrome (MetS) in these patients.

Methods: Erythrocyte G6PD activity was evaluated in 40 RA patients, 30 SS patients and in 30 age- and sex-matched control. The clinical characteristics, disease activity score (DAS28), SS disease activity (SSDAI) and damage (SSDDI) indices and presence of MetS of the included patients were analyzed in relation to the enzyme level.

Results: The G6PD activity in RA patients $(7.72 \pm 3.57 \text{ U/g Hb})$ was significantly reduced compared to that in the SS patients $(11.55 \pm 3.14 \text{ U/g Hb})$ and control $(13.23 \pm 3.34 \text{ U/g Hb})$ especially those with MetS $(4.61 \pm 1.84 \text{ U/g Hb})$ (p < 0.001).

There was a significant negative correlation of the G6PD activity with the disease duration and DAS28 (p < 0.001).

Conclusion: The results of this study, suggest that G6PD not only does not protect against MetS in RA, but may even be considered a risk factor for the development of this disorder. The identification of regulatory tools for G6PD activity may prove promising for treating the associated metabolic disorders and chronic inflammation in RA.

Keywords: G6pd; Rheumatoid Arthritis; Sjogrens Syndrome; Metabolic syndrome.

810. Detection of asymptomatic cranial Neuropathies in Patients with Systemic Lupus Erythematosus and their relation to antiribosomal P antibody levels and disease activity

Gaber W, Ezzat Y, El Fayoumy NM, Helmy H and Mohey AM

Clin Rheumatol, 33: 1459-1466 (2014) IF: 1.774

The objectives of this study are to assess the risk of asymptomatic cranial neuropathy among patients with systemic lupus erythematosus (SLE) and find any association with disease activity and antiribosomal P antibodies.

This study is a case-control study including 60 female patients and 30 healthy female controls. Disease activity wasmeasured with the SLE disease activity index (SLEDAI). All patients were evaluated using evoked potentials, blink reflex, and levels of antiribosomal P antibodies. Patients with abnormal electrophysiological parameters had significantly higher levels of antiribosomal P antibodies (P=0.034) and secondary antiphospholipid syndrome (P=0.044). Antiribosomal P antibodies.

Keywords: Antiribosomal P Antibodies; Auditory Brain Reflex; Evoked Blink Reflex; Systemic Lupus Erythematosus.

811. Involvement of II-23 in Enteropathic Arthritis Patients With Inflammatory Bowel Disease: Preliminary Results

Gheita TA, El Gazzar II, El-Fishawy HS, Aboul-Ezz MA and Kenawy SA.

Clinical Rheumatology, 33: 713-717 (2014) IF: 1.774

The role of interleukin (IL)-23 in the pathogenesis of inflammatory bowel disease (IBD) remains unclear. The aim of this work was to study the serum level of IL-23 in IBD with and without arthritis and determine its relation to the subsets and clinical features of the disease. Thirty-seven patients with IBD including 11 with arthritis were included in the study with a mean age of 30.86±4.66 years. Twenty healthy subjects served as control. Seronegative spondyloarthropathy was present in 11 (29.73 %) of the IBD patients; Crohn's disease (CD) was present in 23 and 14 had ulcerative colitis (UC). Serum level of IL-23 was measured in all patients and control by ELISA. IL-23 was significantly higher in IBD patients (46.24±27.19 pg/ml) compared to control (24.1±2.31 pg/ml) (p<0.0001) being higher in CD patients (52.57±32.78 pg/ml) compared to those with UC (35.86±6.41 pg/ml) (p=0.026). Furthermore, it was significantly higher in those with peripheral and/or axial arthritis (67.73±40.85 pg/ml) compared to patients without (37.15±10.37 pg/ml) (p=0.03). There was a tendency to a higher level in males (49.15±30.97 pg/ml) compared to females (38.4±9.54 pg/ml). Serum IL-23 is increased in IBD especially those with CD

associated with arthritis and sacroiliitis. The IL-23 could be added to the biomarkers of development of arthritis in IBD patients. These results also confirm the findings of previous studies on the critical role played by IL-23 in the pathogenesis of IBD making it an important new therapeutic target for these patients. **Keywords**: Il23; IBD.

812. The Effect of Leflunomide On theEye Dryness in Secondary Sjögrens Syndrome Associated With Rheumatoid Arthritis and in Rheumatoid Arthritis Patients

Amira Shahin, Sameh El-Agha and Ghada El-Azkalany

Clinical Rheumatology, 33: 925-930 (2014) IF: 1.774

The aim of this work was to clarify the effect of leflunomide (LEF) on the eye dryness in patients with secondary Sjögren's syndrome associated with rheumatoid arthritis (RA-sSS) and in patients with rheumatoid arthritis (RA). Seventy-five female patients, 45 with RA-sSS (group A) and 30 with RA (group B), taking methotrexate at a dose of 20 mg/week for more than 6 months were enrolled in this study. They all had a loading dose of leflunomide then were maintained at a dose of 20 mg/day in addition to methotrexate for another 3 months. The modified disease activity score (DAS28) was calculated and modified Schirmer's-I test was performed. Assessment of disease parameters was done to all patients before and after 3 months of taking LEF. The mean modified Schirmer's-I test showed a significant decrease after 3 months of taking LEF in group A (3 $\hat{A} \pm 1.6$ before versus 1.9 $\hat{A} \pm 1.6$ after 3 months, P < 0.001), while this difference was non-significant in group B (21.3 $\hat{A} \pm 10$ versus 19.9 \hat{A} ± 11). One patient (group A) developed peripheral ulcerative keratitis (PUK) with exacerbation of disease activity (DAS-28 = 6.9) that improved by taking corticosteroids. Three patients (group A) had aggravation of punctate keratocojunctivitis sicca with punctate erosions without PUK. The condition improved dramatically by stopping LEF and using topical lubricants. We report in this study a significant deterioration of the eye dryness in patients with sSS-RA after 3 months of receiving LEF inspite of the significant improvement of their DAS28. This finding was not clearly detected in RA patients. Close monitoring of eye dryness changes by special tests in patients using LEF is recommended, especially in cases with sSS-RA having very low baseline values.

Keywords: Eye Dryness; Leflunomide; Peripheral Ulcerative Keratitis; Punctate Keratoconjunctivitis Sicca; Rheumatoid Arthritis; Secondary SjöGren's Syndrome.

813. Therapeutic Potential of Hydroxychloroquine On Serum B-Cell Activating Factor Belonging To theTumor Necrosis Factor Family (BAFF) in Rheumatoid Arthritis Patients

Amina A. Mahdy, Hala A. Raafat, Hussein S. El-Fishawy and Tamer A. Gheita

Bulletin of Faculty of Pharmacy, Cairo University, 52: 37-43 (2014)

Objective: To assess the serum B-cell activating factor belonging to the tumor necrosis factor family (BAFF) level in rheumatoid arthritis (RA) patients in view of different treatment regimens received and evaluate its relation with disease activity.

Patients and methods: Ninety female RA patients were included. Sixty were on disease modifying anti-rheumatic drugs

(DMARDs); 34 on hydroxychloroquine (HCQ) plus methotrexate (MTX), 26 on leflunomide (LFN) plus MTX and 30 newly diagnosed cases not yet on any treatment. Thirty age and gender matched healthy subjects served as controls. Full history taking, clinical examination and relevant laboratory investigations were performed. Disease activity score, in 28 joints (DAS-28), was calculated.

Results: Serum BAFF level was significantly higher in patients (1.82 \pm 0.91 ng/ml) compared to control (0.71 \pm 0.33 ng/ml; p < 0.001). There was a significantly lower BAFF and disease activity in patients receiving DMARDs (1.55 \pm 0.73 ng/ml and 3.08 \pm 0.73) compared to new cases (2.36 \pm 1.02 ng/ml and 3.46 \pm 0.82) (p < 0.001 and p = 0.036, respectively). Those receiving HCQ + MTX had a lower BAFF level (1.29 \pm 0.51 ng/ml) compared to those receiving LFN + MTX (1.94 \pm 0.85 ng/ml; p = 0.002). The BAFF level significantly correlated with the presence of anti-CCP antibodies, DAS28 and MTX dose in all RA patients (r = 0.24, p = 0.02; r = 0.504, p < 0.001; r = 0.51, p < 0.001, respectively). Only DAS28 and MTX dose would highly influence the BAFF level (p = 0.015 and p = 0.001, respectively).

Conclusion: Elevated level of BAFF in RA has been confirmed with a notable relation to disease activity making it a promising marker. The beneficial effect of hydroxychloroquine in dampening BAFF level throws light on the importance of considering it in combination among the newly developed biologics that also target B-cells.

Keywords: Serum Baff; Ra; Das28; Hydroxychloroquine; Methotrexate; Leflunomide.

Dept. of Urology Dept

814. Slow VS Rapid Delivery Rate Shock Wave Lithotripsy for Pediatric Renal Urolithiasis: A Prospective Randomized Study

Salem HK, Fathy H, Elfayoumy H, Aly H, Ghonium A, Mohsen MA and Hegazy Ael R

Journal of Urology, 191(5):1370-1374 (2014) IF: 3.753

Purpose:We compared slow vs fast shock wave frequency rates in disintegration of pediatric renal stones less than 20 mm.

Materials and Methods: Our study included 60 children with solitary 10 to 20 mm radiopaque renal stones treated with shock wave lithotripsy. Patients were prospectively randomized into 2 groups, ie those undergoing lithotripsy at a rate of 80 shock waves per minute (group 1, 30 patients) and those undergoing lithotripsy at a rate of 120 shock waves per minute (group 2, 30 patients). The 2 groups were compared in terms of treatment success, anesthesia time, secondary procedures and efficiency quotient.

Results: Stone clearance rate was significantly higher in group 1 (90%) than in group 2 (73.3%, p = 0.025). A total of 18 patients in group 1 (60%) were rendered stone-free after 1 session, 8 required 2 sessions and 1 needed 3 sessions, while shock wave lithotripsy failed in 3 patients. By comparison, 8 patients (26.6%) in group 2 were rendered stone-free after 1 session, 10 (33.3%) required 2 sessions and 4 (13.3%) needed 3 sessions to become stone-free. Mean general anesthesia time was significantly longer in group 1 (p = 0.041). Postoperatively 2 patients in group 1 and 4 in group 2 suffered low grade fever (Clavien grade II). Significantly more secondary procedures (percutaneous nephrolithotomy, repeat shock wave lithotripsy) were required in group 2 (p = 0.005). The predominant stone analysis was calcium oxalate dihydrate in both groups. Efficiency quotient was 0.5869 and 0.3437 for group 1 and group 2, respectively (p = 0.0247).

Conclusions: In children with renal stones slow delivery rates of shock wave lithotripsy have better results regarding stone clearance than fast delivery rates.

Keywords: High-Energy Shock Waves; Kidney Calculi; Lithotripsy; Pediatrics; Urolithiasis.

815. Holmium: YAG Laser Ureteroscopic Lithotripsy for Ureteric Calculi in Children: Predictive Factors for Complications and Success

Elsheemy MS, Maher A, Mursi K, Shouman AM, Shoukry AI, Morsi HA and Meshref A.

World Journal of Urology, 32 (4): 985-990 (2014) IF: 3.423

Objectives: To evaluate the impact of age, stone size, location, radiolucency, extraction of stone fragments, size of ureteroscope and presence and degree of hydronephrosis on the efficacy and safety of holmium:YAG (Ho:YAG) laser lithotripsy in the ureteroscopic treatment of ureteral stones in children.

Methods: Between October 2011 and May 2013, a total of 104 patients were managed using semirigid Ho:YAG ureterolithotripsy. Patient age, stone size and site, radiolucency, use of extraction devices, degree of hydronephrosis and size of ureteroscope were compared for operative time, success and complications.

Results: In all, 128 URS were done with a mean age of 4.7 years. The mean stones size was 11 mm. Success rate was 81.25 %. Causes of failure were 12.5 % access failure, 1.5 % extravasation and 4.7 % stone migration. Overall complications were 23.4 %. Failure of dilatation and extravasation were detected only in children <2 years old. Extravasation was significantly higher in smaller ureters and cases with stone size >15 mm. Stone migration was significantly higher in upper ureteric stones.

Conclusions: Failure and complications rates in Ho:YAG ureterolithotripsy were significantly affected by younger age (<2 years), upper ureteric stones and smaller ureters but were not related to stone radiolucency or degree of hydronephrosis. Larger stones (>15 mm) were associated with increased complications. After multivariate analysis, the age of the patients remained significant predictor for failure of dilatation and stone migration, while size of the ureter was the only significant predicting factor for failure.

Keywords: Holmium Laser Intracorporeal Lithotripsy Stones Endourology Children.

816. Circulating miRNas 21 and 221 as Biomarkers for Early Diagnosis of Prostate Cancer

Sameh Kotb, Ashraf Mosharafa, Mona Essawi, Heba Hassan, Alaa Meshref and Ahmed Morsy

Tumor Biology, 35: 12613-12617 (2014) IF: 2.84

To compare the expression of two promising circulating microribonucleic acids (miRNAs 21 and 221) in patients with prostate cancer to subjects without cancer and to evaluate their potential role as specific noninvasive molecular biomarkers for prostate cancer diagnosis, circulating miRNAs 21 and 221 expression profiles were analyzed in 20 men aged 50–75 years, presenting with lower urinary tract symptoms (LUTSs) and undergoing transrectal ultrasound (TRUS)-guided prostate biopsy based on either elevated serum prostatespecific antigen (PSA) (>4.0 ng/ml) or suspicious digital rectal examination (DRE). The performance of miRNAs 21 and 221 in differentiating prostate cancer from nonmalignant cases was evaluated and compared to DRE and elevated PSA. miRNA 21 was overexpressed in 90 % of group A vs. 10 % of group B, while miRNA 221 was overexpressed in 80 % of group A vs. 20 % of group B (p=0.001). MiRNA 21 overexpression had the highest performance as a diagnostic test with a sensitivity of 90 % and a specificity 90 % (p=0.02). No correlations were noted between Gleason score of prostate cancer cases and relative quantity (RQ) 21 (r=-0.355,p=0.292) or RQ 221 (r=-0.044, p=0.892). Our study showed that serum miRNAs 21 and 221 expression profiling tests may be used as specific noninvasive molecular biomarkers for prostate cancer diagnosis due to their higher sensitivity and specificity with a high negative predictive value leading to a decrease in the biopsies taken for patients with elevated serum PSA values.

Keywords: Mirnas . Prostate Neoplasms . Diagnosis .

817. Effect of Multiple Access Tracts During Percutaneous Nephrolithotomy on Renal Function: Evaluation of Risk Factors for Renal Function Deteriorationo

Amr S. Fayad, Mohamed G. Elsheikh, Ashraf Mosharafa, Ragheb El-Sergany, Mohammed A. Abdel-Rassoul, Ahmed Elshenofy, Hisham Ghamrawy, Ahmed Abd El Bary and Tarek Fayad

Journal of Endourology, 28: 775-779 (2014) IF: 2.095

Purpose: To assess the impact of multiple access tracts during percutaneous nephrolithotomy (PCNL) on shortand midterm renal function, and to determine risk factors predicting renal function deterioration and/or recoverability. Patients and Methods: Patients undergoing PCNL with multiple punctures were prospectively enrolled. Preoperativeevaluation included dimercaptosuccinic acid and diethylenetriaminepentaacetic acid renography.Patients were classified according to baseline renal function into patients with normal (<1.4mg/dL) serum creatinine (group A) and patients with elevated (≥1.4mg/dL) serum creatinine evaluations and a repeated renography at 12 months. Factors evaluated for possible impact on renal functionchanges included preoperative renal function, number of accesstracts, hypertension, and diabetes mellitus.

Results: There were 102 patients 21 to 65 (mean 39.9) years who completed the study. Fifty patients (group A) had normal preoperative serum creatinine levels and glomerular filtration rate (GFR), which showed no statistically significant change 12 months after PCNL. Fifty-two patients had baseline renal impairment (group B), and they experienced statistically significant worsening of the serum creatinine level and GFR at 12 months postoperatively (P<0.001). Ten (19.23%) patients in group B had a significant deterioration of GFR more than 25%. Independent risk factors for this poor outcome were elevated ($\geq 1.4 \text{ mg/dL}$) preoperative serum creatinine level, diabetes, and hypertension.

Conclusion: PCNL with multiple tracts carries a risk of adversely affecting renal function. Preoperative baseline renal impairment, diabetes, and hypertension are risk factors for significant renal function deterioration after the procedure.

Keywords: Percutaneous nephrolithotomy; Multiple tracts; Renal function.

818. Management of Obstructive Calcular Anuria With Acute Renal Failure in Children Less Than 4 Years in Age: A Protocol for Initial Urinary Drainage in Relation To Planned Definitive Stone Management

ElSheemy MS, Shoukry AI, Shouman AM, ElShenoufy A, Aboulela W, Daw K, Hussein AA and Morsi HA

J. of Pediatric Urology, 10 (6): 1126-1132 (2014) IF: 1.413

Objectives: To describe and evaluate our protocol for management of children4years old with obstructive calcular anuria (OCA) and acute renal failure (ARF) to improve selection of initial urinary drainage (ID) method and to facilitate subsequent definitive stone management (DSM) as studies discussing this special group of patients are still few. Patients and Methods: Patients with a contraindication to any method of ID were excluded. Decision (percutaneous nephrostomy (PCN) or double J (JJ) stent) was based on degree of hydronephrosis and planned DSM. We used 4.8-5Fr JJ or 6-8Fr PCN under general anesthesia and fluoroscopic guidance. According to our protocol, JJ is inserted for hydronephrosis grade 1. When the hydronephrosis is >grade 1, patients with radiolucent stones were treated by JJ whatever the site of the stone. When the stones were radiopaque, PCN was reserved for stones in a solitary functioning kidney and bilateral ureteric stones prepared for subsequent bilateral ureterolithotomy (or stone prepared for ureterolithotomy in a solitary kidney). After normalization of renal functions, DSM was staged attacking only one side before discharge. Both sides were cleared at the same session in cases with bilateral ureterolithotomy. Renal or ureteric stones suitable for SWL in a solitary kidney were treated with percutaneous nephrolithotripsy (PNL) or ureteroscopy. This was followed also in patients with bilateral stones suitable for SWL by clearing one side using ureteroscopy or PNL before discharge. Open surgery (OS) was reserved for cases with failed ureteroscopy or PNL, for ureteric stones>2.5 cm in size or very large volume complex renal stones. Stone free rate (SFR) was evaluated by CT. Our protocol was evaluated as regard recovery of renal functions, complications, and number of interventions to clear stones. Results: This study included 62 boys and 22 girls presented with anuria for 1-4 days. JJ and PCN were inserted in 105 and 30 ureterorenal units (URU), respectively. Creatinine returns normal within 72 h. JJ insertion formed a part of DSM in 78/159 (49%) URU (stones prepared for extracorporeal shockwave lithotripsy or oral chemolytic dissolution therapy). PCN was the ideal tract for subsequent PNL in 11/159 (6.9%) URU. Accordingly, ID participated by 55.97% in DSM. Both operative and imaging times were slightly longer with PCN than JJ. There was no statistically significant difference in the insertion success or mean period to return to normal chemistry. Complications of both methods were mild and without any significant difference. Endourologic procedures constituted the majority of our interventions. Open surgical and endoscopic interventions for clearance of stones (including ID, treatment conversion and 2ry procedures) were done once for 25 patients, twice for 43 patients while it was needed three times for 16 patients. Total number of interventions was 149 procedures. SFR was 94%. Conclusion: Our protocol ensures adequate ID with minimal complications when using our selection criteria in children≤4 years in age with OCA and ARF. It also minimizes number of subsequent procedures to clear stones. Complications and success in insertion and drainage were equivalent in PCN and JJ groups.

Keywords: Anuria; Children; Nephrostomy; Stents; Urinary Calculi.

819. Surgical Complications and Graft Function Following Live-Donor Extraperitoneal Renal Transplantation in Children 20 Kg Or Less

ElSheemy MS, Shouman AM, Shoukry AI, Soaida S, Salah DM, Yousef AM, Morsi HA, Fadel FI and Sadek SZ

Journal of Pediatric Urology, 10 (4): 737-743 (2014) IF: 1.413

Objectives: To evaluate the effect of patient, surgical, and medical factors on surgical complications and graft function following renal transplantation (Tx) in children weighing ≤ 20 kg, because the number of this challenging group of children is increasing. Patients and Methods: Between June 2009 and October 2013, 26 patients received living donor renal allotransplant using the extraperitoneal approach (EPA). The immunosuppression regimen was composed of prednisolone, mycophenolate mofetil, and ciclosporin or tacrolimus. Results: The mean weight was 16.46 ± 2.61 kg. Mean cold ischemia time was 53.85 ± 12.35 min. The graft survival rate (GSR) and patient survival rate (PSR) were 96% at 3 years. Acute rejection episodes (AREs) occurred in eight patients (30%). Postoperative surgical complications were ureteral leakage (3), vesicoureteric reflux (2), and renal vein thrombosis (2) (with one graft nephrectomy). Mean follow-up was 37.5 ± 7.4 months. Conclusion: Excellent PSR and GSR can be achieved in low weight (<20 kg) recipients. Even in very low weight patients, the EPA was used. No cases were reported with primary graft non-function due to use of living donors, increasing pre-Tx body weight to at least 10 kg and maintaining adequate filling pressure before graft reperfusion. The presence of related donors and use of induction therapy and tacrolimus decreased the rate of ARE while the presence of pre-Tx lower urinary tract surgical interventions increased the rate of ureteric complications, but this was statistically insignificant. Keywords: Renal transplantation; Extraperitoneal approach; Live

820. Human Urinary Myiasis Due To Larvae of Clogmia (Telmatoscopus) Albipunctata Williston (Diptera: Psychodidae) First Report in Egypt

El-Badry AA, Salem HK and El-Aziz Edmardash YA.

donor; Low body weight children; Pediatric.

J Vector Borne Dis, 51(3):247-249 (2014) IF: 0.647

Human myiasis is defined as "the infestation of the tissue of living human with dipterous larvae"1. Parasitologically myiasis could be classified as obligatory, facultative or accidental. Clinically myiasis may be classified according to part of the body tissue invaded. Cutaneous myiasis is the commonest type. Body cavity myiasis; nasopharyngeal, ocular, aural and the gastrointestinal tract urogenital system are less common. Urethral myiasis is exceptionally rare, even in sites usually protected by clothes, inaccessible for the flies1-2. A large number of fly species may cause urinary myiasis. Larvae of Fannia scalaris3 is the most frequent cause of urinary myiasis. Other fly genera Musca, Sarcophaga, Lucilia, Wohlfahrtia or Calliphora were also associated with cases of urinary myiasis4. Few cases of urinary myiasis were caused by Eristalis5,6, Psychoda7 and Megaselia8 flies. Cases of urinary myiasis were caused by larvae of Clogmia albipunctata worldwide9 but had never been reported before in our region. Keywords: Clogmia Albipunctata; Egypt; Human Myasis.

Faculty of Oral Dental Medicine

Dept. of Endodontics

821. Dentinal Damage and Fracture Resistance of Oval Roots Prepared With Single-File Systems Using Different Kinematics

Hend Mahmoud Abou El Nasr and Karim Galal Abd El Kader

Journal of Endodontics, 40: 849-851 (2014) IF: 2.788

Introduction: Vertical root fracture is a common finding in endodontically treated teeth, notably oval roots. The aim of the present study was to determine the effect of instrumentation kinematics and the material of instrument construction of singlefile systems on dentin walls and fracture resistance of oval roots. Methods: Sixty five roots with oval canals were classified into a control group (n=5) and 3 experimental groups of 20 roots each. Group 1 was instrumented with WaveOne primary file; group 2 was prepared with F2 ProTaper files used in a reciprocating motion; and group 3 was prepared with F2 ProTaper files used in a rotation motion. For crack evaluation, half of the samples (n=30) was embedded in acrylic resin and the blocks were sectioned at 3, 6, and 9mm from the apex. The sections were examined under a stereomicroscope and scored for crack presence. The other half of the specimens (n=30) was obturated using lateral condensation of gutta percha and AdSeal sealer. The specimens were then subjected to a load of 1mm/min to determine the force required to fracture the roots. Results: WaveOne instruments induced the least amount of cracks and exhibited the greatest resistance to fracture compared to ProTaper F2 files whether used in reciprocating or rotating motions.

Conclusion: The material of manufacturing is a more important factor determining the dentin damaging potential of single-file instruments than the motion of instrumentation.

Keywords: Crack; M-Wire; Oval canals; Protaper; Reciprocation; Root fracture; Waveone.

Dept. of Operative Dentistry

822. Reinforcement of Teeth With Simulated Coronal Fracture and Immature Weakened Roots Using Resin Composite Cured by a Modified Layering Technique

Reham S Seyam and Enas H Mobarak

Operative Dentistry, 39 (3): E128-E136 (2014) IF: 1.266

Objective: The purpose of this study was to evaluate the strengthening effect of resin composite, cured by a modified layering protocol, for teeth with simulated coronal fracture and weakened immature roots.

Methods: Fifty maxillary teeth were decoronated and their apices sectioned to standardize the length to 12 mm. Prepared teeth were equally distributed into five groups. Group 1VF root apices were flared with Pesso drills up to size 6. The roots were flared until a dentin thickness of only 1 ± 0.2 mm remained. Root ends were filled with mineral trioxide aggregate. The canals were backfilled with Vertise Flow following a modified layering protocol using two light-transmitting posts size 6 and 3. Next, a DT light post size 2 was cemented using the same material. Groups 2TS/MF and 3ED/PF were prepared and cured in the same way as group 1VF but filled with Clearfil Tri-S Bond/Majesty Flow and ED Primer II/Panavia F2.0 respectively. Group 4UF was similarly

prepared but left unfilled (control). In group 5NW, roots were unflared but similarly filled as in group 3ED/PF. After 24 hours of storage, the fracture load was measured. The degree of cure for each tested material was indirectly measured using microhardness at different root levels (cervical, middle, and apical). Data were analyzed using one-way analysis of variance followed by Newman-Keuls post hoc test.

Results: Fracture load results revealed that groups 1VF and 2TS/MF had no statistically significant difference from group 5NW (p>0.05). For each tested material, no significant difference was found among microhardness values at different root levels.

Conclusion: It may be possible to reinforce the teeth with coronal fracture and immature weakened roots to be comparable with unweakened ones when composite is applied and cured by the modified layering technique.

Dept. of Oral and Maxillofacial Surgery

823. Three-Dimensional Versus Standard Miniplate Fixation in the Management of Mandibular Angle Fractures: A Systematic Review and Meta-Analysis. the Management of Mandibularangle Fractures: A Systematicreview and Meta-Analysis

Al-Moraissi EÀ, El-Sharkawy TM, El-Ghareeb TI and Chrcanovic BR

Int J Oral Maxillofac Surg, 43(6): 708-716 (2014) IF: 1.359

The aim of the present study was to test whether there is a significant difference in the clinical outcomes between standard and three-dimensional (3D) miniplate fixation in the management of mandibular angle fractures (MAFs). An electronic search without date and language restrictions was performed in October 2013. Inclusion criteria were studies in humans including randomized controlled trials, controlled clinical trials, and retrospective studies, with the aim of comparing the two techniques. Six studies were included. The meta-analyses revealed statistically significant differences for the incidence of hardware failure and postoperative trismus. There were no significant differences in the incidence of postoperative infection, malocclusion, wound dehiscence, non-union/malunion, or paresthesia. The cumulative odds ratio was 0.42, meaning that the use of 3D miniplates in the fixation of MAFs decreases the risk of the event (postoperative complication) by 58%. The results of this meta-analysis showed lower postoperative complication rates with the use of 3D miniplate fixation in comparison with the use of standard miniplate fixation in the management of MAFs.

Keywords: Mandibular Angle Fracture; Surgicaltreatment; Rigid Fixation; Conventional Miniplate; 3D Miniplate; Complications.

824. Segment Tilting Associated With Surgically Assisted Rapid Maxillary Expansion

Emad Tawfik Daif

International Journal of Oral & Maxillofacial Surgery, 43: 311-315 (2014) IF: 1.359

This study aimed to evaluate, via computed tomography, the direction and magnitude of the segmental tilting that may occur after surgically assisted rapid maxillary expansion (SARME) in patients with a transverse maxillary deficiency. Thirty adult patients with a transverse maxillary deficiency greater than 5 mm were treated by SARME. The procedures consisted of bilateral

zygomatic buttress and midpalatal osteotomies combined with the use of a tooth-borne orthopaedic device postoperatively. Axial and coronal images were obtained before and 6 months after SARME to evaluate the segment tilting. The greatest expansion occurred in the most inferior $(5.4 \pm 1.1 \text{ mm})$ and anterior $(4.0 \pm$ 1.3 mm) regions of the maxilla. The expanded segment tilted outward inferiorly and anteriorly in coronal and axial images, respectively. The segment tilting was 2.0 mm (2.3%) inferiorly and 3.1 mm (12.8%) anteriorly. It can be concluded that an outward tilting occurs in the most inferior and anterior portions of the maxilla during SARME procedures. Hence the direction and magnitude of such segmental tilting must be considered preoperatively when determining the surgical objectives. **Keywords**: Maxillary deficiency; Sarme; Segmental tilting.

825. Correlation of plates' number with complications of osteosynthesis in mandibular fractures

Daif ET

Journal of Craniofacial Surgery, 25(6):e526-529 (2014) *IF*: 0.676

Objectives: This study aimed to assess the correlation of the miniplates' number used for fixation of single-compound symphyseal and parasymphyseal fractures with the osteosynthesis complications.

Patients And Methods: Two hundred eighty-five patients having miniplate osteosynthesis complications participated in this study. They were classified into 3 groups according to the number of miniplates used for the fixation of the fractured segments. The first group included patients having 2 miniplates, whereas the second and third groups included patients having 4 miniplates and more than 4 miniplates, respectively.

Results: The main osteosynthesis complications were malocclusion (32%) infection with an extraoral fistula (21%), wound dehiscence with intraoral exposure of the miniplates (17%), and combination of these (13%). Lower lip affection and intraoral bone exposure were 11% and 6%, respectively. Malocclusion was the most common complication in each group and showed the highest rate (62%) in the first group. Infection with extraoral fistula was found in all groups, with the highest rate (27%) in the first group. Wound dehiscence with intraoral exposure of the miniplates was present in the 3 groups, and the third group had the highest rate (19%). The second and third groups had equal rates of lower lip affection, numbness or weakness, (12%) and intraoral bone exposure (7%). In addition, they had combined complications in rates of 16% and 13%, respectively.

Conclusions: The use of 2 miniplates for the fixation of singlecompound symphyseal and parasymphyseal fractures is quite enough to avoid osteosynthesis complications such as wound dehiscence, bone or plate exposure, and lower lip affection.

Dept. of Oral Biology

826. the Ability of H₁ or H₂ Receptor Antagonists or their Combination in Counteracting the Glucocorticoid-Induced Alveolar Bone Loss in Rats

Bassant A. Ezzat and Marwa M.S. Abbass

Journal of Oral Pathology and Medicine, 43: 148-156 (2014) IF: 1.87 **Objective**: The aim of the present study was to compare between three possible osteoporotic treatments in prevention of glucocorticoid-induced alveolar bone loss.

Design: Fifty adult female Wistar rats with an average weight 150-200 g were randomized into 5 groups, control, glucocorticoid administration, glucocorticoid administration with concomitant administration of H1 receptor antagonist, H2 receptor antagonist or H1 and H2 receptor antagonists. After 30 days, the rats have been sacrificed. The mandibles were examined histologically, histomorphometrically and histochemically. The bone mineral density was measured using DEXA.

Results: Histopathologically the glucocorticoid group showed wide medullary cavities with wide osteocytic lacunae. These marrow cavities were reduced in the prophylactic groups (III, IV) but increased in group V. Histomorphometric analysis showed significant reduction in area percentage of bone in groups II, IV and V (p< 0.0001) and group III (p= 0.0158) when compared to the control group I. Histochemical results demonstrated positive TRAP reaction in osteocytes' lacunae and along bone resorbing surface of all experimental groups. The DEXA revealed significant reduction in the bone density in all experimental groups compared to the control group.

Conclusions: Patients initiating glucocorticoid treatment should be concomitantly treated with effective osteoporosis therapy to reduce fracture risk and counseled on preventive lifestyle changes.

Keywords: H1 Receptor Antagonist, H2 Receptor Antagonist, Dexa, Glucocorticoids.

Dept. of Oral Medicine and Periodontology

827. IL-18 Gene Polymorphisms in Aphthous Stomatitis Vs Behcets Disease in A Cohort of Egyptian Patients

Hala H. A. Hazzaa, Weam A. M. Rashwan and Enas A. S. Attia

J Oral Pathol Med, 43: 746-753 (2014) IF: 1.87

A clinical investigation of the potential correlation of two singlenucleotide polymorphisms at 137 (G/C) and 607 (C/A) in the promoter region of the IL-18 gene, with the susceptibility to aphthous stomatitis and Behcet's disease.

Patient and Methods: This study included 80 aphthous stomatitis patients and 80 patients with Behcet's disease. Eighty healthy subjects were enrolled as a control group. IL-18 single-nucleotide polymorphisms at 607 and 137 regions were analyzed using polymerase chain reaction–restriction fragment length polymorphism analysis.

Results: The genotype and allele distributions of the two regions did not differ significantly between patients with aphthous stomatitis and controls. The genotype and allele distributions at 607 were significantly different between patients with Behcet's disease [CC (P = 0.044), C allele (P = 0.043), A allele (P = 0.043)], and controls. The frequency of the GG genotype at position 137 in patients with Behcet's disease was associated only with a higher rate of ocular manifestations (OR= 1.4, CI= 0.76– 2.7, P = 0.031).

Conclusion: IL-18 gene polymorphisms were not associated with any susceptibility to aphthous stomatitis, while a positive association was found with patients with Behcet's disease regarding 607 promoter site. Moreover, patients with Behcet's disease carrying theGGgenotype at position 137 had a higher risk of developing ocular manifestations. Keywords: Aphthous Stomatitis; BehcEt'S Disease; Gene Polymorphism;

Dept. of Oral Pathology

828. Chemopreventive Effect of Mentha Piperita on Dimethylbenz[*a*]Anthracene and Formaldehyde-Inducedtongue Carcinogenesis in Mice (Histological Andimmunohistochemical Study)

Rehab F. Kasem, Radwa H. Hegazy, Mona A. A. Arafa and Mona M. Abdel Mohsen

Journal of Oral Pathology and Medicine, 43: 484-491 (2014) IF: 1.87

Objective: Cancer chemoprevention is defined as the use of chemicals or dietary components to block, inhibit, or reverse the development of cancer in normal or preneoplastic tissue. Mentha extract (ME) has antioxidant and antiperoxidant properties. This study was held to investigate the protective and anticancer effect of Mentha leaves aqueous extract on oral epithelium of mice tongues.

Design: A total of 80 Egyptian albino mice were divided into three groups. Group I served as control (not subjected to any kind of treatment), and groups II and III were subjected to two-stage chemical carcinogenesis through topical application of dimethylbenz[a]anthracene (DMBA) followed by formaldehyde on dorsal and ventral surfaces of tongues for 9 weeks. Mentha leaves extract was administrated to group III at the same time of cancer induction. Histological changes were assessed in H&E sections at 3-week intervals. The anticarcinogenic effect of Mentha piperita was tested using immunostain with anticaspase antibody.

Results: The oral administration of ME reduced the appearance of dysplastic cellular changes with 61% and inhibited tumor incidence with 100%. Group I showed moderate-to-strong cytoplasmic caspase expression. At 6-week interval, group II showed weak-to-moderate caspase expression, while sections from group III showed moderate- to-strong caspase expression. High significant statistical difference in the total score of caspase 3 expression was found between specimens obtained from animals sacrificed at 6 weeks in groups I, II, and III (P = 0.001^{**}).

Conclusion: Our study demonstrated that Mentha piperita has inhibited the initiation and promotion of oral dysplastic lesions. **Keywords**: Carcinogenesis Induction; Chemoprevention; Dimethylbenz [A] Anthraceneformaldehyde; Menthapiperita; Micetongues.

Dept. of Prosthetic Dentistry

829. Evaluation of Metal Ion Release from Ti6Al4V and CO-CR-MO Casting Alloys: in Vivo and in Vitro Study

Amal A. El Sawy and Mohammed A. Shaarawy

Journal of Prosthodontics, 23(2): 89-97 (2014) IF: 0.905

Purpose: The aim of this study was to evaluate the amount of ions released from Ti6Al4V and Co-Cr-Mo alloys both in vivo and in vitro.

Materials and Methods: Twenty-one discs of each alloy were constructed and divided into seven groups. Three specimens from

each group were immersed in a buffered saline solution over a period of 1, 3, 5, 7, 14, 21, and 28 days. Twenty-eight participants were also included in the study, where the study group consisted of 14 mandibular partially edentulous patients, and the control group consisted of 14 volunteers. The study group was further divided into two equal groups: the first group received removable partial dentures (RPDs) constructed from Co-Cr-Mo alloy, while the second group received RPDs constructed from Ti6Al4V alloy. Saliva samples were collected from each participant over the same study period. The conditioning media and saliva samples were analyzed using a spectrophotometer. One-way ANOVA and Tukey tests were used for statistical analysis (p < 0.05).

Results: The concentrations of metal ions released from the studied alloys were significantly higher in the in vitro than in the in vivo study group during the follow-up periods. A statistically significant increase in ion concentrations of the different elements for both alloys was found with time (p < 0.05).

Conclusion: The amounts of released metallic ions from Co-Cr-Mo and Ti6Al4V alloys were higher in the buffered saline solutions than in the studied saliva samples and control groups; however, these amounts were still within the physiological limit of trace elements in the human body.

Keywords: Ti6al4v Alloy; Co-Cr-Mo Alloy; Metal Ion Release; Metal Ion Concentration; Removable Partial Dentures.

Faculty of Pharmacy

Dept. of Analytical Chemistry

830. Advantages of the incorporation of 2-hydroxyl propyl beta cyclodextrin and calixarene as ionophores in potentiometric ion-selective electrodes for rivastigmine with a kinetic study of its alkaline degradation

Mohamed Abdalla Elsayed

Sensors and Actuators B: Chemical, 190: 101-110 (2014) IF: 3.84

Three selective electrodes were investigated for rivastigmine (RIV). Sensor 1 was fabricated using ammonium reineckate (RNC) as a cation exchanger without incorporation of any ionophore. Sensors 2 and 3 used 2-hydroxy propyl β-cyclodextrin and 4-sulfocalix-8-arene as ionophores respectively in addition to RNC as a cation exchanger. Linear responses of RIV within the concentration ranges of 10^{-5} to 10^{-2} , 10^{-6} to 10^{-2} and 5×10^{-7} to 10^{-2} M with Nernstian slopes of 51.5 \pm 0.8, 54.6 \pm 0.7 and 56.8 \pm 0.4 mV/decade over the pH range of 4-7 were obtained using sensors 1, 2 and 3, respectively. The utility of ionophores had a significant influence on increasing the membrane sensitivity and selectivity of sensors 2 and 3 compared to sensor 1. The proposed sensors displayed useful analytical characteristics for the determination of RIV in pharmaceuticals, biological fluids and in the presence of its degradation product and thus could be used for stability-indicating assays. Sensor 3 was used to study the kinetics of RIV alkaline degradation that was found to follow a pseudo first-order reaction. The activation energy could be estimated from the Arrhenius plot to be 9.864 kcal mol^{-1} .

Keywords: Rivastigmine; 2-Hydroxy propyl β -cyclodextrin; 4-Sulfocalix-8-arene; Ionophore; Stability-indicating methods; Kinetic study.

831. Validated Liquid Chromatographic Determination of Anovel ACE Inhibitor in the Presence of its Hydrolytic and Oxidative Degradation Products as Perich Guidelines

Maha A. Hegazy, Maya S. Eissa, Osama A bdEl-Sattar and Mohamed M. AbdEl-Kawy

Talanta, 119: 170-177 (2014) IF: 3.511

Imidapril hydrochloride (IMD) is a recently developed prodrugtype angiotensin-converting enzyme (ACE) inhibitor. Due to its instability under both hydrolytic and oxidative conditions, development of rapid, simple and sensitive methods for its determination in the presence of its possible degradation products is essential. We proposed two simple liquid chromatographic methods associated with ultraviolet detection. The first method is an HPTLC-densitometric one in which separation of IMD from its degradation products was achieved followed by densitometric scanning at 220 nm using silica gel F254 plates and chloroform:ethanol:acetic acid (3:0.5:0.1, v/v/v) as the developing system. The second method was based on RP-HPLC in which the separation was performed using C18 analytical column and isocratic elution system with acetonitrile: 0.15% triethylamine (pH=2.2) (40:60, v/v). The optimum flow rate was 1.5 mL min(-1) and the detection was at 220 nm. Validation was conducted in compliance with the ICH guidelines and the methods were

successfully applied for IMD determination in its commercial tablets. The obtained results were statistically compared to those obtained by applying reported HPLC method where no significant difference was found in accordance with accuracy and precision. **Keywords**: AKN; DKP; Degradation products; ES; HPLC; HPTLC; IMD; Imidapril hydrochloride; OXI; Stability-indicating method; diketopiprazine; External standard; Imidapril hydrochloride; Suggested alkaline induced degradation product of imidapril hydrochloride.

832. Stability of Catechins in Green Tea Nutraceutical Products: Application of Solid Phase Extraction–Thin Layer Chromatography Densitometry

Heba-Alla H. Abd-ElSalam, Medhat A. Al-Ghobashy, Hala E. Zaazaa and Mohamed A. Ibrahim

Food Chemistry, 156: 94-99 (2014) IF: 3.259

Epigallocatechin gallate (EGCG) is a powerful antioxidant and commonly used nutraceutical. Accelerated stability of EGCG in tablet formulations was investigated. LLE and SPE were employed for sample clean-up and enrichment of EGCG over caffeine. Samples were analysed after spiking with fixed concentration of gallic acid (GA), in order to verify reproducibility of analysis. A TLC-densitometric assay was developed and validated for determination of % loss EGCG. EGCG, GA and caffeine were resolved with Rf values 0.54, 0.69 and 0.80, respectively. LC-MS/MS was used to verify identity and purity of the EGCG band. Determination was carried out over a concentration range of 0.50-5.00 µg/band and 0.20-2.40 µg/band for GA and caffeine, respectively. Results showed significant reduction in EGCG content after one, three and six months: 24.00%, 28.00% and 52.00% respectively. Results continue to demonstrate that stability of nutraceutical products should be investigated in-depth using industry-oriented protocols before granting marketing authorization.

Keywords: Nutraceuticals; Catechins; Epigallocatechin Gallate; Solid Phase Extraction; Tlc–Densitometry; Accelerated Stability; Gallic Acid Equivalent.

833. Chromatographic and Electrophoretic Assessment of Filgrastim Biosimilars in Pharmaceutical Formulations

Eman L. Shaltout, Medhat A. Al-Ghobashy, Faten A. Fathalla and Maissa Y. Salem

Journal of Pharmaceutical and Biomedical Analysis, 97: 72-80 (2014) IF: 2.829

An orthogonal testing protocol was developed and validated to assess the quality of Filgrastim biosimilars. Results were compared to those obtained from the innovator product. Initial screening was carried out using reducing and non-reducing gel electrophoresis. RP-LC was employed for the determination of Filgrastim in the presence of its oxidative degradation products. SEC and CIEF were used under non-denaturing conditions to reveal high molecular weight and charged impurities, respectively. RP-LC assay was found accurate (99.78 \pm 0.89) and precise over a linear concentration range of 9.38–300.00 µg/ml with a LOD of 8.26 µg/ml (0.44 mM). SEC was carried out over a molecular weight range of 5.0–150.0 kDa. CIEF was optimized

using neutrally coated capillaries over a wide-range pH gradient (pH 3.0–10.0). Differences between the studied products were revealed using all these techniques. Impurities above the acceptable limits were detected in both biosimilar products. CIEF revealed heterogeneity in the active ingredient that has not been investigated by the manufacturers. Correlation of the obtained results indicated the presence of not only product-related impurities, but also process-related impurities. Results confirmed the need for in-house validated orthogonal testing protocols to be developed by local regulatory authorities. This should prevent access of substandard biosimilars to price-sensitive markets. **Keywords**: Filgrastim; Biosimilars; Rp-Hplc; Capillary Isoelectric Focusing; Size exclusion; Chromatography

834. Development, Optimization and Validation of A Highly Sensitive UPLC-ESI-MS/MS Method for Simultaneous Quantification of Amlodipine, Benazeprile and Benazeprilat in Human Plasma: Application to A Bioequivalence Study

Mamdouh R. Rezka and Kamal A. Badrb

Journal of Pharmaceutical and Biomedical Analysis, 98: 1-8 (2014) IF: 2.829

A rapid, simple, sensitive and specific LC-MS/MS method has been developed and validated for the simultaneous estimation of amlodipine (AML), benazepril (BEN) and benazeprilat (BNT) using eplerenone and torsemide as internal standards (IS). The Xevo TQD LC-MS/MS was operated under the multiple-reaction monitoring mode using electrospray ionization. Sample preparation involves both extraction and precipitation techniques. The reconstituted samples were chromatographed on Acquity UPLC BEH C18 (50 mm × 2.1 mm, 1.7 m) column by pumping 0.1% formic acid and acetonitrile in a gradient mode at a flow rate of 0.45 ml/min. A detailed validation of the method was performed as per the FDA guidelines and the standard curves were found to be linear in the range of 0.1-5 ng/ml for AML: 5-1200 ng/ml forboth BEN and BNT. The intra-day and inter-day precision and accuracy results were within the acceptable limits. A run time of 2.5 min for each sample made it possible to analyze more than 300 human plasma samples per day. The developed assay method was successfully applied to a bioequivalence study in human volunteers.

Keywords: Amlodipine; Benazepril; Benazeprilat; Bioequivalence; Uplc–Ms/Ms.

835. A Comparative Study of Novel Spectrophotometric Methods Based on Isosbestic Points; Application on A Pharmaceutical Ternary Mixture

Hayam M. Lotfy, Sarah S. Saleh, Nagiba Y. Hassan and Hesham Salem

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 126: 112-121 (2014) IF: 2.129

This work represents the application of the isosbestic points present in different absorption spectra. Three novel spectrophotometric methods were developed, the first method is the absorption subtraction method (AS) utilizing the isosbestic point in zero-order absorption spectra; the second method is the amplitude modulation method (AM) utilizing the isosbestic point in ratio spectra; and third method is the amplitude summation method (A-Sum) utilizing the isosbestic point in derivative spectra. The three methods were applied for the analysis of the ternary mixture of chloramphenicol (CHL), dexamethasone sodium phosphate (DXM) and tetryzoline hydrochloride (TZH) in eye drops in the presence of benzalkonium chloride as a preservative. The components at the isosbestic point were determined using the corresponding unified regression equation at this point with no need for a complementary method. The obtained results were statistically compared to each other and to that of the developed PLS model. The specificity of the developed methods was investigated by analyzing laboratory prepared mixtures and the combined dosage form. The methods were validated as per ICH guidelines where accuracy, repeatability, inter-day precision and robustness were found to be within the acceptable limits. The results obtained from the proposed methods were statistically compared with official ones where no significant difference was observed.

Keywords: Isosbestic Point; Absorption Subtraction Method; Amplitude Modulation Method; Chloramphenicol; Dexamethasone.

836. A Comparative Study of Progressive Versus Successive Spectrophotometric Resolution Techniques Applied for Pharmaceutical Ternary Mixtures

Sarah S. Saleh, Hayam M. Lotfy, Nagiba Y. Hassan and Hesham Salem

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 132: 239-248 (2014) IF: 2.129

This work represents a comparative study of a novel progressive spectrophotometric resolution technique namely, amplitude center method (ACM), versus the well-established successive spectrophotometric resolution techniques namely; successive derivative subtraction (SDS); successive derivative of ratio spectra (SDR) and mean centering of ratio spectra (MCR).

All the proposed spectrophotometric techniques consist of several consecutive steps utilizing ratio and/or derivative spectra. The novel amplitude center method (ACM) can be used for the determination of ternary mixtures using single divisor where the concentrations of the components are determined through progressive manipulation performed on the same ratio spectrum. Those methods were applied for the analysis of the ternary mixture of chloramphenicol (CHL), dexamethasone sodium phosphate (DXM) and tetryzoline hydrochloride (TZH) in eye drops in the presence of benzalkonium chloride as a preservative. The proposed methods were checked using laboratory-prepared mixtures and were successfully applied for the analysis of pharmaceutical formulation containing the cited drugs. The proposed methods were validated according to the ICH guidelines.

A comparative study was conducted between those methods regarding simplicity, limitation and sensitivity. The obtained results were statistically compared with those obtained from the official BP methods, showing no significant difference with respect to accuracy and precision.

Keywords: Amplitude center Method; Successive derivative Subtraction successive Derivative ratio Chloramphenicol; Dexamethasone; Tetryzoline.

837. Development and Validation of Simultaneous Spectrophotometric and Tlc-Spectrodensitometric Methods for Determination of Beclomethasone Dipropionate and Salbutamol in Combined Dosage Form

Ahmed Samir, Hayam M. Lotfy, Hesham Salem and Mohammed Abdelkawy

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 128: 127-136 (2014) IF: 2.129

Spectrophotometric and TLC-spectrodensitometric methods were developed and validated for the simultaneous determination of beclomethasone dipropionate (BEC) and salbutamol (SAL). The spectrophotometric methods include dual wavelength, ratio difference, constant center coupled with a novel method namely, spectrum subtraction and mean centering with mean percentage recoveries and RSD 99.72 \pm 1.07 and 99.70 \pm 1.12, 100.25 \pm 1.12 and 99.89 \pm 1.12, 99.66 \pm 1.85 and 99.19 \pm 1.32, 100.74 \pm 1.26 and 101.06 ± 0.90 for BEC and SAL respectively. The TLCspectrodensitometric method was based on separation of both drugs on TLC aluminum plates of silica gel 60 F254, using benzene: methanol: triethylamine (10:1.5:0.5 v/v/v) as a mobile phase, followed by densitometric measurements of their bands at 230 nm. The mean percentage recoveries and RSD were 99.07 \pm 1.25 and 101.35 \pm 1.50 for BEC and SAL respectively. The proposed methods were validated according to ICH guidelines and were applied for the simultaneous analysis of the cited drugs in synthetic mixtures and pharmaceutical preparation. The methods were found to be rapid, specific, precise and accurate and can be successfully applied for the routine analysis of BEC and SAL in their pharmaceutical formulation with no need for prior separation. The results obtained were statistically compared to each other and to that of the reported HPLC method. The statistical comparison showed that there is no significant difference regarding both accuracy and precision.

Keywords: Ratio difference; Constant center; Spectrum subtraction; Mean centering; Salbutamol; Beclomethasone; Dipropionate.

838. Different Approaches in Partial Least Squares and Artificial Neural Network Models Applied for theAnalysis of A Ternary Mixture of Amlodipine, Valsartan and Hydrochlorothiazide

Darwish HW, Hassan SA, Salem MYand El-Zeany

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 122: 744-750 (2014) IF: 2.129

Different chemometric models were applied for the quantitative analysis of Amlodipine (AML), Valsartan (VAL) and Hydrochlorothiazide (HCT) in ternary mixture, namely, Partial Least Squares (PLS) as traditional chemometric model and Artificial Neural Networks (ANN) as advanced model. PLS and ANN were applied with and without variable selection procedure (Genetic Algorithm GA) and data compression procedure (Principal Component Analysis PCA). The chemometric methods applied are PLS-1, GA-PLS, ANN, GA-ANN and PCA-ANN. The methods were used for the quantitative analysis of the drugs in raw materials and pharmaceutical dosage form via handling the UV spectral data. A 3-factor 5-level experimental design was established resulting in 25 mixtures containing different ratios of the drugs. Fifteen mixtures were used as a calibration set and the other ten mixtures were used as validation set to validate the prediction ability of the suggested methods. The validity of the proposed methods was assessed using the standard addition technique.

Keywords: Pls; Ann; Ga; Amlodipine; Valsartan; Hydrochlorothiazide.

839. Kinetic Study and Mechanism of Niclosamide Degradation

Hala E. Zaazaa, Maha M. Abdelrahman, Nouruddin W. Ali, Maimana A. Magdy and M. Abdelkawy

Spectrochimica Acta Part A: Molecular And, 132: 655-662 (2014) IF: 2.129

A spectrophotometric kinetic study of Niclosamide alkaline degradation as a function of drug concentration, alkaline concentration and temperature has been established utilizing double divisor-ratio spectra spectrophotometric method. The developed method allowed determination of Niclosamide in presence of its alkaline degradation products; namely; 2-chloro-4-nitro aniline (DEG I) and 5-chloro salicylic acid (DEG II) with characterization of its degradation mechanism. It was found that degradation kinetic of Niclosamide followed pseudo-first order under the established experimental conditions with a degradation rate constant (k) of 0.0829 mol/h and half life (¹/₂) of 8.35 h. The overall degradation rate constant as a function of the temperature under the given conditions obeyed Arrhenius equation where the activation energy was calculated to be 3.41 kcal/mol. **Keywords**: Niclosamide-Double Divisor-Ratio Spectra-

Spectrophotometry-Degradation.

840. Linear Support Vector Regression and Partial Least Squares Chemometric Models for Determination of Hydrochlorothiazide and Benazepril Hydrochloride in Presence of Related Impurities: A Comparative Study

Naguib IA, Abdelaleem EA, Draz ME and Zaazaa.

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 130: 350-356 (2014) IF: 2.129

Partial least squares regression (PLSR) and support vector regression (SVR) are two popular chemometric models that are being subjected to a comparative study in the presented work. The comparison shows their characteristics via applying them to Hydrochlorothiazide (HCZ) analyze and Benazepril hydrochloride (BZ) in presence of HCZ impurities; Chlorothiazide (CT) and Salamide (DSA) as a case study. The analysis results prove to be valid for analysis of the two active ingredients in raw materials and pharmaceutical dosage form through handling UV spectral data in range (220-350 nm). For proper analysis a 4 factor 4 level experimental design was established resulting in a training set consisting of 16 mixtures containing different ratios of interfering species. An independent test set consisting of 8 mixtures was used to validate the prediction ability of the suggested models. The results presented indicate the ability of mentioned multivariate calibration models to analyze HCZ and BZ in presence of HCZ impurities CT and DSA with high selectivity and accuracy of mean percentage recoveries of (101.01±0.80) and (100.01±0.87) for HCZ and BZ respectively using PLSR model and of (99.78±0.80) and

(99.85±1.08) for HCZ and BZ respectively using SVR model. The analysis results of the dosage form were statistically compared to the reference HPLC method with no significant differences regarding accuracy and precision. SVR model gives more accurate results compared to PLSR model and show high generalization ability, however, PLSR still keeps the advantage of being fast to optimize and implement.

Keywords: Hydrochlorothiazide;Benazepril Hydrochloride;Chemometrics-Pls;Svr.

841. Novel Spectrophotometric Methods for Simultaneous Determinationof Timolol and Dorzolamide in their Binary Mixture

Hayam Mahmoud Lotfy, Maha A. Hegazy, Mamdouh R. Rezk and Yasmin Rostom Omran

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 126: 197-207 (2014) IF: 2.129

Two smart and novel spectrophotometric methods namely; absorbance subtraction (AS) and amplitude modulation (AM) were developed and validated for the determination of a binary mixture of timolol maleate (TIM) and dorzolamide hydrochloride (DOR) in presence of benzalkonium chloride without prior separation, using unified regression equation. Additionally, simple, specific, accurate and precise spectrophotometric methods manipulating ratio spectra were developed and validated for simultaneous determination of the binary mixture namely; simultaneous ratio subtraction (SRS), ratio difference (RD), ratio subtraction (RS) coupled with extended ratio subtraction (EXRS), constant multiplication method (CM) and mean centering of ratio spectra (MCR). The proposed spectrophotometric procedures do not require any separation steps. Accuracy, precision and linearity ranges of the proposed methods were determined and the specificity was assessed by analyzing synthetic mixtures of both drugs. They were applied to their pharmaceutical formulation and the results obtained were statistically compared to that of a reported spectrophotometric method. The statistical comparison showed that there is no significant difference between the proposed methods and the reported one regarding both accuracy and precision.

Keywords: Absorbance; Subtraction; Amplitude; Modulation; Dorzolamide Hydrochloride; Ratio spectra And Timolol Maleate.

842. Simultaneous Determination of Some Anti-Hypertensive Drugs in Their Binary Mixture By Novel Spectrophotometric Methods

yasmin Mohammed fayez

Spectrochimica Acta Part A:Molecular and Biomolecular Spectroscopy, 132: 446-451 (2014) IF: 2.129

Three simple, accurate and precise spectrophotometric methods manipulating ratio spectra were developed and validated for simultaneous determination of Irbesartan (IRB) and Hydrochlorothiazide (HCT) without prior separation namely; ratio subtraction coupled with constant multiplication (RS-CM), ratio difference (RD) and constant center (CC). The accuracy, precision and linearity ranges of the proposed methods were determined, and the methods were validated and the specificity was assessed by analyzing synthetic mixtures containing the cited drugs. The three methods were applied for the determination of the cited drugs in tablets and the obtained results were statistically compared with each other and with those of official methods. The comparison showed that there is no significant difference between the proposed methods and the official methods regarding both accuracy and precision.

Keywords: Constant; Multiplication; Hydrochlorothiazide; Irbesartan; Ratio; Difference And Constant; Center; Ratio Subtraction.

843. Spectrophotometric Methods for Simultaneous Determination of Ternary Mixture of Amlodipine Besylate, Olmesartan Medoxomil and Hydrochlorothiazide

Hanan A. Merey, Nesrin K. Ramadan, Sherine S. Diab, Azza A. Moustafa

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 125: 138-146 (2014) IF: 2.129

Four, accurate, precise, and sensitive spectrophotometric methods are developed for the simultaneous determination of a ternary mixture containing amlodipine besylate (AM), olmesartan medoxomil (OL) and hydrochlorothiazide (HZ), where AM is determined at its $\lambda(\text{max})$ 364.6 nm (⁰D), while (OL) and (HZ) are determined by different methods. Method (A) depends on determining OL and HZ by measuring the second derivative of the ratio spectra (²DD) at 254.4 and 338.6 nm, respectively. Method (B) is first derivative of the double divisor ratio spectra (D-(1)DD) at 260.4 and 273.0 nm for OL and HZ, respectively. Method (C) based on successive spectrophotometric resolution technique (SSRT). The technique starts with the ratio subtraction method then measuring OL and HZ at their isoabsorptive point at 260.0 nm, while HZ is measured using the amplitude of first derivative at 335.2 nm. Method (D) is mean centering of the ratio spectra (MCR) at 252.0 nm and 220.0 nm for OL and HZ, respectively. The specificity of the developed methods is investigated by analyzing laboratory prepared mixtures containing different ratios of the three drugs and their combined dosage form. The obtained results are statistically compared with those obtained by the official or reported methods, showing no significant difference with respect to accuracy and precision at p=0.05.

Keywords: Ternary mixture; First derivative ratio spectra; Double Divisor;Successive Spectrophotometry; Isoabsorptive Point; Mean centering.

844. Spectrophotometric Methods Manipulating Ratio Spectra for Simultaneous Determination of Binary Mixtures With Sever Overlapping Spectra: A Comparative Study

H. Moustafa and Y. Fayez

Spectrochimica Acta Part A:Molecular and Biomolecular Spectroscopy, 13: 759-766 (2014) IF: 2.129

Three simple, specific and accurate spectrophotometric methods manipulating ratio spectra were developed and validated for simultaneous determination of Rabeprazole sodium (RB) and Domperidone (DP) in their binary mixture without prior separation. Method A, is constant center spectrophotometric method (CC). Method B is a ratio difference spectrophotometric one (RD), while method C is a combined ratio isoabsorptive point-ratio difference method (RIRD). Linear correlations were obtained in range of 4-44 μ g/mL for both Rabeprazole sodium and Domperidone. The mean percentage recoveries of RB were 99.69 ± 0.504 for method A, 99.83 ± 0.483 for (B) and 100.31 ± 0.499 for (C), respectively, and that of DP were 99.52 ± 0.474 for method A, 100.12 ± 0.505 for (B) and 100.16 ± 0.498 for (C), respectively. Specificity was investigated by analysis of laboratory prepared mixtures containing the cited drugs and their combined tablet dosage form.

The obtained results were statistically compared with those obtained by the reported methods, showing no significant difference with respect to accuracy and precision. The three methods were validated as per ICH guidelines and can be applied for routine analysis in quality control laboratories.

Keywords: Domperidone;Rabeprazole;Constant center; Ratio Difference; Ratio isoabsorptive;Spectroscopy.

845. Successive Spectrophotometric Resolution as A Novel Technique for the Analysis of Ternary Mixtures of Pharmaceuticals

Lotfy HM, Tawakkol SM, Fahmy NM and Shehata

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 121: 313-323 (2014) IF: 2.129

A novel spectrophotometric technique was developed for the simultaneous determination of ternary mixtures, without prior separation steps.

This technique was called successive spectrophotometric resolution technique. The technique was based on either the successive ratio subtraction or successive derivative subtraction. The mathematical explanation of the procedure was illustrated. In order to evaluate the applicability of the methods a model data as well as an experimental data were tested. The results from experimental data related to the simultaneous spectrophotometric determination of lidocaine hydrochloride (LH), calcium dobesilate (CD) and dexamethasone acetate (DA); in the presence of hydroquinone (HQ), the degradation product of calcium dobesilate were discussed.

The proposed drugs were determined at their maxima 202 nm, 305 nm, 239 nm and 225 nm for LH, CD, DA and HQ respectively; by successive ratio subtraction coupled with constant multiplication method to obtain the zero order absorption spectra, while by applying successive derivative subtraction they were determined at their first derivative spectra at 210 nm for LH, 320 nm or $P_{292-320}$ for CD, 256 nm or P_{225252} –for DA and P220–233 for HQ respectively. The calibration curves were linear over the concentration range of 2–20 µg/mL for both LH and DA, 6–50 µg/mL for CD, and 3–40 µg/mL for HQ. The proposed methods were checked using laboratory-prepared mixtures and were successfully applied for the analysis of pharmaceutical formulation containing the cited drugs with no interference from other dosage form additives.

The proposed methods were validated according to the ICH guidelines. The obtained results were statistically compared with those of the official BP methods for LH, DA, and CD, and with the official USP method for HQ; using student t-test, F-test, and one way ANOVA, showing no significant difference with respect to accuracy and precision.

Keywords: Lidocaine Hydrochloride; Dexamethasone Acetate; Calcium Dobesilate; Successive Ratio Subtraction; Successive Spectrophotometric Resolution Technique.

846. Two and Three Way Spectrophotometric-Assisted Multivariate Determination of Linezolid in the Presence of Its Alkaline and Oxidative Degradation Products and Application To Pharmaceutical Formulation

Maha Abd El-Monem Hegazy, Maya Shaaban Eissa, Osama Ibrahim Abd El-Sattar and Mohammad Abd El-Kawy

Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 128: 231-242 (2014) IF: 2.129

Linezolid (LIN) is determined in the presence of its alkaline (ALK) and oxidative (OXD) degradation products without preliminary separation based on ultraviolet spectrophotometry using two-way chemometric methods; principal component regression (PCR) and partial least-squares (PLS), and three-way chemometric methods; parallel factor analysis (PARAFAC) and multi-way partial least squares (N-PLS). A training set of mixtures containing LIN, ALK and OXD; was prepared in the concentration ranges of 12–18, 2.4–3.6 and $1.2-1.8 \ \mu g \ mL^{-1}$, respectively according to a multilevel multifactor experimental design. The multivariate calibrations were obtained by measuring the zero-order absorbance from 220 to 320 nm using the training set. The validation of the multivariate methods was realized by analyzing their synthetic mixtures. The capabilities of the chemometric analysis methods for the analysis of real samples were evaluated by determination of LIN in its pharmaceutical preparation with satisfactory results. The accuracy of the methods, evaluated through the root mean square error of prediction (RMSEP), was 0.058, 0.026, 0.101 and 0.026 for LIN using PCR, PLS, PARAFAC and N-PLS, respectively. Protolytic equilibria of LIN and its degradation products were evaluated using the corresponding absorption spectra-pH data obtained with PARAFAC. The obtained pK_a values of LIN, ALK and OXD are 5.70, 8.90 and 6.15, respectively. The results obtained were statistically compared to that of a reported HPLC method, and there was no significant difference between the proposed methods and the reported method regarding both accuracy and precision. Keywords: Principle Component Regression Partial Least Squares Parallel Factor Analysis N-Way Partial Least Squares Linezolid Stability-Indicating Method.

847. Design, Synthesis, Characterization of Novel Ruthenium(II) Catalysts: Highly Efficient and Selective Hydrogenation of Cinnamaldehyde To (*E*)-3-Phenylprop-2-en-1-ol

Darwish HW, Barakat A, Nafady A, Suleiman M, Al-Noaimi M, Hammouti B, Radi S, Hadda TB, Abu-Obaid A, Mubarak MS and Warad I.

Molecules, 19: 5965-5980 (2014) IF: 2.095

In this contribution, two novel supported and non-supported ruthenium(II) complexes of type [RuCl₂(dppme)(NN)] where NN $H_2C=C(CH2PPh_2)_2$ and [dppme is is N1-(3-(trimethoxysilyl)propyl) ethane-1,2-diamine] were prepared. The NN co-ligand caused release of one of the dppme ligands from [RuCl2(dppme)₂] precursor to yield complex 1. The process of substitution of dppme by NN was monitored by ³¹P{¹H}-NMR. Taking advantage of the presence of trimethoxysilane group in the backbone of complex 1, polysiloxane xerogel counterpart, X1, was prepared via sol-gel immobilization using tetraethoxysilane

as cross-linker. Both complexes **1** and X1 have been characterized via elemental analysis, CV and a number of spectroscopic techniques including FT-IR, ¹H-, ¹³C-, and ³¹P-NMR, and mass spectrometry. Importantly, carbonyl selective hydrogenation was successfully accomplished under mild conditions using complex **1** as a homogenous catalyst and **X1** as a heterogeneous catalyst, respectively.

Keywords: Ru(II) Complexes; Hydrogenation; Diphosphine; Cinnamic Aldehyde; NMR.

848. Validated Simultaneous Determination of Antipyrineand Benzocaine Hcl in thePresence of Benzocaine HCL Degradation Product

Hanan A. Merey and Hala E. Zaazaaa

Analytical Methods, 6: 6044-6050 (2014) IF: 1.938

Two validated, sensitive and highly selective stability-indicating methods were adopted for the simultaneous quantitative determination of antipyrine (ANT) and benzocaine HCl (BEN) in the presence of the degradation product of benzocaine HCl [paminobenzoic acid (PABA)]. The first method was high performance liquid chromatography, where a mixture of antipyrine (ANT), benzocaine HCl (BEN) and degradation product of benzocaine HCl (PABA) is separated on a C8 ZORBAX analytical column (5 μ m, 4.6 \times 150 mm I.D.) using acetonitrile-phosphate buffer of pH 5.5 (25:75, v/v) as the mobile phase. The drugs were detected at 270 nm over a concentration range of 10–100 $\mu g \; m L^{-1}$ and 5–100 $\mu g \; m L^{-1},$ with mean percentage recoveries of 100.22% (S.D. 1.375) and 99.77% (S.D. 1.089) for antipyrine and benzocaine HCl, respectively. The second method was thin layer chromatography combined with the densitometric determination of the separated bands at 275 nm. Adequate separation was achieved using silica gel 60 TLC F₂₅₄ plates and toluene-acetone-methanol-ammonia (8:3:3:0.1 by volume) as the mobile phase. The proposed methods were applied for the analysis of antipyrine and benzocaine HCl in their pharmaceutical formulation, and the results were statistically compared with the reported methods.

Keywords: Antipyrine- Benzocaine-Hplc.

849. DNA Binding Test, X-Ray Crystal Structure, Spectral Studies, Tg-Dta, and Electrochemistry of [Cox2(Dmdphphen)] (Dmdphphen Is 2,9-Dimethyl-4,7-Diphenyl-1,10-Phenanthroline, X = Cl, and NCS) Complexes

Mousa Al-Noaimi, Mohammed Suleiman,2 Hany W. Darwish, Ahmed H. Bakheit, Muneer Abdoh, Iyad Saadeddin, Naveen Shivalingegowda, Neartur Krishnappagowda Lokanath, Odey Bsharat, Assem Barakat and Ismail Warad

Bioinorganic Chemistry and Applications, 2014: 1-7 (2014) IF: 1.661

Two new neutral mixed-ligand cobalt(II) complexes, $[CoCl_2 (dmdphphen)]$ 1 and $[Co(NCS)_2 (dmdphphen)]$ 2, where dmdphphen is 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline, were synthesized and characterized by an elemental analysis, UV-Vis, IR, TG/DTA, cyclic voltammetry CV, and single X-ray diffraction. Complex 2 crystallized as monoclinic with a space group P2₁/c. Co(II) ions are located in a distorted tetrahedral environment. TG/DTA result shows that these complexes are very stable and decomposed through one-step reaction. The two

Keywords: Dna; X-Ray; Electrochemistry.

850. Different Techniques for the Determination of Tofisopam

Nesrin K. Ramadan, Afaf O. Mohamed, Roaida M. Fouad and Azza A. Moustafa

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Five simple and sensitive methods were developed for the determination of tofisopam (TF). The first four are stabilityindicating depending on the determination of TF in the presence of its degradation product, while the fifth depended on the determination of TF via its degradation product. Method A was based on first and second derivative spectrophotometry, 1D and 2D, measuring the amplitude at 298 and 332 nm in the case of ${}^{1}D$ and at 312 and 344 nm in the case of ²D. Method B depended on measuring the peak amplitude of the first derivative of the ratio spectra ¹DD at 336 nm. Method C was based on difference spectrophotometry by measuring ΔA at 366 nm. Method D was a TLC method using silica gel 60 F254 plates, the optimized mobile phase ethyl acetate-methanol-ammonium hydroxide 10% (8.5 + 1.0 + 0.5, v/v/v), and quantification by densitometric scanning at 315 nm. In method E, spectrofluorometry was applied for the determination of TF via its degradation product; maximum emission was 383 nm when excitation was 295 nm. Linearities were obtained in the concentration range 2-20 µg/mL for methods A, B, and C and 2-20 µg/band and 0.2-1.6 µg/mL for D and E, respectively. In method A, the mean recoveries were 99.45 \pm 0.287 and 100.28 \pm 0.277% at 298 and 332 nm, respectively, in the case of ${}^{1}D$ and 99.40 \pm 0.245% and 99.50 \pm 0.292% at 312 and 344 nm, respectively in the case of 2 D.

The mean recovery was $100.03 \pm 0.523\%$ at 366 nm in method B. Method C showed mean recovery of $100.20 \pm 0.642\%$. Recoveries for methods D and E were 98.98 ± 0.721 and $100.25 \pm 0.282\%$, respectively.

The degradation product was obtained in acidic stress condition, separated, and identified by IR and mass spectral analysis, from which the degradation product was confirmed and the degradation pathway was suggested. The first four methods were specific for TF in the presence of different concentrations of its degradation product. The five proposed methods were successfully applied for the determination of TF in Nodeprine tablets. Statistical comparison among the results obtained by these methods and that obtained by the official method for the determination of the drug was made, and no significant differences were found.

Keywords: Tofisopam; Derivative; Derivative Ratio; Tlc; Fluorometry.

851. Stability Indicating Methods for the Determination of Erdosteine in the Presence of Its Degradation Product

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Four accurate, sensitive, and reproducible stability-indicating methods for the determination of erdosteine in the presence of its

acid degradation products are presented. The first method involves processing the spectra by using a first-derivative method at 229 nm in a concentration range of 10-70 microg/mL. The mean percentage recovery was 100.43 +/- 0.977. The second based on ratio-spectra first method is derivative spectrophotometry at 227.4 and 255 nm over a concentration range of 10-70 microg/mL. The mean percentage recovery was 99.65 +/- 1.122% and 100.02 +/- 1.306% at 227.4 and 255 nm, respectively. The third method utilizes quantitative densitometric evaluation of the TLC of erdosteine in the presence of its acid degradation products, and uses methanol-chloroform-ammonia (7 + 3 +/- 0.01, v/v/v) as the mobile phase. TLC chromatograms were scanned at 235 nm. This method analyzes erdosteine in a concentration range of 2.4-5.6 microg/spot, with a mean percentage recovery of 100.03 +/- 1.015%. The fourth method is HPLC for the simultaneous determination of erdosteine in the presence of its acid degradation products. The mobile phase consists of water-methanol (65 + 35, v/v). The standard curve of erdosteine showed good linearity over a concentration range of 10-80 microg/mL, with a mean percentage recovery of 99.90 +/-1.207%. These methods were successfully applied to the determination of erdosteine in bulk powder, laboratory-prepared mixtures containing different percentages of the degradation products, and pharmaceutical dosage forms. The validity of results was assessed by applying the standard addition technique. The results obtained agreed statistically with those obtained by a reported method, showing no significant differences with respect to accuracy and precision.

Keywords: Erdosteine; Stability-Indicating; Ratio-Spectra First Derivative; Densitometry; Hplc Technique

852. Stability-indicating Determination of Rebamipide in the Presence of Its Acid Degradation Products

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Journal Aoac International, 97: 78-85 (2014) IF: 1.385

Four sensitive and precise stability-indicating methods for the determination of rebamipide (REB) in the presence of its aciddegradation products and in a pharmaceutical formulation were developed and validated. Method A used the first derivative of the ratio spectra (1DD) spectrophotometric method by measuring the peak amplitude at 249.4 nm (maximum) and at 259 nm (minimum), and at the total peak amplitude (from 249.4 to 259 nm, 1DD 249.4 + 259 nm) in the range of $2-14 \mu g/mL$. This method yielded mean recoveries of 99.87 ± 0.83 , 100.04 ± 0.75 , and 100.28 \pm 1.11%, respectively. Method B is a dual wavelength method, which allows the determination of REB in presence of its acid-degradation products by measuring the absorbance difference between 254 and 269 nm within a linearity range of 5-65 μ g/mL; it showed a mean recovery of 99.84 \pm 1.06. Method C is a TLC-densitometric procedure in which REB was separated from its degradation products using a developing solution of methanol-chloroform- ammonia (8.5 + 1.5 + 0.5, v/v/v). The quantitative evaluation of REB at 329 nm was linear over the concentration range of 0.50-4.5 µg/band, with a mean recovery of $99.49 \pm 0.99\%$ even in the presence of up to 90% degradation products. Method D is an RP-HPLC procedure. It provided the complete separation of REB from its degradation products on an XterraTM C18 column using phosphate buffer (pH 6, 0.01 M)methanol (1 + 1, v/v) as the mobile phase (UV detection at 254

nm). Recovery was 99.28 \pm 0.78% within the range of 10–190 $\mu g/mL$

The selectivity of the proposed methods was checked using laboratory-prepared mixtures. The proposed methods have been successfully applied to the analysis of REB in pharmaceutical dosage forms without interference from other dosage form excipients.

Keywords: HPLC; TLC; Stability testing; Repamibide.

853. Assessment of the Degradation Pattern and Extent of PEG Interferon α-2b Using A Stability-Indicating SE-HPLC Assay

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Chromatographia, 77: 1661-1669 (2014) IF: 1.37

Covalently attaching polyethylene glycol (PEGylation) to therapeutic proteins is an increasingly important tool for improving stability, pharmacokinetic and pharmacodynamic properties. In this work, degradation of pegylated interferon a-2b (mono-PEG-IFN) was induced using various physicochemical stress conditions (mechanical agitation, pH, temperature, and repeated freeze-thaw). Stability-indicating SE-HPLC assay was validated and employed for monitoring mono-PEG-IFN in the presence of all degradation products. Results were expressed in terms of percentage decrease in mono-PEG-IFN concentration (%Degradation) and peak area normalization method (%Purity). Separation was carried out using a mobile phase of phosphate buffer (100 mM, pH 6.8):1-propanol (80:20 v/v) at 1.0 mL/min and 214 nm. Incubation at pH 4.0-10.0, 37 °C for up to 4 weeks resulted in the formation of aggregates, small molecular weight peptide fragments and mostly depegylated interferon. Similar degradation pattern but to lower extent was noted under shortterm storage conditions (24 h at 2-8 and 37 °C). No degradation was noted when the lyophilized powder was stored for 30 months at 2-8 °C, under real-time stability conditions. It should be noted that expression of the results using %Purity, currently employed for batch release was not a reliable approach. Alternatively, the stability of mono-PEG-IFN should be expressed as %Degradation that was shown to reveal minor changes in product stability. Results raised a concern about the efficacy and safety of reconstituted multi-dose vials of pegylated therapeutics that are stored refrigerated. The need for in-house validated testing protocols developed by local regulatory authorities to prevent access of substandard biotherapeutics to local markets is discussed.

Keywords: Size exclusion chromatography; Stability; Biopharmaceuticals; Pegylated interferon interferon A-2B.

854. Highly Sensitive Fluorimetric Method for Determination of Varenicline in Its Bulk and Tablets Via Derivatization With 7-Chloro-4-Nitrobenzoxadiazole

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Digest Journal of Nanomaterials and Biostructures, 9: 1065-1075 (2014) IF: 1.123

This study represents the first report on the development and validation of a highly sensitive fluorimetric method for determination of varenicline (VRC) in tablets and plasma. The method was based on nucleophilic substitution reaction of VRC

with 7-chloro-4-nitrobenzoxadiazole (NBD-Cl) in an alkaline buffered medium (pH 9) to form a highly fluorescent derivative that exhibited maximum fluorescence intensity at 550 nm after excitation at 470 nm. The factors affecting the reaction were carefully optimized. The stoichiometry of the reaction was determined, and the mechanism was postulated. Under the optimum reaction conditions, a linear relationship with good correlation coefficient (r = 0.9993) was found between the fluorescence intensity and VRC concentrations in the range of 5-250 ng ml-1. The limits of detection and quantitation were 2.5 and 8.3 ng ml-1, respectively. The method was reproducible as the relative standard deviations of the results did not exceed 2%. The proposed method was successfully applied to the determination of VRC in its bulk and tablets with good accuracy; the label claim percentage was $99.17 \pm 1.06\%$. The proposed method is valuable for routine application in quality control laboratories for determination of VRC.

Keywords: Varenicline; Flourimetry; Nbd-Cl; Pharmaceutical Analysis; Tablets.

855. Highly Sensitive Synchronous Spectrofluorimetric Method for Determination of Stiripentol in Capsules and Human Urine: Application To In-Vitro Drug Release and Weight Variation Test

Hany W. Darwish, Ahmed H. Bakheit and Mohamed I. Attia

Digest Journal of Nanomaterials and Biostructures, 9: 819-829 (2014) IF: 1.123

A highly sensitive and simple spectrofluorimetric method has been developed and validated for the determination of stiripentol (STP) in its pharmaceutical formulations and human urine. The proposed method is based on the investigation of the fluorescence spectral behaviour of STP in methanol using synchronous scan technique ($\Delta\lambda$ =80 nm, 343nm). The fluorescence–concentration plot was rectilinear over the range 10–70 ng/mL, with lower detection limit of 2ng/mL. The proposed method was successfully applied to the assay of commercial capsules, spiked urine samples as well as weight variation testing.

The application of the proposed method was extended to test the in-vitro drug release of STP capsules, according to USP guidelines.

Keywords: Stiripentol; Spectrofluorimetry; Human Urine; Content Uniformity; In-Vitro Release.

856. Simultaneous Spectrophotometric Determination of Diphenhydramine, Benzonatate, Guaifenesin and Phenylephrine in Their Quaternary Mixture Using Partial Least Squares With and Without Genetic Algorithm as A Powerful Variable Selection Procedure

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Digest Journal of Nanomaterials and Biostructures, 9: 1359-1372 (2014) IF: 1.123

Diphenhydramine HCl, benzonatate, guaifenesin and phenylephrine HCl are co-formulated together in Bronchofree TM capsule in the ratio of 2.5:10:10:1 respectively. Literature review showed only one reported HPLC method for this mixture. Simultaneous chemometric- assisted spectrophotometric analysis

of the multi-component dosage form has been carried out using two chemometric methods. These methods includes partial least squares (PLS-1) and PLS-1 proceeded by genetic algorithm (GA-PLS). Results demonstrated the efficiency of the two methods as quantitative tool of analysis of the four components without any interference of the excipient added, that eliminates the need for preliminary extraction of analytes from the pharmaceutical formulation. The four analytes were determined precisely using the afore-mentioned methods in an independent data set as well as in dosage form after optimization of the experimental conditions.Both methods are robust,accurate and precise in addition to their remarkable simplicity in comparison to other sophisticated techniques such as HPLC.

Keywords: Diphenhydramine Hcl, Benzonatate, Guaifenesin, Phenylephrine Hcl, Spectrophotometry, Pls, Genetic Algorithm.

857. A Rapid and Sensitive Hplc Assay of Some Concomitant Anti-Migraine Drugs

Rezk MR, Michael AM, Lotfy HM, El-Kadi AO and Shehata MA

Journal of Chromatographic Science, 52: 704-706 (2014) IF: 1.026

This work describes a simple and sensitive method for simultaneous determination of zolmitriptan, naproxen and propranolol in their dosage forms using HPLC. The drugs were separated isocratically on a Zorbax C8 (4.6 3 250 mm with 5 mm particle size) column using a mobile phase composed of 20 mM phosphate citrate buffer [0.1% TEA (pH 3.1)]:methanol:THF (5:3:2, by volumes). The detection was accomplished fluorometrically setting the excitation wavelength at 280 nm and emission wavelength at 360 nm. The method was validated over a linearity range of 100-900 ng/mL for zolmitriptan, 50-300 ng/mL for naproxen and 100-800 ng/mL for propranolol. The assay was successfully applied to the determination of the studied drugs in pharmaceutical dosage forms without interference from tablet excipients with high specificity. The method can be applied successfully in the future for the pharmacokinetic study of these drugs in the human plasma with high accuracy especially that LOQs of zolmitriptan and propranolol in the proposed method cover their Cmax.

Keywords: Hplc; Zolmitriptan; Naproxen; Propranolol.

858. Stability-Indicating Chromatographic Methods for the Determination of Sertindole

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Journal of Chromatographic Science, 52: 559-565 (2014) IF: 1.026

In this work, two chromatographic methods have been developed and validated for the determination of sertindole (an antipsychotic agent) in the presence of its oxidative degradation product. Sertindole was subjected to stress stability studies, including acid, alkali, oxidative, photolytic and thermal degradation. The chromatographic methods included the use of thin-layer chromatography (TLC–densitometry) and high-performance liquid chromatography (HPLC). The TLC method employed aluminum TLC plates precoated with silica gel G.F254 as the stationary phase and methanol–ethyl acetate–33% ammonia (1:9:0.1, by volume) as the mobile phase, and the chromatograms were scanned at 227 nm. The developed HPLC method used a reversed-phase C18 column with isocratic elution. The mobile phase was composed of phosphate buffer pH 3.0–acetonitrile–triethylamine (45:55:0.03, by volume) and run at a flow rate of 1.0 mL/min. Quantitation was achieved with ultraviolet detection at 256 nm. The linearity ranges were found to be 2–14 mg/band and 5–200 mg/mL for TLC and HPLC, respectively. The developed methods were validated according to the International Conference on Harmonization guidelines and were applied for bulk powder and dosage forms.

Keywords: Spectrophotometry; Tlc-Densitometry; Hplc; Sertindole.

859. Validated Stability Indicating Rp-Hplc for Quantitation of Nitazoxanide in Presence of its Alkaline Degradation Products and their Characterization by Hplc-Tandem Mass Spectrometry

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Journal of Chromatographic Science, 52: 1071-1081 (2014) IF: 1.026

A simple and sensitive stability indicating HPLC method was developed and validated for quantitative determination of Nitazoxanide (NTZ), a new antiprotozoal drug, in presence of degradation products generated under forced alkaline hydrolysis. Chromatographic separation was achieved on Inertsil C8-3 column (150 3 4.6 mm i.d.) using a mobile phase composed of acetonitrile: 50 mM ammonium acetate buffer (50:50, v/v, pH 5.0 adjusted with acetic acid) at a flow rate of 1 mL/min. Quantification was achieved with UV detection at 298 nm based on relative peak area. The method was linear over the concentration range of 0.8-50 mg/mL (r 5 0.9999) with a limit of detection and quantification 0.0410 and 0.1242 mg/mL, respectively. The developed method has the requisite accuracy, selectivity, sensitivity and precision to assay NTZ in presence of its degradation products either in bulk powder or in pharmaceutical formulations. The degradation products were then identified by HPLC-MS/MS analysis using an electrospray ionization source and an ion trap analyzer.

Keywords: Nitazoxanide; Hplc; Degradation Products.

860. A Stability-Indicating Hplc-Dad Method for Determination of Stiripentol: Development, Validation, Kinetics, Structure Elucidation and Application To Commercial Dosage Form

Hany Wagih Darwish

Journal of Analytical Methods In Chemistry, 2014: 1-10 (2014) IF: 0.948

A rapid, simple, sensitive, and accurate isocratic reversed-phase stability-indicating high performance liquid chromatography method has been developed and validated for the determination of stiripentol and its degradation product in its bulk form and pharmaceutical dosage form. Chromatographic separation was achieved on a Symmetry C18 column and quantification was achieved using photodiode array detector (DAD). The method was validated in accordance with the ICH requirements showing specificity, linearity (r^2 = 0.9996, range of 1–25 µg/mL), precision (relative standard deviation lower than 2%), accuracy (mean

recovery100.08±1.37), limits of detection and quantitation (LOD = 0.024 and LOQ = $0.081 \mu g/mL$), and robustness. Stiripentol was subjected to various stress conditions and it has shown marked stability under alkaline hydrolytic stress conditions, thermal, oxidative, and photolytic conditions. Stiripentol degraded only under acidic conditions, forming a single degradation product which was well resolved from the pure drug with significantly different retention time values. This degradation product was characterized by 1H-NMR and 13C-NMR spectroscopy as well as ion trap mass spectrometry. The results demonstrated that the method would have a great value when applied in quality control and stability studies for stiripentol.

861. Determination of Fluoroquinolone Antibiotics in Industrial Wastewater by High-Pressure Liquid Chromatography and Thin-Layer Chromatography– Densitometric Methods

Fatma I. Khattab, Hesham Salem, Safaa M. Riad and Heba T. Elbalkiny

Journal of Planar Chromatography, 27 (4): 287-293 (2014) IF: 0.67

Two methods were described for the simultaneous determination of ciprofloxacin HCl (CIP) and moxifloxacin HCl (MOX) in their binary mixture present in industrial wastewater. A solid-phase extraction procedure (SPE) based on retention on HLB OASIS cartridges and elution with a mixture of methanol-water in acidic medium was preformed, and then both fluoroquinolones were separated using two chromatographic methods. The first method was based on highperformance liquid chromatographic separation of the two drugs on reversed-phase Zorbax C18 column. The mobile phase consisted of monobasic potassium phosphate (50 mM, pH 2.5, adjusted with phosphoric acid) and acetonitrile (80:20, v/v). Flow rate was 1 mL min-1. Quantitation was achieved with ultraviolet (UV) detection at 278 nm. Linearity was found to be over the concentration range of 1-50 µg mL-1 for both CIP and MOX. The second method was based on the thinlayer chromatographic (TLC) separation of the two drugs followed by densitometric measurements of their bands at 278 nm. The separation was carried out on silica gel 60 F254 plates, using methanol, ammonia, and methylene chloride (55:35:20, v/v) as a developing system. The linearity was found to be in the range of 0.25-2.5 µg band-1 for both CIP and MOX. Both methods were optimized and validated as per International Conference on Har - monization (ICH) guidelines. Separation was developed on spiked water samples and checked on process wastewaters of industrial origin after SPE sample pretreatment.

Keywords: Ciprofloxacin hydrochloride; Moxifloxacin hydrochloride; High-performance liquid chromatography; Thinlayer chromatography–densitometry industrial wastewater.

862. Simultaneous Determination of Sulphadiazine Sodium and Trimethoprim in Medicated Fish Feed, Fish Tissues and in Their Veterinary Pharmaceutical Formulation by Thin-Layer Chromatography– Densitometry

Fatma I Khattab, Safaa M. Riad, Mamdouh Rezk and Hoda M. Marzouk

Journal of Planar Chromatography, 27: 113-119 (2014) IF: 0.67

A specific, precise, and accurate thin-layer chromatographic method for the simultaneous estimation of sulphadiazine sodium (SDZ) and trimethoprim (TMP) in medicated fish feed and in fish tissues was developed and validated. This method is based on simple liquid extraction technique and employing thin-layer chromatography (TLC) as a cleanup step. In order to optimize the extraction procedure from fish tissues, several mobile phase systems and extracting solvents were tried. The method employed TLC aluminum plates precoated with silica gel 60 F254 as the stationary phase and chloroform-toluene-ethanol-glacial acetic acid (4.5:4.5:1.0:1.0 by volume) mixture as the developing solvent. This system was found to give compact and dense spots for both sulphadiazine sodium (RF value of 0.48) and trimethoprim (RF value of 0.16) without interference from either medicated fish feed or fish tissues co-extractives. Densitometric analysis of both drugs was carried out in the reflectanceabsorbance mode at 270 nm for SDZ and 225 nm for TMP to maximize sensitivity for each drug. The linearity of the proposed method was established over the ranges 0.1-2.0 and 0.1-1.0 µg/band for sulphadiazine sodium and trimethoprim, respectively. The method was validated for linearity, specificity, precision, and accuracy. Statistical analysis proves that the method is repeatable and selective for the estimation of both drugs in various matrices. The proposed method was successfully applied for the determination of SDZ and TMP either in bulk pure powder or in their veterinary pharmaceutical formulation.

Keywords: Densitometry; Tlc; Sulphadiazine Sodium; Trimethoprim; Medicated Fish Feed; Fish Tissues.

863. Thin-Layer Chromatographic Enantioseparation Ofofloxacin and Zopiclone Using Hydroxy-Propyl-Beta-Cyclodextrin as Chiral Selector and Thermodynamicstudies of Complexation

Nahla Salama, Hala E Zaazaa, Lobna Mohammed Abd El Halim, Maissa Salem and Laila E. Abd El Fattah

Journal of Planar Chromatography, 127: 166-173 (2014) IF: 0.67

A novel economic thin-layer chromatographic procedure for stereoselective separation of racemic mixtures of each of zopiclone and ofloxacin, and determination of their enantiomers: eszopiclone, (+)(S)-zopiclone, and levofloxacin, (-)-(S)-ofloxacin, was described. The method was based on using normal plates and hydroxy propyl-beta-cyclodextrin (HP-beta-CD) as chiral mobile phase additive (CMPA). The spots were detected under UV lamp 254 nm, followed by densitometric measurements at 304 and 330 nm for (+)-(S)-zopiclone and (-)-(S)-ofloxacin, respectively. The mobile phase enabling successful resolution of the drugs was ethanol-acetonitrile-glacial acetic acid-diethylamine-distilled water containing 0.5% HP-beta-CD (4:2:3:1:1, by volume), pH 4, for zopiclone and ethanol-acetonitrile-glacial glacial acetic aciddiethylamine-distilled water containing 0.3% HP-beta-CD (4:4:3:2:1 by volume), pH 4.5, for ofloxacin at 25 +/- 2 degrees C. All variables affecting the resolution, such as concentration of different chiral selectors, temperature, and pH, were investigated, and the conditions were optimized. Furthermore, some thermodynamic parameters were calculated. The procedure provided a linear response over the concentration range of 1-4 and 2-7 mu g spot(-1) for determination of pure active isomers, (+)-(S)-zopiclone and (-)-(S)-ofloxacin, respectively, with acceptable precision (relative standard deviation [% RSD] <2.0). The

developed method was validated and proved to be robust. The proposed method was found to be selective and accurate for the identification and quantitative determination of enantiomeric purity of the two active isomers in their drug substances and drug products.

Keywords: Eszopiclone-Levofloxacin-Enantiomeric Purity-Densitometry–Tlc-Chiral Mobile Phase Additive

864. Two Validated Liquid Chromatographic Methods for the Simultaneous Determination of Flumethasone Pivalate, its Related Substance (Flumethasone), and Clioquinol

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Journal of Planar Chromatography, 27: 466-471 (2014) IF: 0.67

Two liquid chromatographic methods were developed and validated. Simple and sensitive thin-layer chromatography and (TLC)-densitometric high-performance liquid chromatographic (HPLC) methods were used for the simultaneous determination of flumethasone pivalate (FP), pivalate related substance and impurity, flumethasone flumethasone (FL), and clioquinol (CL). The proposed TLCdensitometric method has been developed using silica gel plates 60 F254 as a stationary phase with benzene-hexane-acetoneformic acid (5:4:2:0.13, by volume) as a developing system followed by densitometric measurements at 235 nm. The studied components were quantified in the range of 0.3-4, 0.3-3, and µg band-1, respectively. For HPLC method, 1 5-5 chromatographic separation was achieved within 11 min with the required peak symmetry, accuracy, and precision on ODS column using acetonitrile–water (70:30, v/v) as the mobile phase at a flow rate of 1 mL min-1 with ultraviolet (UV) detection at 235 nm. The calibration plots were linear over the concentration range of 5-50, 2-35, and 10-70 mg mL-1, respectively.

The proposed methods were validated as per International Conference on Harmonization (ICH) guidelines; accuracy, precision, and repeatability were found to be within the acceptable limits.

Keywords: Flumethasone Pivalate Flumethasone Clioquinol Thin-Layer Chromatography High-Performance Liquid Chromatography.

865. Selective Chromatographic Methods for the Determination of Rosuvastatin Calcium in the Presence of ITS Acid Degradation Products

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Journal of Liquid Chromatography & Related Technologies, 37: 2182-2196 (2014) IF: 0.638

Two accurate and sensitive stability-indicating methods for the determination of rosuvastatin calcium in the presence of its acid degradation products are presented. The first method utilizes quantitative spectrodensitometric evaluation thin-layer chromatography (TLC) of rosuvastatin calcium in the presence of its acid degradation products, using ethvl acetate/methanol/ammonia (7:3:0.01, by volume) as a mobile phase. Chromatograms are scanned at 245 nm. This method analyzes rosuvastatin calcium in a concentration range of 0.6-

3.4 µg/band with mean percentage recovery of 99.78 ± 1.42 . The second method is a high-performance liquid chromatography (HPLC) method for the simultaneous determination of rosuvastatin calcium in the presence of its acid degradation The mobile products. phase consists of water/acetonitrile/methanol (40:40:20, by volume). The standard curve of rosuvastatin calcium shows a good linearity over a concentration range of 10-60 μ g mL⁻¹ with mean percentage recovery of 100.22 ± 0.86 . These methods were successfully applied to the determination of rosuvastatin calcium in bulk powder, laboratory-prepared mixtures containing different percentages of the acid degradation products, and pharmaceutical dosage forms.

The validity of results was assessed by applying standard addition technique. The results obtained were found to agree statistically with those obtained by a reported method, showing no significant difference with respect to accuracy and precision.

Keywords: Degradation, Densitometry, Hplc technique, Rosuvastatin Calcium, Stability-indicating, Tlc technique.

866. Novel Spectrophotometric Methods for Determination of salicylamide and Ascorbic Acid in Their Binary Mixture

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Journal Of Chemical Society Of Pakistan, 36: 988-995 (2014) IF: 0.612

Simple, selective and precise four spectrophotometric methods were developed and validated for quantitative determination of Salicylamide (SAD) and Ascorbic acid (ASC, Vitamin C) in their binary mixture. Method A is Area under curve spectrophotometry, in which the area under curve in the wavelength ranges 225-245 nm and 265-285 nm were selected for determination of SAD and ASC. Method B is based on dual wavelength spectrophotometry, where ASC can be determined by difference in absorbance at 249.8 and 285.8 nm.

On the same way; SAD is measured by difference in absorbance at 240.4 and 286.4 nm. Method C utilizes isoabsorptive point spectrophotometry where total concentration of SAD and ASC was calculated at their isoabsorptive points at 246.4 and 287 nm, while SAD concentration alone can be determined by first derivative spectrophotometry (¹D) at 315.4 nm, then ASC concentration can be determined by subtraction. Method D is ratio subtraction spectrophotometry, where ASC can be determined by dividing the spectrum of the mixture by the spectrum of the SAD (as a divisor) followed by subtracting the constant absorbance value of the plateau region, then finally multiplying the obtained spectrum by the spectrum of the divisor.

The developed methods have been successfully applied for determination of the studied drugs in different laboratory prepared mixtures and in their pharmaceutical formulation. Statistical comparison between the results obtained by applying the proposed methods and the reported HPLC method was done, and it was found that there was no significant difference between them regarding both accuracy and precision.

Keywords: Ascorbic Acid; Area Under Curve; Dual Wavelength; Isoabsorptive Point.

867. Smart Methods for Linezolid Determination in the Presence of Alkaline and Oxidative Degradation Products Utilizing Their Overlapped Spectral Bands

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Journal of Applied Spectroscopy, 81: 646-654 (2014) IF: 0.514

Linezolid (LIN) is considered the first available oxazolidinone antibacterial agent. It is susceptible to hydrolysis and oxidation. Five simple, accurate, sensitive and validated UV spectrophotometric methods were developed for LIN determination in the presence of its alkaline (ALK) and oxidative (OXD) degradation products in bulk powder and pharmaceutical formulation. Method A is a second derivative one (D^2) in which LIN is determined at 240.9 nm. Method B is a pH-induced differential derivative one where LIN is determined using the fourth derivative (D⁴) of the difference spectra (ΔA) at 285.3 nm. Methods C, D, and E are manipulating ratio spectra, where C is the double divisor-ratio difference spectrophotometric one (DD-RD) in which LIN was determined by calculating the amplitude difference at 243.7 and 267.6 nm of the ratio spectra. Method D is the double divisor- first derivative of ratio spectra $(DD-DD^{1})$ in which LIN was determined at 270.2 nm. Method E is a mean centering of ratio spectra one (MCR) in which LIN was determined at 318.0 nm. The developed methods have been validated according to ICH guidelines. The results were statistically compared to that of a reported HPLC method and there was no significant difference regarding both accuracy and precision.

Keywords: Spectrophotometry; Derivative; Ratio difference; Ratio spectra derivative; Mean centering; Linezolid; Degradation products.

868. Artificial Neural Networks And Concentration Residual Augmented Classical Least Squares for the Simultaneous Determination of Diphenhydramine, Benzonatate, Guaifenesin And Phenylephrine in Their Quaternary Mixture

Hany W Darwish, Fadia H Metwally, Abdelaziz El Bayoumi and Ahmed A Ashour

Tropical Journal Of Pharmaceutical Research, 13: 2083-2090 (2014) IF: 0.495

Purpose: To develop two multivariate calibration methods for the simultaneous spectrophotometric determination of a quaternary mixture composed of diphenhydramine HCl, benzonatate, guaifenesin and phenylephrine HCl in Bronchofree TM capsules in the ratio of 2.5:10:10:1, respectively.

Methods: Novel artificial neural networks (ANNs) and concentration residual augmented classical least squares (CRACLS) methods were developed for the quantitative determination of the quaternary mixture. For proper analysis, a four-level, four-factor experimental design was established resulting in a training set of 16 mixtures containing different ratios of the four analytes. A validation set consisting of six mixtures was used to validate the prediction ability of the suggested models.

Results: ANNs and CRACLS methods were successfully applied for the analysis of raw materials and capsules. For ANNs method, % recovery of diphenhydramine HCl, benzonatate, guaifenesin and phenylephrine HCl in the capsules was 102.21 ± 1.34 , 100.30

 \pm 1.17, 99.31 \pm 2.00 and 98.50 \pm 1.27, respectively. On the other hand, % recovery of the four analytes by CRACLS was 99.84 \pm 2.22, 100.07 \pm 0.63, 98.37 \pm 1.42 and 97.99 \pm 0.96, respectively.

Conclusion: The proposed methods can be applied for the quantitative determination of the four components without interference from excipients, thus obviating the need for preliminary extraction of analytes from the pharmaceutical formulation. The ability of the methods to deconvolute the highly overlapped UV spectra of the four components' mixtures using low-cost and easy-to-handle instruments such as UV spectrophotometer is also an advantage.

Keywords: Artificial Neural Networks, Concentration Residual Augmented Classical Least Squares, Quaternary Mixture, Simultaneous Determination.

869. Comparative Study of RP–HPLC Versus TLC– Spectrodensitometric Methods Applied for Binary Mixtures of Fluoroquinolones and Corticosteroids

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Acta Chromatographica, 26: 439-456 (2014) IF: 0.485

Reversed phase high-performance liquid chromatography (RP-HPLC) and thin-layer chromatography (TLC)spectrodensitometric methods have been developed and validated for the separation and quantitation of two binary mixtures: Ofloxacin (OFX) and dexamethasone (DXM) in eye preparation; ciprofloxacin hydrochloride (CIP) and hydrocortisone (HYD) in ear preparation. The linearity ranges of RP-HPLC methods were found to be (2.5-45 µg mL-1) for OFX, (2.5-50 µg mL-1) for DXM and (1-8 µg mL-1) for both CIP and HYD. The percentage recoveries/relative standard deviation (RSD) were found to be 100.36/1.38, 100.13/1.49, 99.98/0.61 and 100.28/1.27. respectively. The linearity ranges of TLC-spectrodensitometric methods were found to be (0.5-2 µg band-1), (0.5-3.5 µg band-1), (0.2–1.6 µg band-1), and (0.6–2 µg band-1) for OFX, DXM, CIP, and HYD, respectively. The percentage recoveries/RSD were found to be 99.98/1.06, 99.93/1.18, 99.74/1.27, and 99.94/1.54, respectively. A comparative study was conducted to show the advantages of the proposed methods which showed that the TLC-spectrodensitometric methods were simpler, more sensitive, and economic, while RP-HPLC methods were more precise and robust. The methods were validated in compliance with the ICH guidelines and were successfully applied for determination of the selected drugs in their laboratory-prepared mixtures and commercial dosage forms.

Keywords: Ofloxacin; Dexamethasone; Ciprofloxacin Hydrochloride; Hydrocortisone; HPLC; TLC-Spectrodensitometry.

870. Electrophoretic Behavior of Charge Regulated Zwitter Ionic Buffers in Covalently And Dynamically Coated Fused Silica Capillaries

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Bulletin Of Faculty Of Pharmacy, Cairo University, 52: 71-78 (2014)

In this work, the electrophoretic behavior of zwitterionic buffers is investigated in the absence of electroosmotic flow (EOF). Electro mobilization of capillary contents is noted when zwitterionic buffers are employed as the background electrolyte at a pH where the buffering moiety carries a net charge. The bulk flow of capillary contents was demonstrated via monitoring the migration of a neutral marker as well as a free and micellar negatively charged marker and SDS-protein complexes. This electrolyte-driven mobilization (EDM) was investigated in detail 4-(2-hydroxyethyl)piprazine-1-ethanesulfonic using acid (HEPES) buffer over a wide pH range (pH 4.0-8.0). Results confirmed that at a pH where HEPES molecules carry a net negative charge, a bulk flow toward the anode is observed. This was attributed to the migration of HEPES ions toward the anode along with their hydration shells. The relatively large difference in size and solvation number between the ionic buffering moiety and its counter-migrating ions (Na⁺ or H⁺) resulted in such a net movement. Results indicated that at constant voltage, plotting the measured current versus buffer pH can be used for determination of the isoelectric point of the zwitterionic buffering moiety. Furthermore, this novel mobilization modality was demonstrated using five different HEPES analogs over pH range 5.0-8.0. More in depth investigations are required in order to explore the applicability of EDM in coated capillaries of different wall chemistries and dimensions.

Keywords: Electrolyte-Driven Mobilization (Edm); Eof; Zwitterionic Buffers; Electrokinetic Pump.

871. Pseudo-MS³ Approach Using Electrospray Mass Spectrometry (ESI-MS/MS) to Characterize Certain (2*E*)-2-[3-(1*H*-Imidazol-1-yl)-1-Phenylpropylidene] Hydrazinecarboxamide Derivatives

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Journal of Chemistry, 2014: 1-10 (2014)

An approach for the use of in-source fragmentation with electrospray ionization followed by product ion scan in a triple quadrupole mass spectrometer system is described. This approach is based on the elucidation of the various fragmentation pathways by further dissociation of each fragment ion in the ion spectrum. This can be achieved predominately, by combining fragmentor voltage induced dissociation (in-source fragmentation) with subsequent collision-induced dissociation; this process can be referred to as pseudo-MS³ scan mode. This technique permitted unambiguous assignment and provided sufficient sensitivity and specificity. It is advantageous for structure elucidation of unknown compounds. We investigate the possibility of using insource fragmentation with the diverse novel chemical entities encompassing different substituents. This process was intended to improve the qualitative capability of tandem mass spectrometry simulating the MS³ of ion trap for studying fragmentation mechanisms. The approach is to implement the investigated technique as a well established tool for the characterization of new pharmacologically important chemical entities. The data presented in this paper provided useful information on the effect of different substituents on the ionization/fragmentation processes and can be used in the characterization of (2E)-2-[3-(1Himidazol-1-yl)-1-phenylpropylidene]-hydrazinecarboxamide derivatives 3a-h.

Keywords: Esi-Ms/Ms; Hydrazinecarboxamide.

Dept. of BioChemsitry

872. Long-Term IKK2/NF- $_{\rm K}$ B Signaling in Pancreatic β -Cells Induces Immune-Mediated Diabetes

Heba H. Salem, Bernadette Trojanowski, Katja Fiedler, Harald J. Maier, Reinhold Schirmbeck, Martin Wagner, Bernhard O. Boehm, Thomas Wirth and Bernd Baumann

Diabetes, 63(3): 960-975 (2014) IF: 8.474

Type 1 diabetes is a multifactorial inflammatory disease in genetically susceptible individuals characterized by progressive autoimmune destruction of pancreatic β -cells initiated by yet unknown factors. Although animal models of type 1 diabetes have substantially increased our understanding of disease pathogenesis, heterogeneity seen in human patients cannot be reflected by a single model and calls for additional models covering different aspects of human pathophysiology. Inhibitor of _KB kinase (IKK)/nuclear factor- $_{K}B$ (NF- $_{K}B$) signaling is a master regulator of inflammation; however, its role in diabetes pathogenesis is controversially discussed by studies using different inhibition approaches. To investigate the potential diabetogenic effects of NF-_KB in β -cells, we generated a gain-of-function model allowing conditional IKK2/NF-_KB activation in β -cells. A transgenic mouse model that expresses a constitutively active mutant of human IKK2 dependent on Pdx-1 promoter activity (IKK2-CA(Pdx-1) spontaneously develops full-blown immune-mediated diabetes with insulitis, hyperglycemia, and hypoinsulinemia. Disease development involves a gene expression program mimicking virus-induced diabetes and allergic inflammatory responses as well as increased major histocompatibility complex class I/II expression by β -cells that could collectively promote diabetes development. Potential novel diabetes candidate genes were also identified. Interestingly, animals successfully recovered from diabetes upon transgene inactivation. Our data give the first direct evidence that β -cell-specific IKK2/NF-_KB activation is a potential trigger of immune-mediated diabetes. Moreover, IKK2-CA(^{Pdx-1}) mice provide a novel tool for studying critical checkpoints in diabetes pathogenesis and mechanisms governing β-cell degeneration/regeneration.

Keywords: Diabetes; Nf-_KB; Inflammation; Beta Cells.

873. Direct Detection of Hyaluronidase in Urine Using Cationic Gold Nanoparticles: A Potential Diagnostic Test for Bladder Cancer

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Biosensors and Bioelectronics, 54: 7-14 (2014) IF: 6.451

Hyaluronidase (HAase) was reported as a urinary marker of bladder cancer. In this study, a simple colorimetric gold nanoparticle (AuNP) assay was developed for rapid and sensitive detection of urinary HAase activity. Charge interaction between polyanionic hyaluronic acid (HA) and cationic AuNPs stabilized with cetyl trimethyl ammonium bromide (CTAB) led to formation of gold aggregates and a red to blue color shift. HAase digests HA into small fragments preventing the aggregation of cationic AuNPs. The nonspecific aggregation of AuNPs in urine samples was overcome by pre-treatment of samples with the polycationic chitosan that was able to agglomerate all negatively charged interfering moieties before performing the assay. The developed AuNP assay was compared with zymography for qualitative detection of urinary HAase activity in 40 bladder carcinoma patients, 11 benign bladder lesions patients and 15 normal individuals, the assay sensitivity was 82.5% vs. 65% for zymography, while the specificity for both assays was 96.1%. The absorption ratio, A530/A620 of the reacted AuNP solution was used to quantify the HAase activity. The best cut off value was 93.5 μ U/ng protein, at which the sensitivity was 90% and the specificity was 80.8%.The developed colorimetric AuNP HAase assay is simple, inexpensive, and can aid noninvasive diagnosis of bladder cancer. Hyaluronidase; Hyaluronic acid; Bladder Cancer; Gold Nanoparticles; Chitosan

Keywords: Hyaluronidase; Hyaluronic acid; Bladder cancer; Gold nanoparticles; Chitosan.

874. The Adaptor Protein P66Shc Inhibits mTOR-Dependent Anabolic Metabolism

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Science Signaling, 18 (7): 313-317 (2014) IF: 6.337

Adaptor proteins link surface receptors to intracellular signaling pathways and potentially control the way cells respond to nutrient availability. Mice deficient in p66Shc, the most recently evolved isoform of the Shc1 adaptor proteins and a mediator of receptor tyrosine kinase signaling, display resistance to diabetes and obesity. Using quantitative mass spectrometry, we found that p66Shc inhibited glucose metabolism. Depletion of p66Shc enhanced glycolysis and increased the allocation of glucosederived carbon into anabolic metabolism, characteristics of a metabolic shift called the Warburg effect. This change in metabolism was mediated by the mammalian target of rapamycin (mTOR) because inhibition of mTOR with rapamycin reversed the glycolytic phenotype caused by p66Shc deficiency. Thus, unlike the other isoforms of Shc1, p66Shc appears to antagonize insulin and mTOR signaling, which limits glucose uptake and metabolism. Our results identify a critical inhibitory role for p66Shc in anabolic metabolism.

Keywords: Metabolism, Cell Signaling, Diabetes, Cancer, Oxidative Stress

875. Sorting of β1-adrenergic receptors is mediated by pathways that are either dependent on or independent of type I PDZ, protein kinase A (PKA), and SAP97

Nooh MM, Chumpia MM, Hamilton TB and Bahouth SW.

Journal of Biological Chemistry, 289: 2277-2294 (2014) IF: 4.6

The β 1-adrenergic receptor (β 1-AR) is a target for treatment of major cardiovascular diseases, such as heart failure and hypertension. Recycling of agonist-internalized β 1-AR is dependent on type I PSD-95/DLG/ZO1 (PDZ) in the C-tail of the β 1-AR and on protein kinase A (PKA) activity (Gardner, L. A., Naren, A. P., and Bahouth, S. W. (2007) J. Biol. Chem. 282, 5085-5099). We explored the effects of point mutations in the PDZ and in the activity of PKA on recycling of the β 1-AR and its binding to the PDZ-binding protein SAP97. These studies indicated that β 1-AR recycling was inhibited by PKA inhibitors and by mutations in the PDZ that interfered with SAP97 binding. The trafficking effects of short sequences differing in PDZ and

SAP97 binding were examined using chimeric mutant β 1-AR. β 1-AR chimera containing the type I PDZ of the β 2-adrenergic receptor that does not bind to SAP97 failed to recycle except when serine 312 was mutated to aspartic acid. β 1-AR chimera with type I PDZ sequences from the C-tails of aquaporin-2 or GluR1 recycled in a SAP97- and PKA-dependent manner. Non-PDZ β 1-AR chimera derived from μ -opioid, dopamine 1, or GluR2 receptors promoted rapid recycling of chimeric β 1-AR in a SAP97- and PKA-independent manner. Moreover, the nature of the residue at position -3 in the PDZ regulated whether the β 1-AR was internalized alone or in complex with SAP97. These results indicate that divergent pathways were involved in trafficking the β 1-AR and provide a roadmap for its trafficking via type I PDZs versus non-PDZs.

Keywords: Adrenergic Receptor; Confocal Microscopy; G Protein-Coupled Receptor (GPCR); Protein Kinase A (PKA); Trafficking

876. Chrysin Alleviates Testicular Dysfunction in Adjuvant Arthritic Rats Via Suppression of Inflammation and Apoptosis: Comparison With Celecoxib

Hebatallah A. Darwish, HanyH. Araba and Rania M. Abdelsalam

Toxicol Appl Pharmacol, 279(2): 129-140 (2014) IF: 3.63

Long standing rheumatoid arthritis RA is associated with testicular dysfunction and subfertility. Few studies have addressed the pathogenesis of testicular injury in RA and its modulation by effective agents. Thus, the current study aimed at evaluating the effects of two testosterone boosting agents; chrysin, a natural flavone and celecoxib, a selective COX2 inhibitor, in testicular impairment in rats with adjuvant arthritis, an experimental model of RA. Chrysin 25 and 50mgkg and celecoxib 5mgkg were orally administered to Wistar rats once daily for 21days starting 1h before arthritis induction. Chrysin suppressed paw edema with comparable efficacy to celecoxib. More important, chrysin, dosedependently and celecoxib attenuated the testicular injury via reversing lowered gonadosomatic index and histopathologic alterations with preservation of spermatogenesis. Both agents upregulated steroidogenic acute regulatory StAR mRNA expression and serum testosterone with concomitant restoration of LH and FSH. Furthermore, they suppressed inflammation via abrogation of myeloperoxidase, TNF-a and protein expression of COX2 and iNOS besides elevation of IL-10. Alleviation of the testicular impairment was accompanied with suppression of oxidative stress via lowering testicular lipid peroxides and nitric oxide. With respect to apoptosis, both agents downregulated FasL mRNA expression and caspase-3 activity in favor of cell survival. For the first time, these findings highlight the protective effects of chrysin and celecoxib against testicular dysfunction in experimental RA which were mediated via boosting testosterone in addition to attenuation of testicular inflammation, oxidative stress and apoptosis. Generally, the 50mg kg dose of chrysin exerted comparable protective actions to celecoxib.

Keywords: Apoptosis; Celecoxib; Chrysin; Inflammation; Rheumatoid Arthritis; Testicular Dysfunction.

877. A Novel Role for Sirt-1 in L-Arginine Protection Against STZ Induced Myocardial Fibrosis in Rats

Sherine M. Rizk, Shohda A. El-Maraghy and Noha N. Nassar

Plos One, 9(12): 1-19 (2014) IF: 3.534

against streptozotocin (STZ) induced myocardial fibrosis. **Methods**: Male Wistar rats were allocated into five groups; (i) normal control rats received 0.1 M sodium citrate buffer (pH 4.5); (ii) STZ at the dose of 60 mg/kg dissolved in 0.1 M sodium citrate buffer (pH 4.5); (iii) STZ + sirtinol (Stnl; specific inhibitor of SIRT-1; 2 mg/Kg, i.p.); (iv) STZ + L-ARG given in drinking water (2.25%) or (v) STZ + L-ARG + Stnl.

Results: L-ARG increased myocardial SIRT-1 expression as well as its protein content. The former finding was paralleled by L-ARG induced reduction in myocardial fibrotic area compared to STZ animals evidenced histopathologically. The reduction in the fibrotic area was accompanied by a decline in fibrotic markers as evident by a decrease in expression of collagen-1 along with reductions in myocardial TGF-B, fibronectin, CTGF and BNP expression together with a decrease in TGF- β and hydroxyproline contents. Moreover, L-ARG increased MMP-2 expression in addition to its protein content while decreasing expression of PAI-1. Finally, L-ARG protected against myocardial cellular death by reduction in NFK-B mRNA as well as TNF-a level in association with decline in Casp-3 and FAS expressions and Casp-3protein content in addition to reduction of FAS positive cells. However, co-administration of L-ARG and Stnl diminished the protective effect of L-ARG against STZ induced myocardial fibrosis.

Conclusion: Collectively, these findings associate a role for SIRT-1 in L-ARG defense against diabetic cardiac fibrosis via equilibrating the balance between profibrotic and antifibrotic mediators.

Keywords: L-Arginine; Diabetic impediments; Silent information regulator; Myocardial fibrosis.

878. The First Synthesis of the Antiangiogenic Homoisoflavanone, Cremastranone

Bit Lee, Halesha D. Basavarajappa, Rania S. Sulaiman, Xiang Fei,Seung-Yong Seo and Timothy W. Corson

Organic & Biomolecular Chemistry, 12: 7673-7677 (2014) IF: 3.487

An antiangiogenic homoisoflavanone, cremastranone, was synthesized for the first time. This scalable synthesis, which includes selective demethylation, could be used to develop lead molecules to treat angiogenesis-induced eye diseases. Synthetic cremastranone inhibited the proliferation, migration and tube formation ability of human retinal microvascular endothelial cells, important steps in pathological angiogenesis.

Keywords: Angiogenesis, Homoisoflavanone.

879. Modulatory Effects of Curcumin, Silybin-Phytosome and Alpha-R-Lipoic Acid Against Thioacetamide-Induced Liver Cirrhosis in Rats

Shimaa Omar Ali, Hebatallah Abd El-moeti Darwish and Nabila Abd El-fattah Ismail

Chem Biol Interact, 216: 26-33 (2014) IF: 2.982

Liver cirrhosis is the final consequence of a progressive fibrotic process characterized by excessive collagen deposition and

destruction of the normal liver architecture. This study aimed to investigate the protective effects of curcumin, silybin-phytosome and alpha-R-lipoic acid against thioacetamide-induced cirrhosis. Male rats were allocated into five groups of which one group received saline and served as normal control. Animals from groups 2-5 were treated with thioacetamide administered intraperitoneally at a dose of 200 mg kg 3 times per week for 7 weeks. Group 2 was left untreated while groups from 3 to 5 were given a daily oral dose of curcumin, silybin-phytosome or alpha-R-lipoic acid simultaneously with thioacetamide. Increases in hepatic levels of malondialdehyde MDA and protein carbonyls Pr Co associated with thioacetamide administration were partially blocked in those groups receiving supplements. Glutathione GSH depletion, collagen deposition, matrix metalloproteinase-2 MMP-2 activity, transforming growth factor-β1 TGF- β1 level as well as a-smooth muscle actin a-SMA and heat shock protein-47 HSP-47 gene expressions were also decreased in response to supplements administration. Serological analysis of liver function and histopathological examination reinforced the results. In conclusion, the present study highlights the antioxidant and the antifibrotic potentials of these supplements against chronic liver diseases caused by ongoing hepatic damage.

Keywords: Alpha-R-Lipoic Acid; Curcumin; Liver Cirrhosis; Oxidative Stress; Silybin-Phytosome; Thioacetamide

880. Pretreatment With Turmeric Modulates the Inhibitory Influence of Cisplatin and Paclitaxel on CYP2E1 and CYP3A1/2 in Isolated Rat Hepatic Microsomes

Enas M. Ahmed, Shohda A. EL-Maraghy, Zakaria A. Teleb and Amira A. Shaheen

Chemico Biological Interaction, 220: 25-32 (2014) IF: 2.982

Previous animal studies have shown that turmeric can significantly modulate the activity of several drug metabolizing enzymes, this may dramatically affect the bioavailability of several drugs resulting in over dose or less therapeutic effects. This study was directed to evaluate the inhibitory effects of cisplatin and paclitaxel on two CYP450 enzymes namely CYP2E1 and CYP3A1/2 in hepatic microsomes isolated from normal and turmeric pretreated rats. Cisplatin and paclitaxel were added by different concentrations to hepatic microsomes isolated from untreated and turmeric (100 mg/kg/day) pretreated rats for 15 days after receiving pyrazole or dexamethasone for induction of CYP2E1 and CYP3A1/2 respectively. The kinetic potency of these drugs as CYP inhibitors was determined by analysis of Lineweaver-Burk plot. Addition of cisplatin or paclitaxel by (10, 50 and 100 µM) to hepatic microsomes from normal or turmeric pretreated rats caused a concentration dependent inhibition of CYP2E1, with an evidence of less inhibition in turmeric pretreated microsomes particularly at higher concentration. Both drugs at 100 µM displayed a mixed type of inhibition of CYP2E1 in normal or turmeric pretreated microsomes where paclitaxel was the most potent inhibitor. Cisplatin (10, 50 and 100 µM) caused a concentration dependant inhibition of CYP3A1/2 that was enhanced by turmeric pretreatment. The inhibition of CYP3A1/2 by cisplatin (100 µM) was in non-competitive manner with a smaller Ki value in turmeric pretreated microsomes. The inhibitory influence of paclitaxel (10, 50 and 100 μ M) on CYP3A1/2 decreased with increasing the drug concentration and this inhibition was augmented by turmeric pretreatment. Interestingly, the inhibition of this enzyme by paclitaxel (10 μ M) was switched from mixed type in normal microsomes to

competitive manner in turmeric pretreated ones with a marked reduction of Ki values reflecting greater inhibitory influence of paclitaxel on CYP3A1/2 by turmeric pretreatment. In conclusion, turmeric pretreatment attenuated the inhibitory influence of cisplatin and paclitaxel on CYP2E1 activity and magnified their inhibition on CYP3A1/2, thus the use of turmeric with drugs or other medications should raise concern for drugs-herb interactions.

Keywords: Cyp450 Isoenzyme; Cisplatin; Inhibition; Paclitaxel; Turmeric

881. Protective Effect of Satureja Montana Extract on Cyclophosphamide-Induced Testicular Injury in Rats

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Chemico-Biological Interactions, 224: 196-205 (2014) IF: 2.982

The present study investigated the protective effect of Satureja montana extract against cyclophosphamide-induced testicular injury in rats. Total phenolic and flavonoid contents of the extract were 1.03% and 0.34% w/w of dry herb expressed as chlorogenic acid and quercetin, respectively. HPLC analysis identified caffeic, syringic and rosmarinic acids as the chief phenolic acids, and rutin as the major flavonoid in the extract. Oral daily administration of S.montana extract (50mg/kg/day) for 7days before and 7days after an intraperitoneal injection of cyclophosphamide (200mg/kg) restored the reduced relative testicular weight, serum testosterone level and testicular alkaline phosphatase activity, raised the lowered testicular sorbitol dehydrogenase and acid phosphatase activities, and decreased the elevated testicular hemoglobin absorbance. It also attenuated lipid peroxidation, restored the lowered glutathione content, glucose-6phosphate dehydrogenase, glutathione peroxidase and glutathione reductase activities, and improved total antioxidant capacity. Moreover, S.montana extract mitigated testicular DNA fragmentation, decreased the elevated Fas and Bax gene expression, up-regulated the decreased Bcl-2 and peroxisome proliferator-activated receptor-gamma (PPAR-y) gene expression normalized Akt1 protein level. Histopathological and investigation confirmed the protective effects of the extract. Conclusively, S.montana extract protects the rat testis against cyclophosphamide-induced damage via anti-oxidative and antiapoptotic mechanisms that seem to be mediated, at least in part, by PPAR-γ and Akt1 up-regulation.

Keywords: Akt1; Apoptosis; Cyclophosphamide; Peroxisome Proliferator-Activated Receptor-Gamma; Satureja Montana Extract; Testis.

882. Propolis Attenuates Doxorubicin-Induced Testicular Toxicity in Rats

Sherine M. Rizk, Hala F. Zaki and Mary A.M. Mina

Food and Chemical Toxicology, 67: 176-186 (2014) IF: 2.61

Doxorubicin (Dox), an effective anticancer agent, can impair testicular function leading to infertility. The present study aimed to explore the protective effect of propolis extract on Dox-induced testicular injury. Rats were divided into four groups (n=10). Group I (normal control), group II received propolis extract (200 mg kg(-1); p.o.), for 3 weeks. Group III received 18 mg kg(-1) total cumulative dose of Dox i.p. Group IV received Dox and propolis extract. Serum and testicular samples were

collected 48 h after the last treatment. In addition, the effects of propolis extract and Dox on the growth of solid Ehrlich carcinoma in mice were investigated. Dox reduced sperm count, markers of testicular function, steroidogenesis and gene expression of testicular 3β-hydroxysteroid dehydrogenase (3β-HSD), 17β-hydroxysteroid dehydrogenase (17β-HSD) and steroidogenic acute regulatory protein (StAR). In addition, it increased testicular oxidative stress, inflammatory and apoptotic markers. Morphometric and histopathologic studies supported the biochemical findings. Treatment with propolis extract prevented Dox-induced changes without reducing its antitumor activity. Besides, administration of propolis extract to normal rats increased serum testosterone level coupled by increased activities and gene expression of 3B-HSD and 17B-HSD. Propolis extract may protect the testis from Dox-induced toxicity without reducing its anticancer potential.

Keywords: Doxorubicin; Propolis; Biochemical; Histopathological.

883. Effect of Simvastatin and Naringenin Coadministration on Rat Liver DNA Fragmentation and Cytochrome P450 Activity: An in Vivo and in Vitro Study

T. K. Motawi, Z. A. Teleb, N. A. El-Boghdady and S. A. Ibrahim

J Physiol Biochem., 70: 225-237 (2014) IF: 2.496

This study was designed to assess the effect of naringenin (NRG) on simvastatin (SV)-induced hepatic damage in rat and to investigate the effects of these drugs on cytochrome P450 (CYP) 2E1 and 3A1/2 isoforms in order to evaluate the possibility of their coadministration. Hepatic damage in rat was induced by SV (20 and 40 mg/kg/day, po for 30 days). The protective effect of NRG (50 mg/kg/day, po) was identified by estimating liver functions and oxidative stress markers such as lipid peroxidation, reduced glutathione, superoxide dismutase, glutathion stransferase, and catalase as well as protein profile. DNA fragmentation and histopathological study were carried out to confirm the hepatic damage. An in vitro study was conducted to further evaluate the effect of SV and/or NRG administration on the activities of two microsomal CYP isoenzymes including CYP2E1 and CYP3A1/2. SV exerted an oxidative stress which may contribute to the hepatotoxicity. Administration of NRG in combination with SV significantly improved the liver functions, state of oxidative stress, protein profile, DNA fragmentation, and the histopathological changes. SV and/or NRG have a potential to inhibit CYP3A1/2 and CYP2E1. This study concluded that concurrent administration of NRG with SV provided a protection of liver tissue against the SV-induced hepatic damage. The inhibition of CYP2E1 and CYP3A1/2 by the SV and NRG should be taken into account in order to adjust doses to avoid interaction between SV and NRG and adverse effects of SV.

Keywords: Oxidative Stressmarkers; DNA Fragmentation; Cyp2e; Cyp3a1/2.

884. Evaluation of Naproxen and Cromolyn Activities Against Cancer Cells Viability, Proliferation, Apoptosis, P53 and Gene Expression of Survivin and Caspase-3

Tarek M. K. Motawi, Yasser Bustanji, Shohda EL-Maraghy, Mutasem O. Taha and Mohamed A. S. Al-Ghussein

J Enzyme Inhib Med Chem, 29: 153-161 (2014) IF: 2.383

We previously reported the inhibitory profiles of naproxen and cromolyn against glycogen synthase kinase-3b, which partly explain the molecular mechanisms of their anti-cancer properties. In this study, we performed a detailed biochemical evaluation of the two drugs against colorectal adenocarcinoma (Caco2), hepatocellular carcinoma (HepG2), mammary gland carcinoma (MCF7), epitheloid cervix carcinoma (Hela), lung carcinoma (A5W9) and epidermoid larynx carcinoma (Hep2) cell lines. Additionally, we performed cellular viability tests using trypan blue, proliferation MTT assay, apoptosis, p53 and real-time polymerase chain reaction for gene expression of survivin and caspase-3. Not only the two drugs were found to significantly reduce the viability of different cell lines, but they also were shown to have potent dose-dependent reduction of cellular proliferation. They exhibited cytotoxicity IC50 values of 3.69 and 4.16 mM for naproxen and cromolyn, respectively. Viability and proliferation results clearly correlated with apoptosis and p53 experiments in showing that both drugs significantly raised apoptotic percentages. Furthermore, we observed a significant reduction in survivin and elevation of caspase-3 gene expression upon exposure to the two drugs. It can be concluded that both naproxen and cromolyn have significant anti-cancer properties. Keywords: Cancer, Caspase-3, Cromolyn, Glycogen Synthase Kinase, Naproxen, P53, Survivin

885. Biochemical Modifications and Neuronal Damage in Brain of Young and Adult Rats After Long-Term Exposure to Mobile Phone Radiations

Motawi TK, Darwish HA, Moustafa YM and Labib MM.

Cell Biochem Biophys., 70: 845-855 (2014) IF: 2.38

This study investigated the effect of exposure to mobile phone radiations on oxidative stress and apoptosis in brain of rats. Rats were allocated into six groups (three young and three adult). Groups 1 and 4 were not subjected to the radiation source and served as control groups. In groups 2 and 5, the mobile phones were only connected to the global system for mobile communication, while in groups 3 and 6, the option of calling was in use. Microwaves were generated by a mobile test phone (SAR = 1.13 W/kg) during 60 days (2 h/day). Significant increments in conjugated dienes, protein carbonyls, total oxidant status, and oxidative stress index along with a significant reduction of total antioxidant capacity levels were evident after exposure. Bax/Bcl-2 ratio, caspase-3 activity, and tumor necrosis factor-alpha level were enhanced, whereas no DNA fragmentation was detected. The relative brain weight of young rats was greatly affected, and histopathological examination reinforced the neuronal damage. The study highlights the detrimental effects of mobile phone radiations on brain during young and adult ages. The interaction of these radiations with brain is via dissipating its antioxidant status and/or triggering apoptotic cell death.

Keywords: Mobile Phone Brain Oxidative Stress Apoptosis Neuronal Damage Rats

886. The Therapeutic Effects of Bone Marrow-Derived Mesenchymal Stem Cells and Simvastatin in A Rat Model of Liver Fibrosis

Tarek M. K. Motawi, Hazem M. Atta, Nermin A. H. Sadik and May Azzam

Cell Biochemistry and Biophysics, 68: 111-125 (2014) IF: 2.38

Liver fibrosis is the excessive accumulation of extracellular matrix (ECM) proteins including collagen that occurs in most types of chronic liver diseases. Studies concerning the capacity of mesenchymal stem cells (MSCs) and simvasatain (SIMV) to repair fibrotic tissues through reducing inflammation, collagen deposition, are still controversial. This study aimed to investigate the therapeutic efficacy of bone marrow (BM)-derived MSCs and SIMV on carbon tetrachloride (CCl₄)-induced liver fibrosis in rats. Rats were divided into: normal, CCl₄, CCl4/MSC_s, CCl₄/SIMV, CCl₄/MSC₅/SIMV, and SIMV groups. BM-derived MSCs were detected by RT-PCR of CD29 and were then infused into the tail vein of female rats that received CCl4 injection to induce liver fibrosis. Sex-determining region Y (SRY) gene on Ychromosome gene was assessed by PCR to confirm homing of the male stem cells in liver tissue of the female recipients. Serum liver function tests, liver procollagens I and III, tissue inhibitors metalloproteinase-1 (TIMP-1), endoglin, matrix of metalloproteinase-1 (MMP-1) gene expressions, transforming $(TGF-\beta 1)$ growth factor-beta immunostaining, and histopathologicl examination were performed. MSCs and SIMV decreased liver procollagens I and III, TIMP-1 and endoglin gene expressions, TGF- β 1 immunostaining, and serum liver function tests compared with the CCl₄ group. MMP-1 expression was increased in the $CCl4/MSC_s$ group. Histopathological examination as well as fibrosis score supports the biochemical and molecular findings. It can be concluded that MSCs and SIMV were effective in the treatment of hepatic CCl4-induced fibrosisrat model. Treatment with MSCs was superior to SIMV. This antifibrotic effect can be attributed to their effect on the MMP_s/TIMP_s balance which is central in fibrogenesis.

Keywords: Liver Fibrosis Mesenchymal Stem Cells Simvastatin Rats.

887. Propolis Enhances the Effectiveness of Praziquantel in Experimental Schistosomiasis: Biochemical and Histopathological Study

Tamer Y. Mahmoud, Sherine M. Rizk, Amany S. Maghraby and Amira A. Shaheen

Parasitology Research, 113: 4513-4523 (2014) IF: 2.327

Despite the wide current use of praziquantel (PZQ) in treatment of schistosomiasis, low cure rates have been recorded in many studies. The aim of this study was directed to evaluate the curative effect of propolis (Pps) alone or in combination with PZQ on biochemical, immunological, parasitological, and histological changes associated with experimental schistosomiasis in mice. Schistosoma mansoni-infected mice were divided into two experimental sets, each with four subgroups: (i) untreated, (ii) treated with Pps/day p.o for 4 weeks, (iii) treated with PZQ p.o 2×500 mg/kg bd wt, and (iv) treated with Pps+PZQ as in group ii and iii; all treatments started on the 8th week postinfection, in addition to uninfected group as control for the previous groups. Treatment of infected mice with Pps, although failed to eradicate the worm, significantly reduced the hepatic granuloma number, their lymphocytic infiltration and aggregation, hepatic and splenic myeloperoxidase (MPO) activity and plasma, and liver and thymus nitric oxide (NOx) levels together with normalization of plasma proteins and alleviation of oxidative stress in the examined tissues as evidenced by reduction of malondialdehyde (MDA) and normalization of glutathione (GSH). Promising results were obtained when Pps was given in combination with PZQ, where the anti-schistosomal activity of PZQ was markedly

potentiated with complete alleviation and amelioration of the histological and biochemical alteration associated with schistosomiasis. This study highlights the potential usefulness of Pps as an adjunct to PZQ in schistosomiasis.

Keywords: Schistosomiasis . Praziquantel . Propolis . Biochemical . Immunological . Parasitological . Histopathological Changes.

888. Alterations in Circulating Angiogenic and Anti-Angiogenic Factors in Type 2 Diabetic Patients With Neuropathy

Tarek Kamal Motawi, Sherine Maher Rizk, Ihab Abdel-Rahman Ibrahim and Yasmin Farid El-Emady

Cell Biochem Funct., 32: 155-163 (2014) IF: 2.134

Diabetic peripheral neuropathy (DPN) is one of the most common diabetic chronic complications. There is an increased attention directed towards the role of angiogenic factors including vascular endothelial growth factor (VEGF) and anti-angiogenic factors including soluble endoglin (sEng) as contributors to diabetic microvascular complications including neuropathy. The purposes of this study were to determine the role of these angiogenesis regulators in the prognosis of DPN.

The study group included 60 patients with type 2 diabetes mellitus (T2DM) and 20 clinically healthy individuals. The patients were divided into two groups. Group I included 20 T2DM patients without peripheral neuropathy, and Group II consisted of 40 T2DM patients with DPN. In all groups, plasma VEGF, sEng and endothelin-1 (ET-1), nitric oxide and ET-1 mRNA were estimated. Plasma levels of VEGF, sEng, ET-1 and nitric oxide were significantly elevated in diabetic patients (Groups I and II) compared with healthy control subjects, with a higher increase in their levels in patients with DPN compared with diabetic patients without peripheral neuropathy.

Measurement of plasma levels of angiogenesis-related biomarkers in high-risk diabetic patients might identify who later develop DPN, thus providing opportunities for early detection and targets for novel treatments.

Keywords: Diabetic Peripheral Neuropathy; Endothelin-1; Endothelin-1 Mrna; Nitric Oxide; Soluble Endoglin; Vascular Endothelial Growth Factor.

889. Chronic Effects of Clozapine Administration on Insulin Resistance in Rats: Evidence for Adverse Metabolic Effects

Mohamed M. El-Seweidy, Nermin Abdel Hamid Sadik and Marwa M. Malek

Pathology -Research and Practice, 210(1): 5-9 (2014) IF: 1.562

Chronic treatment with the atypical antipsychotics clozapine has been associated with an increased risk for deterioration of glucose homeostasis, leading to hyperglycemia and insulin resistance diabetes. The present study mainly aimed to investigate possible mechanisms underlying clozapine-induced hyperglycemia. Male Wistar albino rats were randomly divided into two groups (each consists of 12 rats). The first group received clozapine orally at a dose of 10 mg/kg body weight daily for 6 weeks, while the other group received the drug vehicle only and served as the control group. At the end of the six weeks, hyperglycemia, hyperinsulinemia and insulin resistance, as indicated by Homeostatic model assessment of insulin resistance (HOMA-IR), were observed in the clozapine group as compared with the control group. This disturbance in glucose regulation was associated with non-significant changes in body weight, serum cortisol level, and hepatic glycogen content. The Clozapine group showed a significant increase in hepatic phosphorylase activity and in the gene expression level of hepatic glucose-6-phosphatse (G6Pase) enzymes compared to the control group. It can be concluded that clozapine-induced hyperglycemia and insulin resistance occur in a manner mostly independent of weight gain, and may be attributed to an increase in hepatic phosphorylase activity and increased expression level of G6Pase.

Keywords: Clozapine; Hyperglycemia; Hyperinsulinemia; Liver; Rats.

890. Visfatin -948G/T and Resistin -420C/G Polymorphisms in Egyptian Type 2 Diabetic Patients With and Without Cardiovascular Diseases

Tarek M.K. Motawi, Olfat G. Shaker, Maha M. El-Sawalhi and Zeinab M. Abdel-Nasser

Genome, 57: 259-266 (2014) IF: 1.558

Diabetes mellitus is one of the main threats to human health in the 21st century. Visfatin/Nampt and resistin are novel adipokines that have been implicated in the pathogenesis of type 2 diabetes mellitus (T2DM) and cardiovascular disease (CVD) complication. Several genetic studies have shown inconsistent results regarding association of visfatin/Nampt gene (NAMPT) and resistin gene (RETN) polymorphisms with T2DM and CVD complications. Here, we investigate whether NAMPT -948G/T and RETN -420C/G polymorphisms are associated with T2DM, its CVD complications, and serum adipokines levels in 90 Egyptian diabetic patients (44 without CVD and 46 with CVD) along with 60 healthy control subjects. Higher frequencies of NAMPT -948G/G and RETN -420G/G were observed among T2DM patients compared with controls. Furthermore, the frequencies of these genotypes were significantly higher in T2DM patients with CVD than those without CVD. Both NAMPT -948G/G and RETN -420G/G genotypes and G alleles were significantly associated with T2DM and CVD in Egyptian diabetic patients. Moreover, serum visfatin/Nampt and resistin levels were markedly elevated in T2DM patients, with the highest values observed in G/G genotypes among T2DM patients with CVD. In addition, positive correlations were observed between plasma adipokines levels and CVD risk factors. In conclusion, our data suggests that genetic variations in NAMPT -948G/T and RETN -420C/G may contribute to the disposition for T2DM and its CVD complications in Egyptian patients. However, further studies with greater sample size should be performed to verify these results.

Keywords: Nampt -948G/T; Retn -420C/G; Cardiovascular Disease; Diabète Sucré De Type 2; Maladies Cardiovasculaires; Polymorphisme; Polymorphisms; Type 2 Diabetes Mellitus. 4

891. Simple Molecular Diagnostic Method for Fragile X Syndrome in Egyptian Patients: Pilot Study

Nagwa A. Meguid, Manal F. Ismail, Rasha S. El-Mahdy, Maged A. Barakat and Mostafa K. El-Awady

Acta Biochimica Polonica, 61: 259-263 (2014) IF: 1.389

Background: Poor knowledge about Fragile X syndrome (FXS) may be a major barrier to early diagnosis that could improve

quality of life and prognosis especially in the developing countries.

Aim: The aim of this study was to evaluate simple and reproducible method for premutation detection in females of fragile X families for the first time in Egypt.

Subjects and Methods: We have developed a rapid modified polymerase chain reaction (PCR)-based screening tool for expanded Fragile X mental retardation 1 (FMR1) alleles. This method utilizes betaine as additive to facilitate FMR 1 gene amplification. We screened fifty three males, thirty two first-degree females; twenty normal healthy controls in addition to six reference samples.

Results: Simple PCR method showed 16 males with abnormal CGG repeats, where 10 of their mothers and four sisters had FMR 1 premutation. Consanguineous marriage was present in 66.6% percent of the studied families. Studying the correlation between genotype and clinical manifestations showed premature ovarian failure in 40% and learning disability in 50% of the studied female carriers.

Conclusion: FXS has to be ruled out in families with consanguineous parents, before assuming that familial mental retardation is due to autosomal recessive gene defects. Early carrier detection may reduce the number of affected children. In conclusion, more studies are still needed of much larger sample size with known allele sizes in order to guarantee the accuracy of the method used.

Keywords: Key Words: Fragile X Syndrome, Consanguinity, Carrier Detection.

892. Ozone Ameliorates Age-Related Oxidative Stress Changes in Rat Liver and Kidney: Effects of Pre- and Post-Ageing Administration

M. H. Safwat, M. M. El Sawalhi1, M. N. Mausouf, and A. A. Shaheen1

Biochemistry-Moscow, 79: 450-458 (2014) IF: 1.353

The ageing process is known to be accompanied by increased oxidative stress and compromised antioxidant defenses. Controlled ozone administration has been shown to be effective in various pathophysiological conditions with an underlying oxidative burden. However, its effect on the biochemical alterations associated with the ageing process has been rarely studied. Therefore, the present work was carried out to study the role of ozone in counteracting the state of oxidative stress associated with ageing in rat liver and kidneys using two experimental models. In the pre-ageing model, ozone was administered prior to the onset of ageing at adulthood and continued after the start of the ageing process (3-month-old rats until the age of 15 months). While in the post-ageing model, ozone was administered after ageing has begun and lasted for one month (14-month-old rats until the age of 15 months). The preageing ozone administration effectively reduced lipid and protein oxidation markers, namely, malondialdehyde and protein carbonyl levels and decreased lipofuscin pigment deposition in rat liver and kidneys. Moreover, it significantly restored hepatic and renal reduced glutathione (GSH) contents and normalized cytosolic hepatic glutathione peroxidase activity. Similar but less pronounced effects were observed in the post-ageing ozonetreated group. Nevertheless, in the latter model ozone administration failed to significantly affect liver and kidney lipofuscin levels, as well as kidney GSH contents. These data provide evidences for potentially positive effects of pre-ageing

ozone therapy in neutralizing chronic oxidative stress associated with ageing in rat liver and kidneys.

Keywords: Ozone; Oxidative stress; Liver; Kidney; Pre-ageing; Post-ageing.

893. Investigating the Cardio-Protective Abilities of Supplemental L-Arginine on Parameters of Endothelial Function in A Hypercholesterolemic Animal Model

Gad MZ, Abu el Maaty MA, El-Maraghy SA, Fahim AT and Hamdy MA.

Journal of Nutritional Science and Vitaminology, 60(3):: 145-151 (2014) IF: 0.868

Endothelial dysfunction is now widely recognized as an early marker of cardiovascular disease, making its treatment, or complete avoidance, an emerging, interesting therapeutic target. This study investigated the ability of the highly intriguing amino acid L-arginine to influence endothelial function. Its therapeutic potential is also compared to that of known cardiovascular medications, namely nitroglycerin [a nitric oxide (NO) donor] and enalapril [an angiotensin-converting enzyme (ACE) inhibitor]. Fifty male New Zealand rabbits were included in the study, divided into 5 equal groups: control, hypercholesterolemia hypercholesterolemia (untreated). (+L-arginine), hypercholesterolemia (+enalapril), and hypercholesterolemia (+nitroglycerin). Biochemical included investigations measurement of circulating NOx, malondialdehyde (MDA), and lipid profile markers, as well as dimethylarginine dimethylaminohydrolase (DDAH) and ACE activities Furthermore, aortic ACE activity and blood platelet aggregation were estimated. A histopathological examination and intimal thickness measurement were also conducted. Compared to the untreated hypercholesterolemic group, all agents were capable of positively influencing MDA levels, platelet aggregation and intimal thickness; however, only the L-arginine group was capable of beneficially and significantly altering both NOx levels and serum and aortic ACE activities. No agents were capable of modulating serum DDAH activity inhibited bv hypercholesterolemia. Based on the results of this study, Larginine appears to be a novel cardio-protective agent, illustrated by its ability to ameliorate the deleterious effects of hypercholesterolemia on endothelial function, in a manner comparable to, and sometimes more potent than, commonly used cardiovascular medications

Keywords: L-Arginine Cardio-Protection Endothelial Function.

Dept. of Clinical Pharmacy

894. Antibiotic Dispensing in Egyptian Community Pharmacies: An Observational Study.

Nirmeen A. Sabrya, Samar F. Farida, Dalia M. Dawoud

Research In Social and Administrative Pharmacy, 10(1): 168-184 (2014) IF: 1.202

Background: Antibiotics are commonly dispensed medications from community pharmacies, and they are frequently prescribed for inappropriate indications. In many countries, they are easily accessible without prescriptions. The inappropriate use of antibiotics results in the emergence of resistant bacterial strains, which represents a considerable public health problem, particularly in developing countries. **Objective**: This study aimed to describe the pattern of antibiotics dispensing from Egyptian community pharmacies and to collect baseline descriptive data on the antibiotics dispensed and their appropriateness.

Methods: A cross-sectional, observational study of antibiotic dispensing encounters was conducted at 36 randomly selected pharmacies in Greater Cairo, Egypt. Data were collected during one shift at each pharmacy. Structured questionnaires recording patient demographics, antibiotics dispensed and reasons for dispensing were completed for each antibiotic dispensing encounter. The data were descriptively analysed.

Results: Overall, 1158 antibiotics were dispensed during the study period with a total cost of L.E. 24,487 (approximately 3,673 \$USD). While self-medication and purchasing without medical prescriptions were common, representing around 23.3% of the antibiotics (n = 270), most antibiotics were prescribed by a doctor or dentist (n = 736, 63.6%). Pharmacist recommendations accounted for the remainder (n = 152, 13.1%). The main reasons antibiotic use were respiratory tract ailments and for gastroenteritis symptoms. The antibiotics most commonly dispensed were: penicillins, erythromycin, metronidazole, neomycin, clotrimoxazole and tetracyclines. Approximately 70% of the antibiotics dispensed on prescriptions were judged to be appropriate for the indications while this percentage was around 61% for antibiotics dispensed on pharmacist recommendation and patient's request.

Conclusions: The results of this study show that antibiotics are frequently dispensed from community pharmacies in Egypt without appropriate prescriptions and for inappropriate indications. These findings support the need for strict enforcement of pharmacy laws through improved inspection processes. They highlight the need for evidence-based guidelines and educational interventions to improve antibiotic prescribing and dispensing practices.

Keywords: Antibiotics; Prescription.

895. Can Zinc Levels Predict Response To Pegylated-Interferon and Ribavirin Therapy in Hepatitis C Genotype 4 Infected Egyptian Patients ?

Mohamed AA, Abbassi MM, Hamed WA, EzzEl-Arab MA and Aref AM.

Acta Gastro-Enterologica Belgica, LXXVII: 217-223 (2014) IF: 0.861

Background and Aims: Zinc has been found to be low in chronic hepatitis patients. Its level was correlated with response to Interferon/ribavirin therapy in patients infected with hepatitis C genotype 1. In Egypt, inexpensive predictors to treatment response in Hepatitis C genotype 4 infected patients are desperately needed. We aim to explore if pretreatment zinc serum levels correlate with response to pegylated- interferon and ribavirin therapy in Egyptian patients.

Methods: This is an observational prospective study where 57 treatment naive hepatitis C genotype 4 infected patients that were Hepatitis B and Human Immunodeficiency virus negative were recruited in a hospital setting. The study was performed from October 2010 till June 2012. Patients had Liver biopsy and basic biochemical profiles were performed pretreatment for all patients. Treatment consisted of 48 weeks of pegylated-interferon-alpha2a and ribavirin therapy. Blood samples were withdrawn from 21 healthy subjects to compare zinc levels and other biochemical markers. Patients were followed up to 72 weeks.

Results: Pretreatment serum zinc levels were significantly lower in hepatitis C infected patients compared to healthy volunteers (p < 0.05). Moreover, zinc levels correlated to sustained viralogical dynami

< 0.05). Moreover, zinc levels correlated to sustained virological response in treated patients (p = 0.00).

Conclusion: Serum zinc levels can be used as an inexpensive predictor to effective Pegylated-interferon/ribavirin therapy in Egyptian patients infected with Hepatitic C genotype 4. **Keywords:** Hepatitis C; Genotype 4; Zinc; And Egypt.

896. Factors Affecting Warfarin Dose Requirements And Quality of Anticoagulation in Adult Egyptian Patients: Role of Gene Polymorphism

Bazan NS, Sabry NA, Rizk A, Mokhtar S and Badary OA.

Irish Journal of Medical Science, 183: 161-172 (2014) IF: 0.573

Background: Warfarin is the mainstay of anticoagulation therapy worldwide. CYP2C9 and VKORC1 are two major genetic factors associated with inter-individual and inter-ethnic variability in the warfarin dose.

Aim: This study aims to assess the impact of VKORC1-1639G>A polymorphism and the most common CYP2C9 variant alleles (*2 and *3) on warfarin response in Egyptian patients.

Methods: Genetic analysis of VKORC1-1639G>A and CYP2C9*2, CYP2C9*3 was performed using real-time PCR system. Patients maintained on a constant dose targeting an international normalized ratio range of 2-3.5 for at least three consecutive times were considered as good candidates. A stepwise linear regression analysis was used to determine the independent effects of genetic and non-genetic factors on daily warfarin dose requirements.

Results: Patients carrying VKORC1 and CYP2C9 variant genotypes needed a 44.8 % lower mean daily warfarin dose as compared to wild types. Patients with G allele for VKORC1-1639G>A had a significantly higher number of thromboembolic complications per month during therapy. On the first 30 days of therapy, presence of a variant allele either in VKORC1 or in CYP2C9 was associated with increased time required to achieve stable dosing. Multiple regression analysis showed that, VKORC1-1639G>A, age, CYP2C9*3, and smoking status explained 43.4 % of the overall variability in the warfarin dose.

Conclusion: VKORC1-1639G>A and CYP2C9 polymorphisms contribute to the difference in warfarin dose requirements and quality of anticoagulation amongst Egyptian patients. Study results support using personalized warfarin treatment in Egyptian patients.

Keywords: Warfarin.Genetics,Polymorphism.

Dept. of Microbiology and Immunology

897. Signatures of Protective Memory Immune Responses During hepatitis C virus reinfection

Abdel-Hakeem MS, Bédard N, Murphy D, Bruneau J and Shoukry NH.

Gastroenterology, 147(4): 870-881.e8 (2014) IF: 13.926

Background & Aims: Development of a vaccine against hepatitis C virus (HCV) has been hindered by our limited understanding of immune correlates of protection during real-life exposure to the virus. We studied the immune response during HCV reinfection.

Methods: We analyzed blood samples from participants in the Montreal Acute Hepatitis C Injection Drug User Cohort Study who were reinfected with HCV from 2009 to 2012. Five patients spontaneously resolved their second infection and 4 developed chronic infections. We monitored the phenotypic and functional dynamics of HCV-specific memory T cell responses in all subjects during natural re-exposure and reinfection.

Results: Populations of CD4(+) and CD8(+) T cells with HCVspecific polyfunctional memory were expanded in all 5 individuals who resolved 2 successive HCV infections. We detected CD127(hi) HCV-specific memory CD8(+)T cells before reinfection regardless of a subject's ability to clear subsequent infections. Protection against viral persistence was associated with the expansion of a CD127(neg), PD110 effector memory T cells at the peak of the response. We also observed broadening of T-cell response, indicating generation of de novo T-cell responses. The 4 individuals who failed to clear their subsequent infection had limited expansion of HCV-specific CD4(+) and CD8(+) memory T cells and expressed variable levels of the exhaustion marker PD1 on HCV-specific CD8(+) T cells. Dominant epitope regions of HCV strains isolated from patients with persistent reinfection had sequence variations that were not recognized by the pre-existing memory T cells.

Conclusions: Protection from persistent HCV reinfection depends on the magnitude, breadth, and quality of the HCV-specific memory T-cell response. Sequence homology among viruses and ability of T cells to recognize multiple strains of HCV are critical determinants of protective memory.

Keywords: Cytokines; Protective immunity; Immune Regulation;

898. the Classical Lancefield Antigen of Group A Streptococcus is A Virulence Determinant With Implications for Vaccine Design

Nina M. van Sorge, Jason N. Cole, Kirsten Kuipers, Anna Henningham, Ramy K. Aziz, Ana Kasirer-Friede, Leo Lin, Evelien T.M. Berends, Mark R. Davies, Gordon Dougan, Fan Zhang, Samira Dahesh, Laura Shaw, Jennifer Gin, Madeleine Cunningham, Joseph A. Merriman, Julia Hütter, Bernd Lepenies, Suzan H.M. Rooijakkers, Richard Malley, Mark J. Walker, Sanford J. Shattil, Patrick M. Schlievert, Biswa Choudhury and Victor Nizet

Cell Host and Microbe, 15: 729-740 (2014) IF: 12.194

Group A Streptococcus (GAS) is a leading cause of infectionrelated mortality in humans. All GAS serotypes express the Lancefield group A carbohydrate (GAC), comprising a polyrhamnose backbone with an immunodominant acetylglucosamine (GlcNAc) side chain, which is the basis of rapid diagnostic tests. No biological function has been attributed to this conserved antigen. Here we identify and characterize the GAC biosynthesis genes, gacA through gacL. An isogenic mutant of the glycosyltransferase gacI, which is defective for GlcNAc side-chain addition, is attenuated for virulence in two infection models, in association with increased sensitivity to neutrophil killing, platelet-derived antimicrobials in serum, and the cathelicidin antimicrobial peptide LL-37. Antibodies to GAC lacking the GlcNAc side chain and containing only polyrhamnose promoted opsonophagocytic killing of multiple GAS serotypes and protected against systemic GAS challenge after passive immunization. Thus, the Lancefield antigen plays a functional role in GAS pathogenesis, and a deeper understanding of this unique polysaccharide has implications for vaccine development. Keywords: Genetics; Virulence factors; Immunology; Innate Carbohydrates; immunity; Biochemistry; Antigen; **Bioinformatics**.
899. A Highly Abundant Bacteriophage Discovered in the Unknown Sequences of Human Faecal Metagenomes

Bas E. Dutilh, Noriko Cassman, Katelyn Mc Nair, Savannah E. Sanchez, Genivaldo G.Z. Silva, Lance Boling, Jeremy J. Barr, Daan R. Speth, Victor Seguritan, Ramy K. Aziz, Ben Felts, Elizabeth A. Dinsdale, John L. Mokili and Robert A.

Nature Communications, 5: 1-11 (2014) IF: 10.742

Metagenomics, or sequencing of the genetic material from a complete microbial community, is a promising tool to discover novel microbes and viruses. Viral metagenomes typically contain many unknown sequences. Here we describe the discovery of a previously unidentified bacteriophage present in the majority of published human faecal metagenomes, which we refer to as crAssphage. Its ~97 kbp genome is six times more abundant in publicly available metagenomes than all other known phages together; it comprises up to 90% and 22% of all reads in viruslike particle (VLP)-derived metagenomes and total community metagenomes, respectively; and it totals 1.68% of all human faecal metagenomic sequencing reads in the public databases. The majority of crAssphage-encoded proteins match no known sequences in the database, which is why it was not detected before. Using a new co-occurrence profiling approach, we predict a Bacteroides host for this phage, consistent with Bacteroidesrelated protein homologues and a unique carbohydrate-binding domain encoded in the phage genome.

Keywords: Bioinformatics; Virology; Metagenomics; Bacteriophage; Cross assembly.

900. Initial Bridges Between Two Ribosomal Subunits Are Formed Within 9.4 Milliseconds, as Studied by Time-Resolved Cryo-Em

Tanvir R. Shaikha, Aymen S. Yassina, Zonghuan Lub, David Barnarda, Xing Menga, Toh-Ming Lub, Terence Wagenknechta and Rajendra K. Agrawala

Proceedings of the National Academy of Sciences, 111: 9822-9827 (2014) IF: 9.809

Association of the two ribosomal subunits during the process of translation initiation is a crucial step of protein synthesis. The two subunits (30S and 50S) of the bacterial 70S ribosome are held together by 12 dynamic bridges involving RNA-RNA, RNAprotein, and protein-protein interactions. The process of bridge formation, such as whether all these bridges are formed simultaneously or in a sequential order, is poorly understood. To understand such processes, we have developed and implemented a class of microfluidic devices that mix two components to completion within 0.4 ms and spray the mixture in the form of microdroplets onto an electron microscopy grid, yielding a minimum reaction time of 9.4 ms before cryofixation. Using these devices, we have obtained cryo-EM data corresponding to reaction times of 9.4 and 43 ms and have determined 3D structures of ribosomal subunit association intermediates. Molecular analyses of the cryo-EM maps reveal that eight intersubunit bridges (bridges B1a, B1b, B2a, B2b, B3, B7a, B7b, and B8) form within 9.4 ms, whereas the remaining four bridges (bridges B2c, B4, B5, and B6) take longer than 43 ms to form, suggesting that bridges are formed in a stepwise fashion. Our approach can be used to characterize sequences of various

dynamic functional events on complex macromolecular assemblies such as ribosomes.

Keywords: Millisecond Time Resolution Cryo-Em; Ribosomal Intersubunit Bridges.

901. One Health People, Animals, and the Environment

Hossam M. Ashour

Clinical Infectious Diseases, 59(10): 1510 (2014) IF: 9.416

The world of emerging infectious diseases is enormous (both in scope and impact) and is comprised mainly of zoonotic diseases. The editors have gathered experts to present their perspective on different angles of the One Health concept, which addresses how complex interactions of humans, animals, and environment lead to infectious diseases. To emphasize that, the authors repeatedly stress that the vast majority of emerging infectious diseases in recent decades are zoonotic in origin with a clear involvement of wildlife, highlighting the ill effects on human health. It is also pointed out that humans' impact on the environment leads to similar ill effects on animal health. This highlights the complex multidirectional impacts of each of these domains (humans, animals, and environment) on one another. As the factors for a "microbial storm" are still in place, these ill effects are expected to be on the rise in the coming years.

Keywords: Infectious diseases; Zoonotic diseases; One health.

902. In Vitro-Induced Cell-Mediated Immune Deviation to Encephalitogenic Antigens

Shukkur M Farooq, Walid F Elkhati and Hossam M Ashour

Brain, Behavior, and Immunity, 35: 64-69 (2014) IF: 6.128

The injection of antigens into the Anterior Chamber (AC) of the eye induces Anterior Chamber Associated Immune Deviation (ACAID), which is a potent form of immune deviation that is largely attributed to the effect of TGF β 2 in the aqueous humor on ocular antigen-presenting cells (APCs). ACAID antigen presentation via APCs and B cells leads to the generation of antigen-specific T regulatory cells. The encephalitogenic antigens Myelin oligodendrocyte glycoprotein (MOG) and Myelin basic protein (MBP) have an obvious clinical relevance. We hypothesized that the intravenous injection of in vitro-generated ACAID APCs or in vitro-generated ACAID B cells specific to the encephalitogenic antigens MOG₃₅₋₅₅/MBP induces specific peripheral tolerance in recipient BALB/c mice. We examined the suppression of MOG35–55-specific/MBP-specific inflammatory responses using delayed-type hypersensitivity (DTH) assays and Local Adoptive Transfer (LAT) assays. Results indicated that MOG35-55-specific/MBP-specific tolerance was generated after the intravenous injections of MOG₃₅₋₅₅-specific/MBP-specific ACAID APC_s, MOG₃₅₋₅₅-specific/MBP-specific ACAID B cells, and MOG₃₅₋₅₅₋specific/MBP-specific ACAID T regulatory cells. The specific immune deviation was in vitro-induced, cellmediated, and specific to the encephalitogenic antigens MOG₃₅₋ 55/MBP. This in vitro-mediated approach for the generation of MOG₃₅₋₅₅/MBP-specific tolerance opens up avenues for the application of ACAID as a tool for the therapy of Multiple Sclerosis, Schizophrenia, and other diseases.

Keywords: Anterior Chamber; Immune Tolerance; Myelin; B Cells.

903. The in Vivo And in Vitro Induction of Anterior Chamber Associated Immune Deviation To Myelin Antigens in C57BL/6 Mice

Shukkur M Farooq, Walid F Elkhati and Hossam M Ashour

Brain, Behavior, and Immunity, 42: 118-122 (2014) IF: 6.128

Introduction of antigens into the anterior chamber (AC) of the eye generates a specific systemic form of tolerance that is termed ACassociated deviation (ACAID). Experimental immune autoimmune encephalomyelitis (EAE) is an animal model of the human CNS demyelinating diseases, including multiple sclerosis (MS) and acute disseminated encephalomyelitis. We investigated whether the encephalitogenic antigens myelin oligodendrocyte glycoprotein (MOG35-55) or myelin basic protein (MBP) induce ACAID in the EAE-prone C57BL/6 mice. We hypothesized that injection of MOG₃₅₋₅₅/MBP induces antigen-specific tolerance whether via the AC route, the adoptive transfer of in vitrogenerated MOG₃₅₋₅₅-specific/MBP-specific ACAID antigen presenting cells (APCs), or the adoptive transfer of MOG₃₅₋₅₅₋ specific/MBP-specific ACAID T regulatory cells (Tregs). ACAID is characterized by the specific impairment of delayed-type hypersensitivity (DTH) responses. Thus, DTH assays were used to test for ACAID following the AC injection of MOG₃₅₋₅₅/MBP, or the intravenous injection of MOG₃₅₋₅₅.specific/MBP-specific ACAID APCs. The functional local adoptive transfer (LAT) assays were used to examine the putative regulatory functions of in vitro generated MOG₃₅₋₅₅-specific/MBP-specific Tregs. This report is the first to demonstrate the in vivo and in vitro induction of MOG₃₅₋₅₅-specific/MBP-specific ACAID-mediated tolerance in C57BL/6 mice. These findings highlight the need for novel immunotherapeutic strategies for MS and optic neuritis.

Keywords: Acaid; Cd8+ Tregs; Immune Privilege; Dth Assay; Eae; Lat Assay; Multiple Sclerosis; Mog; Mbp; Regulatory T Cells; Peripheral Tolerance.

904. Mutual Exclusivity of Hyaluronan and Hyaluronidase in Invasive Group A Streptococcus

Anna Henningham, Masaya Yamaguchi, Ramy K. Aziz, Kirsten Kuipers, Cosmo Z. Buffalo, Samira Dahesh, Biswa Choudhury Jeremy Van Vleet, Yuka Yamaguchi, Lisa M. Seymour, Nouri L. Ben Zakour, Lingjun He, Helen V. Smith, Keith Grimwood, Scott A. Beatson, Partho Ghosh, Mark J. Walker, Victor Nizet and Jason N. Cole

Journal of Biological Chemistry, 289: 32303-32315 (2014) IF: 4.6

A recent analysis of group A Streptococcus (GAS) invasive infections in Australia has shown a predominance of M4 GAS, a serotype recently reported to lack the antiphagocytic hyaluronic acid (HA) capsule. Here, we use molecular genetics and bioinformatics techniques to characterize 17 clinical M4 isolates associated with invasive disease in children during this recent epidemiology. All M4 isolates lacked HA capsule, and whole genome sequence analysis of two isolates revealed the complete absence of the hasABC capsule biosynthesis operon. Conversely, M4 isolates possess a functional HA-degrading hyaluronate lyase (HylA) enzyme that is rendered nonfunctional in other GAS through a point mutation. Transformation with a plasmid expressing hasABC restored partial encapsulation in wild-type (WT) M4 GAS, and full encapsulation in an isogenic M4 mutant lacking HylA. However, partial encapsulation reduced binding to human complement regulatory protein C4BP, did not enhance survival in whole human blood, and did not increase virulence of WT M4 GAS in a mouse model of systemic infection. Bioinformatics analysis found no hasABC homologs in closely related species, suggesting that this operon was a recent acquisition. These data showcase a mutually exclusive interaction of HA capsule and active HylA among strains of this leading human pathogen.

Keywords: Bacterial pathogenesis; Hyaluronan; Hyaluronate; Infectious disease; Streptococcus pyogenes; Group a Streptococcus; Hyaluronate lyase; Hyaluronic acid capsule; Invasive diseases.

905. Type II Fatty Acid Synthesis is Essential for the Replication of Chlamydia Trachomatis

Yasser Mohamed Elsayed Metwally Abdelrahman

Journal Of Biological Chemistry, 289: 22365-22376 (2014) IF: 4.6

The major phospholipid classes of the obligate intracellular bacterial parasite Chlamydia trachomatis are the same as its eukaryotic host except that they also contain chlamydia-made branched-chain fatty acids in the 2-position. Genomic analysis predicts that C. trachomatis is capable of type II fatty acid synthesis (FASII). AFN-1252 was deployed as a chemical tool to specifically inhibit the enoyl-acyl carrier protein reductase (FabI) of C. trachomatis to determine whether chlamydial FASII is essential for replication within the host. The C. trachomatis FabI (CtFabI) is a homotetramer and exhibited typical FabI kinetics, and its expression complemented an Escherichia coli fabI(Ts) strain. AFN-1252 inhibited CtFabI by binding to the FabI·NADH complex with an IC50 of 0.9 μ M at saturating substrate concentration. The x-ray crystal structure of the CtFabI·NADH·AFN-1252 ternary complex revealed the specific interactions between the drug, protein, and cofactor within the substrate binding site. AFN-1252 treatment of C. trachomatisinfected HeLa cells at any point in the infectious cycle caused a decrease in infectious titers that correlated with a decrease in branched-chain fatty acid biosynthesis. AFN-1252 treatment at the time of infection prevented the first cell division of C. trachomatis, although the cell morphology suggested differentiation into a metabolically active reticulate body. These results demonstrate that FASII activity is essential for C. trachomatis proliferation within its eukaryotic host and validate CtFabI as a therapeutic target against C. trachomatis.

Keywords: Bacterial metabolism; Chlamydia trachomatis; Enzyme Inhibitor; Fatty Acid Synthase (FAS); Fatty Acid Synthesis; Glycerophospholipid.

906. Evaluation of Different Microtiter Plate-Based Methods for the Quantitative Assessment of Staphylococcus Aureus Biofilms

Walid F Elkhatib, Ahmed S Khairalla and Hossam M Ashour

Future Microbiology, 9(6): 725-735 (2014) IF: 3.819

Aim: To quantitatively assess Staphylococcus aureus biofilms. **Materials and Methods**: In addition to the qualitative Congo red agar (CRA) method, we used the bioluminescence (BLM), safranine (SAF), crystal violet (CRV) and resazurin (RES) highthroughput microtiter plate-based quantitative assays. **Results**: 60.47% (26/43) of S. aureus clinical isolates were weak biofilm producers. The CRA method detected positive-slime phenotypes (13.95%), but was unable to distinguish weak from negative producers. BLM assays demonstrated significant correlations with RES (highest), CRV and SAF (lowest). Lower coefficient of variation values indicate precision. BLM scored highest precision (coefficient of variation = 0.013) followed by RES, SAF and CRV.

Conclusion: BLM and RES detect live biomass in S. aureus biofilms (for physiological studies). SAF and CRV detect live/dead bacteria plus biofilm matrix (for monitoring overall biofilm architecture, not only its cell viability). Reliable assays are essential for effective biofilm therapy.

Keywords: Biofilm, Bioluminescence, Quantitation, Safranine, Staphylococcus Aureus.

907. Eye-Mediated Immune Tolerance To Type II Collagen in Arthritis-Prone Strains of Mice

Shukkur M. Farooq, Ashok Kumar and Hossam M. Ashour

Journal of Cellular and Molecular Medicine, 18(12): 2512-2518 (2014) IF: 3.698

Type II collagen (CII) is a cartilage structural protein that plays important roles in joint function, arthritis and ageing. In studying the ability of CII to induce eye-mediated specific immune tolerance, we have recently proven that CII is capable of inducing anterior chamber-associated immune deviation (ACAID) in Balb/c mice. Here, we study the ability of CII to induce eyemediated immune tolerance in strains of mice that are prone to the induction of rheumatoid arthritis. Thus, we hypothesized that CII induces ACAID in DBA/1 mice and in C57BL/6 mice through the AC route (direct injection) or the intravenous route (adoptive transfer of in vitro-generated CII-specific ACAID macrophages or of CII-specific in vitro-generated T regulatory cells). Specific immune tolerance induction was assessed using both delayed-type hypersensitivity (DTH) and local adoptive transfer (LAT) assays. Results indicated the ability of CII to generate CII-specific ACAID-mediated immune tolerance in vivo and in vitro in both DBA/1 mice and C57BL/6 mice. These findings could be beneficial in studies of immune tolerance induction using CII.

Keywords: Acaid; Peripheral Tolerance; Immune Privilege; Regulatory T Cells; Collagen Type Ii; C57bl/6 Mice; Dba/1 Mice.

908. Protein Kinase Expression as A Predictive Factor for Interferon Response in Chronic Hepatitis C Patients

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Journal of Advanced Research, 5: 117-123 (2014) IF: 3

Egypt has the highest prevalence of hepatitis C virus (HCV) worldwide. Currently, combined pegylated interferon and ribavirin therapy are the standard treatment. The biological activity of interferon (IFN) is mediated by the induction of intracellular antiviral proteins, such as 20–50 oligoadenylate synthetase, and dsRNA-activated protein kinase. IFN-inducible doublestranded RNA-activated protein kinase (PKR) is thought to play a key antiviral role against HCV. Some studies observed that PKR expression was higher in sustained viral responders compared with the non-responders. The PKR is considered as antiviral toward HCV and responsible for IFN's effect against

HCV while others have showed that, there were kinetic results indicate that HCV infection is not altered by reduced levels of PKR, indicating that HCV is resistant to the translational inhibitory effects of the phosphorylated forms of PKR.

This study was conducted on 50 consecutive patients with chronic HCV infection (CHC) and 20 healthy controls. All the patients were subjected to clinical and laboratory assessment, abdominal ultrasound, and liver biopsy. Determination of PKR gene quantity by using a real time PCR was done at the baseline and at the end of treatment for all patients and controls. Pre-treatment levels of protein kinase gene were significantly higher in responders in comparison with non-responders (P<0.001). It was found that 97.06% of patients who were responding to treatment had the expression of protein kinase gene greater than 26 cycle threshold. **Keywords**: Chronic Hepatitis C; Pegylated Interferon; Protein Kinase Gene.

909. Pharmacomicrobiomics: the Impact of Human Microbiome Variations on Systems Pharmacology and Personalized Therapeutics

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Omics: A Journal of Integrative Biology, 18: 402-414 (2014) IF: 2.73

The Human Microbiome Project (HMP) is a global initiative undertaken to identify and characterize the collection of humanassociated microorganisms at multiple anatomic sites (skin, mouth, nose, colon, vagina), and to determine how intraindividual and inter-individual alterations in the microbiome influence human health, immunity, and different disease states. In this review article, we summarize the key findings and applications of the HMP that may impact pharmacology and personalized therapeutics. We propose a microbiome cloud model, reflecting the temporal and spatial uncertainty of defining an individual's microbiome composition, with examples of how intra-individual variations (such as age and mode of delivery) shape the microbiome structure.

Additionally, we discuss how this microbiome cloud concept explains the difficulty to define a core human microbiome and to classify individuals according to their biome types. Detailed examples are presented on microbiome changes related to colorectal cancer, antibiotic administration, and pharmacomicrobiomics. drug-microbiome interactions, or highlighting how an improved understanding of the human microbiome, and alterations thereof, may lead to the development of novel therapeutic agents, the modification of antibiotic policies and implementation, and improved health outcomes. Finally, the prospects of a collaborative computational microbiome research initiative in Africa are discussed.

Keywords: Pharmacogenomics, Microbiome, Systems Biology, Genome, Bioinformatics, Human, Pharmacometrics.

910. Morphologic and Molecular Evaluation of Chlamydia Trachomatis Growth in Human Endocervix Reveals Distinct Growth Patterns

Yasser Mohamed Elsayed Metwally Abdelrahman

'Frontiers In Cellular and Infection Microbiology, 4: 1-12 (2014) IF: 2.62 In vitro models of Chlamydia trachomatis growth have long been studied to predict growth in vivo. Alternative or persistent growth modes in vitro have been shown to occur under the influence of numerous stressors but have not been studied in vivo. Here, we report the development of methods for sampling human infections from the endocervix in a manner that permits a multifaceted analysis of the bacteria, host and the endocervical environment. Our approach permits evaluating total bacterial load, transcriptional patterns, morphology by immunofluorescence and electron microscopy, and levels of cytokines and nutrients in the infection microenvironment.

By applying this approach to two pilot patients with disparate infections, we have determined that their contrasting growth patterns correlate with strikingly distinct transcriptional biomarkers, and are associated with differences in local levels of IFN γ . Our multifaceted approach will be useful to dissect infections in the human host and be useful in identifying patients at risk for chronic disease. Importantly, the molecular and morphological analyses described here indicate that persistent growth forms can be isolated from the human endocervix when the infection microenvironment resembles the in vitro model of IFN γ -induced persistence

Keywords: Bacterial Persistence, Chlamydia Trachomatis, Endocervix, Human, Interferon Gamma, Indole.

911. Monte Carlo Simulation Analysis of Ceftobiprole, Dalbavancin, Daptomycin, Tigecycline, Linezolid and Vancomycin Pharmacodynamics Against Intensive Care Unit-Isolated Methicillin-Resistant Staphylococcus Aureus

Ahmed Hamed Salem, George G Zhanel, Safaa A Ibrahim and Ayman M Noreddin

Clinical and Experimental Pharmacology and Physiology, 41(6): 437-443 (2014) IF: 2.405

The aim of the present study was to compare the potential of ceftobiprole, dalbavancin, daptomycin, tigecycline, linezolid and vancomycin to achieve their requisite pharmacokinetic/pharmacodynamic (PK/PD) targets against methicillin-resistant Staphylococcus aureus isolates collected from intensive care unit (ICU) settings.

Monte Carlo simulations were carried out to simulate the PK/PD indices of the investigated antimicrobials. The probability of target attainment (PTA) was estimated at minimum inhibitory concentration values ranging from 0.03 to 32 μ g/mL to define the PK/PD susceptibility breakpoints. The cumulative fraction of response (CFR) was computed using minimum inhibitory concentration data from the Canadian National Intensive Care Unit study.

Analysis of the simulation results suggested the breakpoints of 4 μ g/mL for ceftobiprole (500 mg/2 h t.i.d.), 0.25 μ g/mL for dalbavancin (1000 mg), 0.12 μ g/mL for daptomycin (4 mg/kg q.d. and 6 mg/kg q.d.) and tigecycline (50 mg b.i.d.), and 2 μ g/mL for linezolid (600 mg b.i.d.) and vancomycin (1 g b.i.d. and 1.5 g b.i.d.). The estimated CFR were 100, 100, 70.6, 88.8, 96.5, 82.4, 89.4, and 98.3% for ceftobiprole, dalbavancin, daptomycin (4 mg/kg/day), daptomycin (6 mg/kg/day), linezolid, tigecycline, vancomycin (1 g b.i.d.) and vancomycin (1.5 g b.i.d.), respectively.

In conclusion, ceftobiprole and dalbavancin have the highest probability of achieving their requisite PK/PD targets against methicillin-resistant Staphylococcus aureus isolated from ICU settings. The susceptibility predictions suggested a reduction of the vancomycin breakpoint to 1 μ g/mL.

Keywords: Ceftobiprole; Intensive care unit; Methicillin Resistant staphylococcus aureus; Monte carlo simulation;Vancomycin.

912. A Sensitive Colorimetric Assay for Identification of Acinetobacter Baumannii Using Unmodified Gold Nanoparticles

M.A.F. Khalil, H.M.E. Azzazy, A.S. Attia and A.G.M. Hashem

Journal Of Applied Microbiology, 117: 465-471 (2014) IF: 2.386

Aims: Acinetobacter baumannii is a global health problem, which threatens many healthcare settings. The current study aims to develop a detection assay for Ac. baumannii using unmodified gold nanoparticles (AuNPs).

Methods and Results: Fifty-three Ac. baumannii clinical isolates were collected from Egyptian hospitals. Bacterial isolation and biochemical identification of isolates were carried out followed by DNA extraction using boiling method and PCR amplification of the 23S–16S rRNA intergenic spacer sequences (ITS). AuNPs were synthesized using citrate reduction method. Detection and optimization of Ac. baumannii amplicons using unmodified spherical AuNPs were performed using species-specific DNA oligonucleotide. The nano-gold assay was able to colorimetrically detect and distinguish Ac. baumannii from other Gram-negative bacteria. The turnaround time of the assay is about 2 h including sample treatment and amplification. The assay detection limit is 0·8125 ng of DNA.

Conclusions: The developed colorimetric assay is sensitive, fast and reliable and can be used for identification of Ac. baumannii.

Significance and Impact of the Study. There is a need to develop robust, rapid, and specific methods for detection of Ac. baumannii isolated from clinical specimens. The developed nanogold assay prototype allows sensitive, specific and rapid detection of amplified DNA of A. baumannii and represents a reliable diagnostic tool to aid routine laboratory identification of this pathogen.

Keywords: Acinetobacter baumannii ;Colorimetric assay;Gold nanoparticles;In vitro detection; Pcr.

913. First Report of Ndm-1-Producing Pseudomonas Aeruginosa in Egypt

Shukkur M. Farooq, Ashok Kumar, Hossam M. Ashour

International Journal of Infectious Diseases, 29: 80-81 (2014) IF: 2.33

This work reports the occurrence of New Delhi metallo-betalactamase 1 (NDM-1) in metallo-beta- lactamase-producing Pseudomonas aeruginosa in Egypt for the first time, and the presence of more than one blaMBL gene in carbapenem-resistant P. aeruginosa.

Keywords: Pseudomonas aeruginosa; New delhi Metallo;Beta;Lactamase 1 (Ndm-1); Verona integron;Encoded Metallo-Beta;Lactamase (Vim-2); Metallo-beta;Lactamases; Carbapenem Resistance; Egypt.

914. Remediation of the Effect of Adding Cyanides on An Algal/Bacterial Treatment of A Mixture of Organic Pollutants in A Continuous Photobioreactor

Tamer Essam, Marwa ElRakaiby and Azza Agha

Biotechnology Letters, 36: 1773-1781 (2014) IF: 1.736

The effect of inorganic pollutants on the treatment of organic pollutants using algal/bacterial microcosm was investigated in a continuous photobi-oreactor. The microcosm was composed ofChlorella vulgarisMM1 andPseudomonasMT1 and was able to efficiently treat artificial waste-water contaminated with 6.4 salicylate and 2.2 mM phenol at a hydraulic retention time of 4 days. No negative effect was recorded when the waste-water was supplemented with 1.6 mM thiocyanate; however, the treatment efficiency severely deteriorated when the system was challenged with 0.74 mM cyanide. Addition of 2 g NaHCO3 l-1 did not improve the efficiency of the treatment. Toxicity of the pollutants to the alga was cyanide[thiocyanate[phenol[salicylate. The high toxicity of the waste-water was eliminated either by a 25-fold dilution or by photocatalytic pre-treatment which allowed the subsequent efficient biological treatment.

Keywords: Chlorella; Cyanide; Microcosm; Photosynthesis Photocatalytic Pretreatment; Phenol; Pseudomonas Salicylate; Thiocyanate.

915. Gas-Assisted Annular Microsprayer for Sample Preparation for Time-Resolved Cryo-Electron Microscopy

Zonghuan Lu, David Barnard, Tanvir R Shaikh, Xing Meng, Carmen A Mannella, Aymen S Yassin, Rajendra K Agrawal, Terence Wagenknecht and Toh-Ming Lu

Journal of Micromechanics and Microengineering, 24 (11): (2014) IF: 1.725

Time-resolved cryo electron microscopy (TRCEM) has emerged as a powerful technique for transient structural characterization of isolated biomacromolecular complexes in their native state within the time scale of seconds to milliseconds. For TRCEM sample preparation, microfluidic device [9] has been demonstrated to be a promising approach to facilitate TRCEM biological sample preparation. It is capable of achieving rapidly aqueous sample mixing, controlled reaction incubation, and sample deposition on electron microscopy (EM) grids for rapid freezing. One of the critical challenges is to transfer samples to cryo-EM grids from the microfluidic device. By using microspraying method, the generated droplet size needs to be controlled to facilitate the thin ice film formation on the grid surface for efficient data collection, while not too thin to be dried out before freezing, i.e., optimized mean droplet size needs to be achieved. In this work, we developed a novel monolithic three dimensional (3D) annular gasassisted microfluidic sprayer using 3D MEMS (Micro Electro Mechanical System) fabrication techniques. The microsprayer demonstrated dense and consistent microsprays with average droplet size between 6-9 µm, which fulfilled the above droplet size requirement for TRCEM sample preparation. With droplet density of around 12-18 per grid window (window size is 58×58 μ m), and the data collectible thin ice region of >50% total wetted area, we collected ~800-1000 high quality CCD micrographs in a 6-8 hour period of continuous effort. This level of output is comparable to what were routinely achieved using cryo-grids prepared by conventional blotting and manual data collection. In

this case, weeks of data collection process with the previous device [9] has shortened to a day or two. And hundreds of microliter of valuable sample consumption can be reduced to only a small fraction.

Keywords: Microfluidics; Cryo Em; Microdroplet; Micronozzle; Microspray; Monolithic Device; Time-Resolved Tem

916. Application of Plackett–Burman Screening Design To the Modeling of Grafted Alginate– Carrageenan Beads for the Immobilization of Penicillin G Acylase

Magdy M. M. Elnashar, Marwa I. Wahba, Magdy A. Amin and Ahmed I. Eldiwany

Journal of Applied Polymer Science, 131 (11): (2014) IF: 1.64

Grafted alginate-carrageenan beads were used to immobilize the industrial enzyme penicillin G acylase (PGA). Sixteen factors were screened with the Plackett-Burman design (PBD) to test their significance on the gel beads formation and enzyme immobilization process. The results of PBD showed a wide variation of 30-fold in the amount of immobilized penicillin G acylase (iPGA) from 11.9 to 354.16 U/g of beads; this reflected the importance of the optimizing process. Among the 16 tested factors, only 3 were proven to be significant. These factors were the enzyme buffer pH (N), enzyme soaking time (Q) with the gel beads, and enzyme concentration (P). The Pareto chart revealed that both Q and P exerted significant positive effects on the amount of iPGA, whereas N had a negative effect. We recommend further study to optimize only these three significant, distinctive enzyme factors. The PGA covalent attachment to the gel beads were proven by Fourier transform infrared spectroscopy, elemental analysis, and NaCl and reusability tests. The best gel bead formula succeeded in the immobilization of 354.16 U/g of beads and proved to be reusable 14 times, retaining 84% of the initial enzyme activity.

Keywords: Catalysts; Composites; Gels.

917. Detection, Characterization, and Molecular Typing of Human Mycoplasma Spp. from Major Hospitals in Cairo, Egypt

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The Scientific World Journal, 2014: 0-0 (2014) IF: 1.219

Mycoplasmas are fastidious slow growing organisms lacking a cell wall and mostly isolated from the mucosal surfaces of the respiratory and genitourinary tracts. There is a dearth of information regarding clinical Mycoplasma spp. isolates among Egyptian patients.

A total of 170 samples were collected from patients and apparently healthy personnel in local public hospitals in Cairo, Egypt. Isolation of Mycoplasma spp. was carried out using appropriate culture media and further identification was carried out by biochemical tests followed by serotyping using specific antisera. Confirmation was done by PCR for detection of different Mycoplasma spp. using genus-specific primers targeting 16S ribosomal RNA gene. Characterization of the antibiotic resistance and sensitivity pattern against different antimicrobials was carried out using disc diffusion test.

The results indicated the presence of six Mycoplasma spp. in 22.94% of the samples. Mycoplasmas were detected more

frequently in throat swabs than sputum. Mycoplasma pneumoniae was highly sensitive to macrolides and quinolones but less sensitive to aminoglycosides and tetracyclines. Molecular techniques were found to be of more rapid, highly sensitive, able to detect nonviable organisms, and cost effective. These results shed light on difficulties of Mycoplasma detection and the superiority of molecular techniques over culture. **Keywords**: Mycoplasma; Virulence; Resistance

918. Antimicrobial Resistance Pattern And Their Beta-Lactamase Encoding Genes Among Pseudomonas Aeruginosa Strains Isolated From Cancer Patients

Mai M. Zafer, Mohamed H. Al-Agamy, Hadir A. El-Mahallawy, Magdy A. Amin and Mohammed Seif El-Din Ashour

Biomedical Reseach International, 2014: 0-0 (2014)

This study was designed to investigate the prevalence of metallo- β -lactamases (MBL) and extended-spectrum β -lactamases (ESBL) in P. aeruginosa isolates collected from two different hospitals in Cairo, Egypt. Antibiotic susceptibility testing and phenotypic screening for ESBLs and MBLs were performed on 122 P. aeruginosa isolates collected in the period from January 2011 to March 2012. MICs were determined. ESBLs and MBLs genes were sought by PCR. The resistant rate to imipenem was 39.34%.

The resistance rates for P. aeruginosa to cefuroxime, ceftazidime, cefoperazone. aztreonam. and piperacillin/tazobactam were 87.7%, 80.3%, 60.6%, 45.1%, and 25.4%, respectively. Out of 122 P. aeruginosa, 27% and 7.4% were MBL and ESBL, respectively. The prevalence of blavIM-2, bla_{OXA-10}-, bla_{VEB-1}, bla_{NDM}-, and bla_{IMP-1}-like genes were found in 58.3%, 41.7%, 10.4%, 4.2%, and 2.1%, respectively. GIM-, SPM-, SIM-, and OXA-2-like genes were not detected in this study. OXA-10-like gene was concomitant with VIM-2 and/or VEB. Twelve isolates harbored both OXA-10 and VIM-2; two isolates carried both OXA-10 and VEB. Only one strain contained OXA-10, VIM-2, and VEB. In conclusion, blaVIM-2- and blaOXA-10-like genes were the most prevalent genes in P. aeruginosa in Egypt. To our knowledge, this is the first report of bla_{VIM-2}, bla_{IMP-1}, bla_{NDM}, and bla_{OXA-10} in P. aeruginosa in Egypt. Keywords: Pseudomonas Aeruginosa; Beta-Lactamase; Cancer.

Dept. of Pharmaceutical Chemistry

919. Synthesis, Bioassay, and Molecular Field Topology Analysis of Diverse Vasodilatory Heterocycles

Polina V. Oliferenko, Alexander A. Oliferenko, Adel S. Girgis, Dalia O. Saleh, Aladdin M. Srour, Riham F. George, Girinath G. Pillai, Chandramukhi S. Panda, C. Dennis Hall and Alan R. Katritzky

Journal of Chemical Information and Modeling, 54: 1103-1116 (2014) IF: 4.068

A diverse training set composed of 76 in-house synthesized and 61 collected from the literature was subjected to molecular field topology analysis. This resulted in a high-quality quantitative structure–activity relationships model (R2 = 0.932, Q2 = 0.809) which was used for the topological functional core identification and prediction of vasodilatory activity of 19 novel

pyridinecarbonitriles, which turned out to be active in experimental bioassay.

Keywords: Qsar, Mfta, Vasodilator, Pyridinecarbonitrile.

920. Design, Synthesis and Anticancer Activity of Benzofuran Derivatives Targeting VEGFR-2 Tyrosine Kinase

Omaima M. Abdelhafez, Kamelia M. Amin, Hamed I. Ali, Mohamed M. Abdalla and Eman Y. Ahmed

Rsc Advances, 4: 11569-11579 (2014) IF: 3.708

Two series of chalcone and thiopyrimidine benzofuran derivatives were designed, synthesized and evaluated in vitro for their vascular endothelial growth factor receptor (VEGFR-2) inhibitory activity, their cytotoxicity on seventeen human cancer cell lines and their in vivo antiprostate cancer activity. The highest anti-VEGFR-2 activity was demonstrated by 1-(6-hydroxy-4methoxybenzofuran-5-yl)-3-(4-nitrophenyl)prop-2-en-1-one (6d) exhibiting an IC₅₀ value (1.00 x 10^{-3} µM) higher than the reference drug Sorafenib (IC₅₀ = $2.00 \times 10^{-3} \mu$ M). On the other hand, most of the synthesized compounds showed potent cytotoxicity against most of the tested cell lines and were more potent than the reference drugs, in particular, bromovisnagin (4) exhibited the best activity on the majority of the cell lines with IC₅₀ values ranging from 3.67 x 10⁻¹³ to 7.65 x 10^{-7} µM. Moreover, the synthesized compounds showed significant in vivo antiprostate cancer activity. The docking experiments were performed using the GOLD program on (VEGFR-2) kinase which introduced new information about the enzyme-inhibitor interaction and the potential therapeutic application of the benzofuran scaffold.

Keywords: Benzofuran; Tyrosine kinase.

921. Stability-Indicating RP-LC Method for Determination of Azilsartan Medoxomil and Chlorthalidone in Pharmaceutical Dosage Forms: Application To Degradation Kinetics

Ebeid WM, Elkady EF, El-Zaher AA, El-Bagary RI and Patonay G.

Analytical and Bioanalytical Chemistry, 406: 6701-6712 (2014) IF: 3.578

A RP-LC method was developed and validated for simultaneous determination of the active components, azilsartan medoxomil (AZL) and chlorthalidone (CLT), in their novel antihypertensive combined recipe.

The chromatographic separation was achieved on an Eclipse XDB-C18 ($4.6 \times 150 \text{ mm}$, $5 \mu \text{m}$) column using a mobile phase consisting of methanol/potassium hydrogen phosphate buffer (pH 8, 0.05 M) (40:60, v/v) in isocratic mode. The flow rate was maintained at 0.8 mL min(-1) at ambient temperature. Detection was carried out at 210 nm.

The method was validated according to the ICH guidelines. Linearity, accuracy, and precision were satisfactory over the concentration range of 5.0-50.0 and 2.5-25.0 μ g mL(-1) for AZL and CLT, respectively (r (2)=0.9999). LODs for AZL and CLT were 0.90 and 0.32 μ g mL(-1), whereas LOQs were 2.72 and 0.98 μ g mL(-1), respectively. Both drugs were subjected to forced degradation studies under hydrolysis (neutral, acidic, and alkaline), oxidative, and photolytic extensive stress conditions. The proposed method is stability indicating by the resolution of

the investigated drugs from their degradation products. Moreover, the kinetics of the acidic degradation of AZL as well as the kinetics of the alkaline degradation of CLT were investigated. Arrhenius plots were constructed and the apparent first-order rate constants, half-life times, shelf-life times, and the activation energies of the degradation processes were calculated. The method was successfully applied for the determination of the studied drugs simultaneously in their coformulated tablet. The developed method is specific and stability indicating for the quality control and routine analysis of the cited medications in their pharmaceutical preparations.

Keywords: Stability;Indicating ; Liquid chromatography Degradation kinetics ; Azilsartan medoxomil ; Chlorthalidone ;Pharmaceutical; Preparations.

922. Microwave Assisted Synthesis and Qsar Study of Novel Nsaid Acetaminophen Conjugates With Amino Acid Linkers

Anand D. Tiwari, Siva S. Panda, Adel S. Girgis, Sandhyamayee Sahu, Riham F. George, Aladdin M. Srour, Brian La Starza, Abdullah M. Asiri, C. Dennis Hall and Alan R. Katritzky

Organic & Biomolecular Chemistry, 12: 7238-7249 (2014) *IF:* 3.487

Novel. non-steroidal anti-inflammatory (NSAID). drug acetaminophen conjugates 6a-l with amino acid linkers were synthesized utilizing benzotriazole chemistry. Biological data acquired for all the novel bis-conjugates showed (a) some bisconjugates (6d, 6e, 6h, and 6k) exhibit more potent antiinflammatory activity than their parent drugs, (b) the potent bisconjugates show no visible stomach lesions in contrast to parent drugs which are highly ulcerogenic, and (c) that the potent bioactive compounds have no mortality rates or toxic symptoms at 5 fold the applied anti-inflammatory dosage. A statistically significant QSAR model describing the anti-inflammatory properties of 6a–l (N = 15, n = 3, $R^2 = 0.891$, $R^2cvOO = 0.770$, $R^2cvMO = 0.796$, F = 29.904, $s^2 = 0.011$) was obtained employing CODESSA-Pro that validated the observed bioactivity.

Keywords: Nsaid; Microwave; Qsar; Codessa-pro; Antiiflammatory activity.

923. Celecoxib Analogs Bearing Benzofuran Moiety as Cyclooxygenase-2 Inhibitors: Design, Synthesis and Evaluation as Potential Anti-Inflammatory Agents

Ghaneya Sayed Hassan, Sahar Mahmoud Abou-Seri, Gehan Kamel and Mamdouh Moawad Ali

European Journal of Medicinal Chemistry, 76: 482-493 (2014) IF: 3.432

Novel series of celecoxib analogs endowed with benzofuran moiety 3a-e and 9a-d were synthesized and evaluated for COX-1/COX-2 inhibitory activity in vitro. The most potent and selective COX-2 inhibitors - compounds **3c**, **3d**, **3e**, **9c** and **9d** - were assessed for their anti-inflammatory activity and ulcerogenic liability in vivo.

The 3-(pyridin-3-yl)pyrazole derivatives 3c and 3e exhibited the highest anti-inflammatory activity, that is equipotent to celecoxib. Furthermore, the tested compounds proved to have better gastric safety profile compared to celecoxib. In particular, compound 3e

demonstrated about 40% reduction in ulcerogenic potential relative to the reference drug. Finally, molecular docking simulation of the new compounds in COX-2 active site and drug likeness studies showed good agreement with the obtained pharmaco-biological results.

Keywords: Celecoxib Analogs; Benzofuran; Pyrazole; Anti-Inflammatory Agents; Cox-1/Cox-2 Inhibitory Activity.

924. Design, Synthesis and Molecular Docking Study of Novel Quinoxalin- 2(1H)-Ones as Anti-Tumor Active Agents With Inhibition of Tyrosine Kinase Receptor and Studying Their Cyclooxygenase-2 Activity

Shadia A. Galal, Sarah H.M. Khairat, Fatma A.F. Ragab, Ahmed S. Abdelsamie, Mamdouh M. Ali, Salwa M. Soliman, Jeremie Mortier, Gerhard Wolber and Hoda I. El Diwani

European Journal of Medicinal Chemistry, 86: 122-132 (2014) IF: 3.432

On continuation to our work, new quinoxalin-2(1H)-ones were synthesized to study their cytotoxic effect against HepG-2 and MCF-7 with their effect on the human tyrosine kinase (TRK). Compounds **12**, **18**, **15**, **13**, **11a**, **20** and 16, respectively, were found to be more potent than cisplatin against HepG2 and selective to TRK. Also, compounds **12**, **18**, **20**, **13**, **14**, and **22**, respectively, exhibited decidedly activity against MCF-7 and selectivity against human TRK compared to cisplatin. A molecular docking study was also performed to gain comprehensive understanding into plausible binding modes and to conclude the structure activity relationships of the synthesized compounds. Moreover, anti-inflammatory activity was studied. Compounds **12**, **15**, **18** and **22** were found to be potent and selective against COX-2.

Keywords: Synthesis; Quinoxalines; Antitumor; Activity Cyclooxygenase-2 Docking protein tyrosine kinase

925. Design, Synthesis and Structure–Activity Relationship of Novel Semi-Synthetic Flavonoids as Antiproliferative Agents

F.A. Ragab, T.A.A. Yahya, M.M. El-Naa and R.K. Arafa

European Journal of Medicinal Chemistry, 82: 506-520 (2014) IF: 3.432

Various flavonoid scaffold based derivatives viz furochalcones (3a–e, 6a–d and 9a–d), furoflavones (10a–d, 11a–d, 12a–d, 18a&b), flavones (21a–d), furoaurones (13a,b, 14a–d and 15a–d) and 7-styrylfurochromones (22a–d and 25a–e) were designed and synthesized. The novel compounds were evaluated for their antiproliferative activity against a panel of 60 cancer cell lines comprising 9 types of tumors.

Ten compounds belonging to the major subgroups of flavonoids viz furochalcones (3a, 3d, 6b, 9a and 9b), furoflavones (12a and 12c), furoaurones (15d), styrylfurochromones (25b and 25e) showed very promising activity.

These active compounds were also evaluated in vitro as kinase inhibitors against CDK2/cyclin E1, CDK4/cyclin D1 and GSK-3 β and the best inhibition was displayed against GSK-3 β with the allylfurochalcone derivative 9b exhibiting 80% decrease in GSK-3 β catalytic activity. On the other hand, the styrylfurochromone 25e interestingly showed a 13% enhancement of GSK-3 β catalytic power and a 12% reduction in CDK4/cyclin D1 activity. Finally, the in vivo anti-tumor activity of 25e was evaluated against breast cancer induced in mice. The results showed a profound anti-tumor effect of 25e that accompanies a significant increase and decrease in the levels of GSK-3 β and cyclin D1, respectively.

Keywords: Furochalcones; Furoflavones; Furoaurones; Furostyrylfurochromones; Cytotoxicity; Kinase; Inhibition.

926. Novel Sulfonamides Bearing Pyrrole and Pyrrolopyrimidine Moieties As Carbonic Anhydrase Inhibitors: Synthesis, Cytotoxic Activity And Molecular Modeling

Mostafa M. Ghorab, Mariangela Ceruso, Mansour S. Alsaid, Yassin M. Nissan, Reem K. Arafa and Claudiu T. Supuran

European Journal f Medicinal Chemistry, 87: 186-196 (2014) IF: 3.432

Novel pyrrole and pyrrolopyrimidine scaffold-based sulfonamides were designed and synthesized. The carbonic anhydrase (CA) inhibition ability of all derivatives was assessed against the human (h) cytosolic isoforms hCA I and II and the transmembrane, tumor-associated isoforms hCA IX and XII. Some of these sulfonamides were 6e8 fold more potent than the reference drug acetazolamide (AZA, $K_i = 5.7$ nM)) against hCA XII showing subnanomolar activity. The in vitro cytotoxicity of these derivatives was evaluated against MCF-7, where some derivatives were more cytotoxic than doxorubicin (IC₅₀ = 8.02 mM) displaying IC₅₀ values between 6.46 and 7.56 mM. Docking of these sulfonamides with CA XII was performed and their binding modes were comparable with that of AZA.

Keywords: Pyrroles, Pyrrolopyrimidines, Sulfonamides, Carbonic Anhydrase, Cytotoxic Activity.

927. Part I. Synthesis, Biological Evaluation and Docking Studies of New 2-Furylbenzimidazoles as Antiangiogenic Agents

Ahmed Temirak, Yasser M. Shaker, Fatma A.F. Ragab, Mamdouh M. Ali, Hamed I. Ali and Hoda I.

European Journal of Medicinal Chemistry, 87: 868-880 (2014) IF: 3.432

2-(2-Furyl)-1H-benzimidazoles 3-11 were synthesized and tested for their in vitro VEGF inhibition in MCF-7 cancer cell line. Compound 5a was more potent than Tamoxifen, and compounds 3b, 5a, 5c, 6b, 7a and 10 showed promising potency. Furthermore, compounds (6b, 7a and 10) showed remarkable selective inhibition of COX-2 enzyme close to that of Celecoxcib. Additionally, docking studies were performed using AutoDock 4.2 into the VEGFR2 kinase. Significant correlation exists between the biological activity (IC₅₀ and %VEGF inhibition) against MCF-7 cell line and the molecular docking results (K_i and Δ Gb) with correlation coefficients (R²) of 0.5513 and 0.4623 respectively. Accordingly, most of the synthesized 2-(2-furyl)-1H-benzimidazoles showed strong antiangiogenic activity against VEGFR2 kinase.

Keywords: 2-(2-Furyl)-1H-Benzimidazoles Angiogenesis Vascular Endothelial Growth Factor (Vegf) Vegfr2 Kinase Cytotoxicity.

928. Synthesis and Antitumor Activity of Pyrido [2,3-D]Pyrimidine and Pyrido[2,3-D] [1,2,4]Triazolo[4,3-A]Pyrimidine Derivatives That Induce Apoptosis Through G1 Cell-Cycle Arrest

Mohamed Fares, Sahar Mahmoud Abou-Seri, Hatem A. Abdel-Aziz Safinaz E.-S. Abbas, Mohieldin Magdy Youssef and Radwa Ahmed Eladwy

European Journal of Medicinal Chemistry, 83: 155-166 (2014) IF: 3.432

New series of 2-(2-arylidenehydrazinyl)pyrido[2,3-d]pyrimidines 5a-e and pyrido[2,3-d][1,2,4]triazolo[4,3-a]pyrimidines 6-15 were synthesized and evaluated for their cytotoxic activity against two cancer cell lines, namely PC-3 prostate cancer and A-549 lung cancer.

Some of the tested compounds displayed high growth inhibitory activity against PC-3 cells. Whereas, compounds 5b and 15f showed relatively potent antitumor activity against PC-3 and A-549 cell lines. In particular, 4-(3-acetyl-5-oxo-6-phenyl-8-(thiophen-2-yl)pyrido[2,3-d][1,2,4]triazolo[4,3-a]pyrimidin1(5H)-yl)benzenesulfonamide 15f exhibited superior antitumor activity against both cell lines at submicromolar level (IC₅₀ = 0.36, 0.41 μ M, respectively).

Moreover, the potential mechanisms of the cytotoxic activity of the promising compound 15f on the more sensitive cell line PC-3 were studied. The data indicated that 15f was able to cause cell cycle arrest at least partly through enhancing the expression level of the cell cycle inhibitor p21 and induced cancer cell apoptosis via caspase-3 dependent pathway.

Keywords: Pyrido [2,3-D] Pyrimidine; Pyrido [2,3-D] [1,2,4]Triazolo [4,3-A] Pyrimidine; Antitumor Activity; Apoptosis; Cell Cycle Arrest.

929. Anticancer, Antioxidant Activities, and Dna Affinity of Novel Monocationic Bithiophenes and Analogues

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Drug Design, Development and Therapy, 8: 1659-1672 (2014) IF: 3.026

A series of 15 monocationic bithiophenes and isosteres were prepared and subjected to in vitro antiproliferative screening using the full National Cancer Institute (NCI)-60 cell line panel, representing nine types of cancer.

Among the nine types of cancer involved in a five-dose screen, non-small cell lung and breast cancer cell lines were the most responsive to the antiproliferative effect of the tested compounds, especially cell lines A549/ATCC, NCI-H322M, and NCI-H460, whereas compounds 1a, 1c, 1d, and 7 exhibited potent activity, with GI_{50} values (drug concentration that causes 50% inhibition of cell growth) from less than 10 nM to 102 nM. In addition, compounds 1c and 1d gave GI_{50} values of 73 nM and 79 nM, respectively, against the MDA-MB-468 breast cancer cell line. Structure–activity relationship findings indicated that the mononitriles were far less active than their corresponding monoamidines and, within the amidines series, the bioisosteric replacement of a thiophene ring by a furan led to a reduction in antiproliferative activity.

Also, molecular manipulations, involving substitution on the phenyl ring, or its replacement by a pyridyl, or alteration of the position of the amidine group, led to significant alteration in antiproliferative activity. On the other hand, DNA studies demonstrated that these monoamidine bichalcophenes have promising ability to cleave the genomic DNA.

These monoamidines show a wide range of DNA affinities, as judged from their DNA cleavage effect, which are remarkably sensitive to all kinds of structural modifications. Finally, the novel bichalcophenes were tested for their antioxidant property by the ABTS (2,2'-azino- bis(3-ethylbenzthiazoline-6-sulfonic acid) diammonium salt) assay, as well as lipid and nitric oxide scavenging techniques, and were found to exhibit good-to-potent antioxidant abilities.

Keywords: Bithiophenes, Anticancer, Dna Cleavage, Antioxidant, Suzuki Coupling, Stille Coupling.

930. Novel Pyrazolopyrimidine Derivatives Targeting COXs and iNOS Enzymes; Design, Synthesis and Biological Evaluation as Potential Anti-Inflammatory Agents

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European Journal of Pharmaceutical Sciences, 62: 197-211 (2014) IF: 3.005

A novel set of 4-substituted-1-phenyl-pyrazolo[3,4-d]pyrimidine and 5-substituted-1-phenyl-pyrazolo[3,4-d]pyrimidin-4-one derivatives were synthesized and evaluated as potential antiinflammatory agents.

The newly prepared compounds were assessed through the examination of their in vitro inhibition of four targets; cyclooxygenases subtypes (COX-1 and COX-2), inducible nitric oxide synthase (iNOS) and nuclear factor kappa B (NF-jB). Compounds 8a, 10c and 13c were the most potent and selective ligands against COX-2 with inhibition percentages of 79.6%, 78.7% and 78.9% at a concentration of 2 IM respectively, while compound 13c significantly inhibited both COX subtypes.

On the other hand, fourteen compounds showed high iNOS inhibitory activities with IC50 values in the range of 0.22–8.5 lMwhere the urea derivative 11 was the most active compound with IC50 value of 0.22 lM. Most of the tested compounds were found to be devoid of inhibitory activity against NF-kB. Moreover, almost all compounds were not cytotoxic, (up to 25 lg/ml), against a panel of normal and cancer cell lines.

The in silico docking results were in agreement with the in vitro inhibitory activities against COXs and iNOS enzymes. The results of in vivo anti-inflammatory and antinociceptive studies were consistent with that of in vitro studies which confirmed that compounds 8a, 10c and 13c have significant anti-inflammatory and analgesic activities comparable to that of the control, ketorolac. Taken together, dual inhibition of COXs and iNOS with novel pyrazolopyrimidine derivatives is a valid strategy for the development of anti-inflammatory/analgesic agents with the probability of fewer side effects.

Keywords: Anti-Inflammatory, Analgesic, Cox, Inos, Nf-Kb, Pyrazolopyrimidines.

931. Carbonic Anhydrase Inhibitors: Synthesis, Molecular Docking, Cytotoxic and Inhibition of the Human Carbonic Anhydrase Isoforms I, Ii, Ix, Xii With Novel Benzenesulfonamides Incorporating Pyrrole, Pyrrolopyrimidine and Fused Pyrrolopyrimidine Moieties

Mostafa M. Ghorab, Mansour S. Alsaid, Mariangela Ceruso, Yassin M. Nissan and Claudiu T. Supuran

Bioorganic and Medicinal Chemistry, 22: 3684-3695 (2014) IF: 2.951

А series of novel pyrrolopyrimidines, pyrroles, pyrazolopyrrolopyrimidine, triazolopyrrolopyrimidines, tetrazolopyrrolopyrimidine, triazinopyrrolopyrimidines and pyrrolopyrimidotriazepines bearing the biologically active benzenesulfonamide moiety were synthesized by using pyrrole-oamino-carbonitrile as key intermediate. All the synthesized compounds were evaluated for their in vitro carbonic anhydrase (CA, EC 4.2.1.1) inhibitory effects against the human (h) isoforms hCA I, II, IX and XII. Among the tested derivatives, compounds 16, 18 and 20-24 showed potent activity as inhibitors for the tumor associated transmembrane isoforms (hCA IX and XII) in the nanomolar and subnanomolar range, with high selectivity. All compounds underwent cytotoxic activity assays on human breast cancer cell line (MCF-7) showing effective activity, comparable to that of the clinically used drug doxorubicin.

Keywords: Pyrrolopyrimidines, Sulfonamide, Cytotoxic Activity, Carbonic Anhydrase Inhibitors, Molecular Docking.

932. Synchronized Separation of Seven Medications Representing Most Commonly Prescribed Antihypertensive Classes By Using RP-LC: Applied To Analysis in Their Combined Formulations

Waleed Ebeid, Ehab F Elkady, Ehab F Elkady, Asmaa Ahmed El-Zaher, Ramzia El-Bagary and Gabor Patonay

Journal of Separation Science, 37: 748-757 (2014) IF: 2.594

An RP-HPLC method was developed for the simultaneous determination of the diuretic, hydrochlorothiazide, along with six representing the commonly drugs most prescribed antihypertensive pharmacological classes such as atenolol, a selective $\beta 1$ blocker, amlodipine besylate, a calcium channel blocker, moexipril hydrochloride, an angiotensin-convertingenzyme (ACE) inhibitor, valsartan and candesartan cilexetil which are angiotensin II receptor blockers and aliskiren hemifumarate, a renin inhibitor, using irbesartan as an internal standard. The chromatographic separation was achieved using acetonitrile: sodium phosphate dibasic buffer (0.02 M, pH 5.5) at a flow rate of 1 mL min(-1) in gradient elution mode at ambient temperature on a stationary phase composed of Eclipse XDB-C18 $(4.6 \times 150 \text{ mm}, 5 \text{ }\mu\text{m})$ column. UV detection was carried out at 220 nm. The method was validated according to ICH guidelines. Linearity, accuracy and precision were satisfactory over the concentration ranges of 2-40 µg mL(-1) for hydrochlorothiazide and candesartan cilexetil, 20-200, 10-160, 5-40, 20-250 and 5-50 µg mL(-1) for atenolol, valsartan, moexipril hydrochloride, aliskiren hemifumarate and amlodipine besylate, respectively. The method was successfully applied for the determination of each of the studied medications in their combined formulations with hydrochlorothiazide. The developed method is suitable for the quality control and routine analysis of the cited drugs in their

pharmaceutical dosage forms. This article is protected by copyright. All rights reserved.

Keywords: Antihypertensive Medications ; Pharmaceuticals ;Liquid Chromatography; Simultaneous; Validation.

933. Anticonvulsant Profiles of Certain New 6-Aryl-9-Substituted- 6,9-Diazaspiro-[4.5]Decane-8,10-Diones and 1-Aryl-4-Substituted- 1,4-Diazaspiro[5.5]Undecane-3,5-Diones

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International Journal of Molecular Sciences, 15: 16911-16935 (2014) IF: 2.339

Synthesis and anticonvulsant potential of certain new 6-aryl-9substituted-6,9-diazaspiro[4.5]decane-8,10-diones (6a-l) and 1aryl-4-substituted-1,4-diazaspiro[5.5] undecane-3,5-diones (6mx) are reported. The intermediates 1-[(aryl)(cyanomethyl)amino] cycloalkanecarboxamides (3a-f) were prepared via adopting Strecker synthesis on the proper cycloalkanone followed by partial hydrolysis of the obtained nitrile functionality and subsequent N-cyanomethylation. Compounds 3a-f were subjected to complete nitrile hydrolysis to give the respective carboxylic acid derivatives 4a-f which were cyclized under mild conditions to give the spiro compounds 5a-f. Ultimately, compounds 5a-f were alkylated or aralkylated to give the target compounds 6a-i and 6m-u. On the other hand, compounds 6j-l and 6v-x were synthesized from the intermediates 5a-f through alkylation, dehydration and finally tetrazole ring formation. Anticonvulsant screening of the target compounds 6a-x revealed that compound 6g showed an ED₅₀ of 0.0043 mmol/kg in the scPTZ screen, being about 14 and 214 fold more potent than the reference drugs, Phenobarbital (ED₅₀ = 0.06 mmol/kg) and Ethosuximide (ED₅₀ = 0.92 mmol/kg), respectively. Compound 6e exhibited an ED50 of 0.019 mmol/kg, being about 1.8 fold more potent than that of the reference drug, Diphenylhydantoin (ED₅₀ = 0.034 mmol/kg) in the MES screen. Interestingly, all the test compounds 6a-x did not show any minimal motor impairment at the maximum administered dose in the neurotoxicity screen.

Keywords: Cycloalkanones; Strecker Synthesis; Alkylation; Spiro Compounds; Tetrazole; Anticonvulsant.

934. Synthesis, Docking and Biological Activities of Novel Hybrids Celecoxib and Anthraquinone Analogs as Potent Cytotoxic Agents

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International Journal of Molecular Sciences, 15: 22580-22603 (2014) IF: 2.339

Herein, novel hybrid compounds of celecoxib and 2aminoanthraquinone derivatives have been synthesized using condensation reactions of celecoxib with 2-aminoanthraquinone derivatives or 2-aminoanthraquinon with celecoxib derivatives. Celecoxib was reacted with different acid chlorides, 2-chloroethyl isocyanate and bis (2-chloroethyl) amine hydrochloride. These intermediates were then reacted with 2-aminoanthraquinone. Also the same different acid chlorides and 2-chloroethyl isocyanate were reacted with 2-aminoanthraquinone and the resulting intermediates were reacted with celecoxib to give isomers for the previous compounds. The antitumor activities against hepatic carcinoma tumor cell line (HEPG2) have been investigated in vitro, and all these compounds showed promising activities, especially compound 3c, 7, and12. Flexible docking studies involving AutoDock 4.2 was investigated to identify the potential binding affinities and the mode of interaction of the hybrid compounds into two protein tyrosine kinases namely, SRC (Pp60v-src) and platelet-derived growth factor receptor, PDGFR (c-Kit). The compounds in this study have a preferential affinity for the c-Kit PDGFR PTK over the non-receptor tyrosine kinase SRC (Pp60v-src).

Keywords: Antitumor; Anthraquinone; Celecoxib; Hepg2; Docking; Protein kinase activities.

935. Simultaneous Determination of Sildenafil Citrate and Some Nitric Oxide Releasing Drugs in Human Plasma Using Uplc Ms/Ms

Ramzia El-Bagary, Hassan M.E. Azzazy, Ehab F. ElKady and Faten Farouk

Clinical Biochemistry, 47: 654-656 (2014) IF: 2.229

Objective: The inadvertent combination of sildenafil (SLD) and nitric oxide releasing compounds (NRC) may cause a life threatening hypotension and conversion of coital angina into an irreversible one. The aimof this study was to develop and validate a UPLC MS/MS method for the simultaneous quantitative analysis of SLD, nicorandil (NRD), and ARG in human plasma to determine the safety margins for drug combinations.

Design and Method: Chromatographic elution was achieved in 4 min using gradient elution and an injection volume of 10 μ L. Electro-spray positive ionization (ESI+ve) detection and multiple-reaction monitoring mode (MRM) were used for detection.

Results: The method was found to be linear (10–900 ng/mL for SLD and NRD while 1–30 μ g/mL for ARG), accurate and precise (99.35 ± 1.58, 99.62 ± 1.13, and 100.04 ± 1.22% for SLD, NRD and ARG; respectively) and met all other validation requirements. **Conclusion**: The developed UPLC MS/MS method is suitable for fast, sensitive, accurate and simultaneous determinations of SLD, NRD, and ARG in plasma.

Keywords: Drug interactions; LC–MS/MS; Nicorandil; Sildenafil citrate; l-Arginine.

936. Molecular Design and Synthesis of 1,4-Disubstituted Piperazines as A1-Adrenergic Receptor Blockers

Dalal A. Abou El-Ella, Mohammed M. Hussein, Rabah A.T. Serya, Rana M. Abdel Naby Ahmed M. Al-Abd, Dalia O. Saleh, Wafaa I. El-Eraky and Khaled A.M. Abouzid

Bioorganic Chemistry, 54: 21-30 (2014) IF: 2.141

A new series of 4,5,6,7-tetrahydrothieno[2,3-c]pyridine-3carboxylic acid amide and 3,5,6,8-tetrahydropyrido [4',3':4,5]thieno[2,3-d]pyrimidin-4-one derivatives were designed, synthesized, their binding and functional properties as a1adrenoreceptors blockers were evaluated. A new validated a1adrenoreceptor blocker pharmacophore model (hypothesis) was generated using Discovery Studio 2.5. The compare-fit study for the designed molecules with the generated hypothesis was fulfilled and several compounds showed significant high fit values. Compounds IVa-c, VIIa-d, VIIIa-c, Xa-c, XIa-d have shown blocking activity ranging from 46.73% up to 94.74% compared to 99.17% for prazosin.

Keywords: Phenylpiperazines; Pyridothienopyrimidine; A1-Adrenoreceptors Blockers.

937. New Series of 6-Substituted Coumarin Derivatives as Effective Factor Xainhibitors: Synthesis, in Vivo Antithrombotic Evaluation and Molecular Docking

Kamelia M. Amin, Nagwa M. Abdel Gawad, Doaa E. Abdel Rahman and Mohamed K.M. El Ashry

Bioorganic Chemistry, 52: 31-43 (2014) IF: 2.141

Despite recent progress in antithrombotic therapy, there's still an unmet medical need for safe and orally available anticoagulants. Encouraged by the marked antithrombotic and anticoagulant activities of some coumarin derivatives, twenty-three new N-coumarinyl-4-amidinobenzamides 4a–f and 6-heterocycle substituted coumarin derivatives 5, 6a,b, 10a–e, 12a–e and 14a–d were synthesized and evaluated for their in vivo antithrombotic activity.

The most active congeners were the unsubstituted amidine 4a (36.5 s), coumarinyl oxadiazole 5 (42.3 s), bis coumarinyl oxadiazole 6b (37.8 s) and coumarinyl pyrazole 10b (38.5 s) that presented prothrombin time (PT) values comparable to the reference drug warfarin (42.3 s). Furthermore, docking studies were undertaken to gain insight into the possible binding mode of these compounds with the coagulation factor Xa (FXa) binding site.

Keywords: Coumarin.

938. Synthesis, Docking and in Vitro Anticancer Evaluation of Some New Benzopyrone Derivatives

Sohair L. El-Ansary, Mohammed M. Hussein, Doaa E. Abdel Rahman and Lina M.A. Abdel Ghany

Bioorganic Chemistry, 53: 50-66 (2014) IF: 2.141

The synthesis of some new 3-alkyl-7-hydroxy-4-methyl-8substituted-1H-benzopyran-2-ones,6-alkyl-7-methyl-2-substituted amino-5H-pyrano[6,5-e] benzoxazol-5-ones, 7-alkyl-8-methyl-3substituted-2,6-dihydropyrano[6,5-f]-1,4-benzoxazin-6-ones, 7,8disubstituted-3-ethyl-4-methyl-1H-benzopyran-2-ones and 3alkyl-4-methyl-7-substituted-1H-benzopyran-2-ones were described. Fourteen compounds were selected by National Cancer Institute (NCI). Bethesda, and evaluated for their in vitro anticancer activity in the full NCI 60 cell lines panel assay by a single dose test. Compounds 4a, 18a, 18b and 23a were found to be broad-spectrum antitumors showing effectiveness toward numerous cell lines that belong to different tumor subpanels. Furthermore, docking studies were undertaken to gain insight into the possible binding mode of these compounds with the binding site of the casein kinase II (CK2) enzyme which is involved in cell survival and proliferation through a number of downstream effectors.

Keywords: Benzopyrones; Anticancer; Docking Studies; Casein Kinase Ii.

939. Synthesis, Cytotoxic Activity and 2D-Qsar Study of Some Imidazoquinazoline Derivatives

Hanan Georgey

Molecules, 19: 3777-3792 (2014) IF: 2.095

A novel series of 4-substituted amino-7,8-dimethoxy-1phenylimidazo[1,5-a]quinazolin-5(4H)-one derivatives was designed, synthesized and tested for their antitumor activity against a human mammary carcinoma cell line(MCF7). Compound 5a was found to be the most active derivative. Physico-chemical parameters were also determined and revealed that most of the compounds obeyed the "rule of five" properties with good absorption percentages. 2D-QSAR studies revealed a well predictive and statistically significant and cross validated QSAR model that helps to explore some expectedly potent compounds.

Keywords: Imidazolinone; Imidazo[1,5-A]Quinazoline; Antitumor Activity; Lipinski'S Parameters; 2D-Qsar.

940. Steady-State and Synchronous Spectrofuorimetric Methods for Simultaneous Determination of Aliskiren Hemifumarate and Amlodipine Besylate in Dosage Forms

Walid M. Ebeid, Ehab F. Elkady, Asmaa A. El-Zaher, Ramzia I. El-Bagary and Gabor Patonay

Luminescence, 29: 878-883 (2014) IF: 1.675

Aliskiren hemifumarate (ALS) and amlodipine besylate (AML) were simultaneously determined by two different spectrofluorimetric techniques. The first technique depends on direct measurement of the steady-state fluorescence intensities of ALS and AML at 313 nm and 452 nm upon excitation at 290 and 375 nm, respectively, in a solvent composed of methanol and water (10: 90, v/v). The second technique utilizes synchronous fluorimetric quantitative screening of the emission spectra of ALS and AML at 272 and 366 nm, respectively using $\Delta\lambda$ of 97 nm. Effects of different solvents and surfactants on relative fluorescence intensity were studied. The method was validated according to ICH guidelines. Linearity, accuracy and precision were found to be satisfactory in both techniques over the concentration ranges of 1-15 and 0.4-4 µg/mL for ALS and AML, respectively. In the first technique, limit of detection and limit of quantification were estimated and found to be 0.256 and $0.776\,\mu g/mL$ for ALS as well as 0.067 and $0.204\,\mu g/mL$ for AML, respectively. Also, limit of detection and limit of quantification were calculated in the synchronous method and found to be 0.293 and 0.887 μ g/mL for ALS as well as 0.034 and 0.103 µg/mL for AML, respectively. The methods were successfully applied for the determination of the two drugs in their co-formulated tablets. The results were compared statistically with reference methods and no significant difference was found. The developed methods are rapid, sensitive, inexpensive and accurate for the quality control and routine analysis of the cited drugs in bulk and in pharmaceutical preparations without pre-separation.

Keywords: Spectrofluorimetry; Synchronous; Aliskiren hemifumarate; Amlodipine besylate; Pharmaceutical preparations; Validation.

941. Synthesis, Biological Evaluation, and Docking Studies of New 2-Furylbenzimidazoles as Anti-Angiogenic Agents: Part II

Ahmed Temirak, Yasser M. Shaker, Fatma A. F. Ragab, Mamdouh M. Ali, Salwa M. Soliman, Jeremie Mortier, Gerhard Wolber, Hamed I. Ali and Hoda I. El Diwani

Arch. Pharm. Chem. Life Sci, 347: 1-14 (2014) IF: 1.396

The 2-(5-methyl-2-furyl)-1H-benzimidazole moiety has shown promising activity against vascular endothelial growth factor (VEGF)-induced angiogenesis. In part I of this study, we have synthesized new analogs and tested their anti-angiogenic potentials. Here, we continue our previous study with different new analogs. Some compounds show promising cytotoxic activity against the human breast cancer cell line MCF-7, with IC₅₀ in the range of 7.80-13.90µg/mL, and exhibited remarkable in vitro inhibition against VEGF in the MCF-7 cancer cell line, with 95-98% of inhibition in comparison to tamoxifen as reference (IC₅₀: 8.00µg/mL, % of inhibition= 98%). Additionally, a molecular docking study was carried out to gain insight into plausible binding modes and to understand the structure-activity relationships of the synthesized compounds.

Keywords: 2-(2-Furyl)-1H-Benzimidazoles; Angiogenesis; Cytotoxicity; Molecular Modeling; Vascular endothelial growth Factor (Vegf).

942. Design, Synthesis and in Vitro Anti-Tumor Evaluation of Novel Acrylohydrazide Thioglycosides

Galal H. Elgemeie, Nahed M. Fathy, Ayman B. Farag, Ossama M. El-Badry, Ghaneia S. Hassan, Kamelia M Amin and Fathi Halaweis

Medicinal Chemistry, 4: 400-406 (2014) IF: 1.387

A facile, convenient and high yielding synthesis of novel Acrylohydrazide thioglycosides via one-pot reaction of the potassium thiolate salts of aglycon part - prepared from readily available starting materials - with 2,3,4,6-tetra-O-acetyl- a-D-gluco- and galactopyranosyl bromides . Pharmacological evaluation of compounds 8j, 8b, 8h, 8k, 8f and 5b in vitro against (MCF-7) cell line (Breast carcinoma cell line) showing high-moderate anti-tumor activities with IC₅₀ values ranging from 3.69-14.93 (μ M), moreover molecular modeling of these compounds revealed that they have high binding affinity through hydrophobic-hydrophobic interaction and moderate selectivity through the hydrogen bond interaction with the atypical nucleotide binding pocket in the amino terminus of Hsp90. **Keywords**: Acrylohydrazide; Anti; Tumor activity; Hsp90

943. Benzofuran–Morpholinomethyl–Pyrazoline Hybrids as A New Class of Vasorelaxant Agents: Synthesis and Quantitative Structure–Activity Relationship Study

Ghaneya Sayed Hassan, Doaa Ezzat Abdel Rahman, Dalia Osama Saleh and Gehad Abdel Raheem Abdel Jaleel

Chem. Pharm. Bull, 62: 1238-1251 (2014) IF: 1.375

A variety of benzofuran-morpholinomethyl-pyrazoline hybrids 4a-e, 5a-e and 6a-j were synthesized via reaction of α,β unsaturated carbonyl compounds 3a-e with hydrazine hydrate, semicarbazide or thiosemicarbazide. Applying Mannich reaction to 5-(5-aryl-4,5-dihydro-1H-pyrazol-3-yl)-4-methoxybenzofuran-6-ol 7a-e with morpholine hydrochloride and paraformaldehyde afforded two positional isomers 7-morpholinomethyl derivatives 4a-e and N-morpholinomethyl derivatives 8a-e. All the synthesized compounds showed significant vasodilatation properties using isolated thoracic aortic rings of rats precontracted with norepinephrine hydrochloride standard technique. Compounds 3d, 3e, 5a, 5b, 5c, 6b, 6c, 6f, 6h and 6i exhibited activity (IC50 0.3185-0.4577 mM) superior to prazocin (IC50 0.487 mM), while 5d, 6j and 8c showed comparable activity (IC50 0.4789-0.4951 mM). QSAR study revealed a correlation between the observed vasorelaxant activities of the newly synthesized compounds and their different physicochemical parameters, especially solubility, in addition to structure connectivity and energetic quantities calculated from stored 3D conformations. ADME evaluation showed good agreement with the obtained biological results.

Keywords: Benzofuran; Morpholinomethyl; Pyrazoline; Vasorelaxant; Quantitative Structure–Activity Relationship Study.

944. Synthesis, Molecular Modeling, and Biological Evaluation of Novel Benzimidazole Derivatives As Inhibitors of Hepatitis C Virus Rna Replication

El Diwani HI, Abdel-Mohsen HT, Salama I, Ragab FA, Ramla MM, Galal SA, Abdalla MM, Abdel-Wahab A and El Demellawy MA.

Chem. Pharm. Bull, 62: 856-866 (2014) IF: 1.375

In this study, synthesis and docking studies of a series of new benzimidazole derivatives linked to substituted pyrimidines either through the methylenethio linkage or its bioisosteric methylene amino bridge were carried out. All the synthesized compounds were evaluated for their hepatitis C virus (HCV) RNA replication-inhibitory activity. Compounds 4d, 4f, and 4h were found to be more potent than VX-950 (IC50/90 of 4d=0.123/0.321, 4f=0.145/0.345, 4h=0.129/0.432, VX-950=0.20/0.45 µM, respectively) and 6d $(IC50/90=0.116/0.452 \mu M)$ displayed activity very similar to that of the standard. Compounds 4d, 4f, 4h, and 6d were potent HCV RNA replication inhibitors and are good drug candidates for further investigations.

Keywords: Synthesis; Benzimidazole; Pyrimidine; Hepatitis c Virus; Viral rna replication inhibitor.

945. Ion-Pair LC Method for Simultaneous Determination of Aliskiren Hemifumarate, Amlodipine Besylate and Hydrochlorothiazide in Pharmaceuticals

Ramzia I. El-Bagary, Gabor Patonay, Asmaa A. Elzahr, Ehab F. Elkady and Walid A. Ebeid

Chromatographia, 77: 257-264 (2014) IF: 1.37

A rapid and precise LC method was developed for the simultaneous determination of aliskiren hemifumarate (ALS), amlodipine besylate (AML) and hydrochlorothiazide (HCZ) using acetonitrile:25 mM octane sulfonic acid sodium salt monohydrate in water (60:40 v/v) as the mobile phase. The flow rate was maintained at 1.2 mL min⁻¹ on a stationary phase composed of Supelco, Discovery[®] HS (C18) column (25 cm × 4.6 mm, 5 µm). Isocratic elution was applied throughout the analysis. Detection was carried out at λ_{max} (232 nm) at ambient temperature. The method was validated according to ICH guidelines. Linearity, accuracy and precision were satisfactory over the concentration ranges of 32–320, 2–44 and 4–64 µg mL⁻¹ for ALS, AML and HCZ, respectively. LOD and LOQ were estimated and found to be 0.855 and 2.951 µg mL⁻¹, respectively, for AML as well as 0.052 and 0.174 µg mL⁻¹, respectively, for HCZ. The method was successfully applied for the determination of the three drugs in

their co-formulated tablets. The results were compared statistically with reference methods and no significant difference was found. The developed method is specific and accurate for the quality control and routine analysis of the cited drugs in pharmaceutical preparations.

Keywords: Column; Liquid; Chromatography ; Aliskiren Hemifumarate ; Amlodipine Besylate ; Hydrochlorothiazide ; Pharmaceuticals.

946. Field-Amplified Sample Stacking β-Cyclodextrin Modified Capillary Electrophoresis for Quantitative Determination of Diastereomeric Saponins

Emara S, Masujima T, Zarad W, Mohamed K, Kamal M, Fouad M and EL-Bagary R

Journal Of Chromatographic Science, 52: 1308-1316 (2014) IF: 1.026

Successful simultaneous diastereomeric separation and sensitive determination of two pairs of triterpenoidal saponins have been achieved by capillary electrophoresis (CE) using β-cyclodextrin $(\beta$ -CD) as a stereoselective agent to cooperate with borate complexation. A usual technique for isolation and group separation of saponins was developed as an appropriate purification step prior to the determination of individual saponins by CE. Sovasaponin I (S1:), azukisaponin V (S2:), bersimoside I (S3:) and bersimoside II (S4:) could be well separated within 14 min in a fused-silica capillary (60 cm long to the detector with an additional 10 cm to the cathode; 75 µm i.d.). The background electrolyte was borate buffer (80 mM, pH 10), containing 24 mM β -CD. The separation voltage was 14 kV with a detection wavelength of 195 nm. The sample was electrokinetically injected using a voltage of 16 kV for 12 s. Methanol (70%) was used as the diluent for field-amplified sample stacking after hydrodynamic injection of short water plug (5 cm, 4 s). The method was partially validated for linearity, repeatability, reproducibility, limits of detection and limits of quantification. The correlation coefficients of the calibration curves were all >0.998, and the recoveries were from 98.23 to 96.21%.

Keywords: Capillary; Electrophoresis; Triterpenoidal; Saponins; B-Cyclodextrin.

947. Design, Synthesis and Potential Anti-Proliferative Activity of Some Novel 4-Aminoquinoline Derivatives

Mostafa m. ghorab mansour s. al-said and reem k. arafa

Acta Pharm, 64: 285-297 (2014) IF: 1.025

Novel nineteen compounds based on a 4-aminoquinoline scaffold were designed and synthesized as potential antiproliferative agents. The new compounds were N-substituted at the 4-position by aryl or heteroaryl (1-9), quinolin- 3-yl (10), 2-methylquinolin-3-yl (11), thiazol-2-yl (12), and dapsone moieties (13, 14 and 18). Bis-compounds 15, 16 and 19 were also synthesized to assess their biological activity. All the newly synthesized comounds were tested for in vitro antiproliferative activity against the MCF-7 breast cancer cell line. Seventeen of the novel compounds showed higher activity than the reference drug doxorubicin. The corresponding 7-(trifluoromethyl)-N-(3,4,5-trimethoxyphenyl) quinolin-4amine 1. N-(7-(trifluoromethyl)quinolin-4yl)quinolin-3amine (10), 2-methyl-N-(7-trifluoromethyl)quinolin-4-yl) quinolin-3-amine (11) and N-(4-(4aminophenylsulfonyl) phenyl)-7-chloroquinolin-4-amine (13) were almost twice to thrice as potent as doxorubicin. Biological screening of the tested compounds could offer an encouraging framework in this field that may lead to the discovery of potent anticancer agents.

Keywords: 4-Aminoquinolines; Bis-Compounds; Dapsone; Antiproliferative Activity.

948. Spectrofluorimetric Determination of Gemifloxacin Mesylate and Linezolid in Pharmaceutical Formulations: Application of Quinone-Based Fluorophores and Enhanced Native Fluorescence

Bahia Abbas Moussa, Marianne Alphonse, Mahrouse Mahmoud Ali Hassan and Michael Gamal Fawzy

Acta Pharmaceutica, 64: 15-28 (2014) IF: 1.025

Quinone-based fluorophores and enhanced native fluorescence techniques were applied for a fast quantitative analysis of gemifloxacin mesylate (GEM) and linezolid (LIN) in pharmaceutical formulations. For this purpose, three sensitive, accurate and precise spectrofluorimetric methods were developed. GEM, as an n-electron donor, reacts with 7,7,8,8tetracyanoquinodimethane (method A) and 2,5-dichloro-3,6dihydroxy-p-benzoquinone (method B) as p-electron acceptors, forming charge transfer complexes that exhibit high fluorescence intensity at 441 and 390 nm upon excitation at 260 and 339 nm, respectively.

Method C depends on measurement of enhanced native fluorescence of LIN in phosphate buffer (pH 5) at 380 nm upon excitation at 260 nm. Experimental factors affecting fluorescence intensity were optimized. Linearity was obtained over concentration ranges 50–500, 10–60 and 20–400 ng mL–1 for methods A, B and C, respectively.

The developed methods were validated and successfully applied for determination of the cited drugs in tablets.

Keywords: Gemifloxacin mesylate; Linezolid; 7,7,8,8-Tetracyanoquinodimethane; 2,5-Dichloro-3,6-Dihydroxy-P-Ben--Zoquinone, Fluorimetry; Charge transfer complex.

949. Novel Quinazoline Derivatives Bearing A Sulfapyridine Moiety As Anticancer and Radiosensitizing Agents

Mostafa M. Ghorab, Fatma A. Ragab, Helmi I. Heiba and Ahmad A. Bayomi

Journal of Heterocyclic Chemistry, 51 (S1): E255–E262 (2014) IF: 0.873

Quinazoline derivatives posses many types of biological activities and have recently been reported to show substantial antitumor activity in vitro and/or in vivo. There is a variety of mechanisms for their anticancer activity. The present work reports the possible utility of methyl anthranilate in the synthesis of some new quinazoline derivatives, bearing a substituted sulfonamide moiety. All the newly synthesized compounds were evaluated for their in vitro anticancer activity against human liver cancer cell line, using doxorubicin as a reference drug. In addition, the most active compounds 14 and 15 were selected and evaluated for their ability to enhance the cell killing effect of γ -radiation. **Keywords**: Quinazoline; Sulfapyridine; Radiosensitizing.

950. Synthesis and Molecular Docking of Some Novel Anticancer Sulfonamides Carrying A Biologically Active Pyrrole and Pyrrolopyrimidine Moieties

Mostafa M. Ghorab, Mansour S. Alsaid and Yassin M. Nissan

Acta Pol Pharm, 71 (4): 603-614 (2014) IF: 0.693

A novel series of pyrroles and pyrrolopyrimdines carrying a biologically active sulfonamide moiety have been synthesized. The structures were confirmed by elemental analyses and spectral data. All the target compounds were subjected to in vitro cytotoxic screening on breast cancer cell line (MCF-7). Most of the synthesized compounds showed good activity as cytotoxic agents with better IC50 than doxorubicin as a reference drug. In order to suggest a mechanism of action for their activity, molecular docking on the active site of human c-Src was performed for all synthesized compounds.

Keywords: Sulfonamide Derivatives, Anticancer Activity.

951. Development and Validation of A Stability-Indicating Rp-Lc Method for the Determination of Sitagliptin and Simvastatin in the Presence of Their Degradation Products in Bulk Drug Mixture and Combined Pharmaceutical Preparations

Ramzia I. El-Bagary , Ehab F. Elkady , Marwa A. Fouad , Zeinab Abdelaziz El-Sherif , Ahmed M. Kadry and Bassam M. Ayoub

Journal Of Liquid Chromatography & Related Technologies, 37: 1895-1908 (2014) IF: 0.638

A simple, selective, and precise stability-indicating reversedphase liquid chromatographic method has been developed and validated for the determination of the first Food and Drug Administration (FDA) approved fixed-dose combination for both diabetes type II and high cholesterol; sitagliptin phosphate monohydrate (SIT); and simvastatin (SIM) in the presence of acid and alkali degradation products of SIT, and the hydrolytic degradation product of SIM.

The method was based on gradient elution on a reversed phase C8 column (250 mm \times 4.6 mm, 5 µm)—Zorbax SB using a mobile phase consisting of 0.01 M potassium dihydrogen orthophosphate (pH = 2.6) and acetonitrile. Quantitation was achieved using UV detection at 210 nm for SIT and its degradation products, while quantitation of SIM and its degradation product was achieved using UV detection at 240 nm. Linearity, accuracy, and precision were found to be acceptable over the concentration ranges of 0.5–200 µg mL-1 and 0.5–100 µg mL-1 for SIT and SIM, respectively. Limits of detection and quantitation for SIT were found to be 5.65 ng and 17.12 ng, respectively, while for SIM were found to be 2.72 ng and 8.25 ng, respectively. The proposed method was successfully applied to the determination of the cited drugs in bulk and in their combined pharmaceutical preparations.

Keywords: Degradation Products, Pharmaceutical Preparation, Reversed Phase Liquid Chromatography, Simvastatin, Sitagliptin, Stability-Indicating Assay.

952. Forced Degradation Study and Validated Stability-Indicating RP–LC Method for Determination of Nilotinib in Bulk and Capsules

Marwa Ahmed Fouad Said Elfeky

Anticancer;

Acta Chromatographica, 26: 637-647 (2014) IF: 0.485

A simple, selective, and precise stability-indicating reversedphase liquid chromatographic method was developed and validated for the determination of nilotinib. Nilotinib was subjected to acid and alkali hydrolysis, oxidation, thermal, and photo-degradation. The degradation products were well separated from the pure drug. The method was based on isocratic elution of nilotinib and its degradation products on reversed phase C18 column (100 mm \times 4.6 mm, 3.5 $\mu m)$ — Zorbax Eclipse Plus using a mobile phase consisting of 10 mM KH2PO4:acetonitrile (54.5:45.5%, v/v) at a flow rate of 1 mL min-1. Quantitation was achieved with UV detection at 265 nm. Linearity, accuracy and precision were found to be acceptable over the concentration range of 0.1–80 µg mL-1. The drug was found to be susceptible to acid and base hydrolysis but resistant to oxidation, dry heat degradation, and photodegradation. The proposed method was successfully applied to the determination of nilotinib in bulk and in its pharmaceutical preparation.

Keywords: Nilotinib; Reversed;Phase Liquid chromatography; Stability;Indicating Assay; Capsules; Anticancer drugs.

Dept. of Pharmaceutical Organic Chemistry

953. Recent Progress in the Identification of Braf Inhibitors As Anti-Cancer Agents

Hala Bakr Ali El-Nassan

European Journal Of Medicinal Chemistry, 72: 170-205 (2014) IF: 3.432

The "RAS/BRAF/MEK/ERK" pathway has been associated with human cancers due to the frequent oncogenic mutations identified in its members. In particular, BRAF is mutated at high frequency in many cancers especially melanoma. This mutation leads to activation of the MAPK signaling pathway, inducing uncontrolled cell proliferation, and facilitating malignant transformation. All these facts make BRAF an ideal target for antitumor therapeutic development. Many BRAF inhibitors have been discovered during the last decade and most of them exhibit potent antitumor activity especially on tumors that harbor BRAF^{V600E} mutations. Some of these compounds have entered clinical trials and displayed encouraged results. The present review highlights the progress in identification and development of BRAF inhibitors especially during the last five years.

Keywords: BRAF; Inhibitors; Anti-cancer agents.

954. Synthesis and Evaluation of 4-Anilinoquinazoline Bioisosteres as Potential Anti-Breast Cancer Agents

Afaf K. El-Ansary, Aliaa M. Kamal and Mokhtar AbdHafiz Al-Ghorafi

European Journal of Medicinal Chemistry, 86: 202-210 (2014) IF: 3.432

Based on one of the four major categories of scaffold hopping theory namely hetrocycle replacements, a series of 5-

arylthieno[2,3-d]pyrimidines had been prepared and evaluated as anti-breast cancer agents. Optimization by combination of different pharmacophores with the thienopyrimidine scaffold led to discovery of biologically active compounds.

Keywords: Breast Cancer Cytotoxic Activity Scaffold Hopping Synthesis Thienopyrimidines

955. Synthesis of Novel 1,2,4-Triazoles, Triazolothiadiazines and Triazolothiadiazoles as Potential Anticancer Agents

Mona M. Kamel and Nadia Y. Megally Abdo

European Journal of Medicinal Chemistry, 86: 75-80 (2014) IF: 3.432

A series of new N-substituted-3-mercapto-1,2,4-triazoles (3a,b and 7aed), triazolo[1,3,4]thiadiazines (5a,b) and triazolo[1,3,4]thiadiazoles (4aed, 6 and 8aed) have been synthesized starting from isonicotinic acid hydrazide.

The structure of the newly synthesized compounds was confirmed on the basis of their spectral data and elemental analyses. All the compounds were screened for their in vitro anticancer activity against 6 human cancer cell lines and normal fibroblasts. Seven of the tested compounds (3a,b, 4c, 5a and 8bed) exhibited significant cytotoxicity against most cell lines. Among these derivatives compound 4c exhibited equivalent cytotoxic effect to the standard CHS 828 against gastric cancer cell line (IC₅₀ ¼ 25 nM). Normal fibroblast cells (WI38) were affected to a much lesser extent (IC₅₀ > 10,000 nM).

Keywords: Isonicotinic Acid Hydrazide Mercaptotriazoles Triazolothiadiazoles Triazolothiadiazines Anticancer Activity.

956. Synthesis and Biological Evaluation of New Pyrazolone–Pyridazine Conjugates as Anti-Inflammatory and Analgesic Agents

Nadia Abdalla Khalil, Eman Mohamed Ahmed, Khaled Omar Mohamed, Yassin Mohammed Nissan and Sawsan Abo-Bakr Zaitone

Bioorganic & Medicinal Chemistry, 22: 2080-2089 (2014) IF: 2.951

A new series of pyrazolone–pyridazine conjugates 3 and 4a–l were synthesized and characterized by spectroscopic means and elemental analyses. All compounds were tested in vivo for their anti-inflammatory and analgesic properties against diclofenac, as reference compound.

The synthesized compounds were also evaluated for their ability to inhibit the production of certain inflammatory cytokines such as TNF-a and IL-6 in serum samples. The ulcerogenic potential of the synthesized compounds was also determined. IC50 values for inhibition of COX-1 and COX-2 enzymes were investigated in vitro for the most active candidates. Molecular docking was performed on the active site of COX-2 to predict their mode of binding to the amino acids. Among the synthesized derivatives, compounds 4c and 4e showed good analgesic and antiinflammatory activities with lower ulcer index than the reference drug.

Keywords: Pyrazolone; Pyridazine; Analgesic; Anti-Inflammatory.

957. Synthesis and Structure Activity Relationship Study of *N*-Substituted 3,5-Diarylidenepiperidin- 4-Ones as Potential Antitumor Agents

Hala Bakr El-Nassan

Anti-Cancer Agent In Medicinal Chemistry, 14: 319-330 (2014) IF: 2.939

A new series of *N*-substituted diarylidenepiperidin-4-ones was synthesized and screened for their possible anticancer activity at the NCI Developmental Therapeutic Program. Almost all the synthesized compounds showed more potent antiproliferative activity than curcumin. The most active compound in this study was 3,5-bis(4-bromobenzylidene)-1-propanoylpiperidin-4-one (**8a**) with MGMID GI50, TGI, and LC50 values of 0.35, 1.62 and 9.12 μ M, respectively. Compound **8a** displayed broad spectrum antiproliferative activity with GI50 values below 1 μ M in 81% of the tested cell lines and was found to be two folds more potent than EF-24. A detailed study of the structure activity relationship of the *N*-substitution was also described.

Keywords: Curcumin derivatives; Antitumor; Structure-activity relationship; 3,5-diarylidene-4-piperidones.

958. Synthesis, Molecular Docking, and Biological Evaluation of Some Novel Hydrazones and Pyrazole Derivatives as Anti-Inflammatory Agents

Khaled O. Mohammed and Yassin M. Nissan

Chemical Biology & Drug Design, 84: 473-488 (2014) IF: 2.507

2-Hydrazinyl-N-(4-sulfamoylphenyl)acetamide 3 was the key intermediate for the synthesis of novel hydrazones 4–10 and pyrazole derivatives 11–17. All compounds were tested for their in vivo anti-inflammatory activity and their ability to inhibit the production of PGE2 in serum samples of rats. IC_{50} values for the most active compounds for inhibition of COX-1 and COX-2 enzymes were determined in vitro, and they were also tested for their ulcerogenic effect.

Molecular docking was performed on the active site of COX-2 to predict their mode of binding to the amino acids. Most of the synthesized compounds showed good anti-inflammatory activity especially compounds 3, 4, 8, 9, 15, and 17 which showed better activity than diclofenac as the reference drug. Compounds 3, 8, 9, 13, and 15–17 were less ulcerogenic than indomethacine as the reference drug. Most of the synthesized compounds interacted with Tyr 385 and Ser 530 in molecular docking study with additional hydrogen bond for compound 17. Compound 17 showed good selectivity index value of 11.1 for COX-1/COX-2 inhibition in vitro.

Keywords: 4-Benzenesulfonamide; Anti-Inflammatory; Hydrazone; Pyrazole.

959. Novel Tacrine Analogs as Potential Cholinesterase Inhibitors in Alzheimer'S Disease

Afaf El-Malah, Ehab M. Gedawy, Asmaa E. Kassab and Rania M. Abdel Salam

Arch. Pharm. Chem. Life Sci, 347: 96-103 (2014) IF: 1.396

Acetylcholinesterase inhibitors (AChEIs) are used for the treatment of Alzheimer's disease (AD). The increase in ACh levels ameliorates the symptoms of the disease. Tacrine is the first

clinically approved drug as AChEI used in the treatment of AD. In this paper, we synthesized new tacrine analogs to act on catalytic and peripheral sites of AChE. Their inhibitory activity was evaluated. All novel compounds except 7a showed promising results toward AChE.

Two compounds, 10b and 11b, are more potent than tacrine. Furthermore, molecular-modeling studies were performed for these two compounds to rationalize the obtained pharmacological activity. Moreover, various drug-likeness properties of the new compounds were predicted.

Keywords: Acetylcholinesterase; Alzheimer'S Disease; Drug-Likeness; Molecular-Modeling; Tacrine.

960. Synthesis and Antitumour Activity of Certain Pyrido[2,3-D] Pyrimidine and 1,8-Naphthyridine Derivatives

Afaf K. Elansary, Ashraf A. Moneer, Hanan H. Kadry and Ehab M. Gedawy

Journal of Chemical Research, 38: 147-153 (2014) IF: 0.697

In an effort to establish new candidates with improved anticancer activity, we report here the synthesis of various series of 2,4,5,7-tetrasubstituted pyrido[2,3-d]pyrimidines and their related isosteres substituted 1,8-naphthyridines.

The cytotoxic activity of the newly synthesised compounds against human breast cancer cell line, MCF7 was investigated. Most of the tested compounds exploited potent to moderate growth inhibitory activity, in particular 7-(4-chlorophenyl)-5-(3-nitrophenyl)pyrido[2,3-d]pyrimidin- 4-amine exhibited superior potency to the reference drug doxorubicin (IC50 = 7.54 and 8.48 μ M respectively).

Keywords: Synthesis, Pyrido[2,3-D]Pyrimidine, Naphthyridine, Inhibitor, Substituent Effect, Antitumour.

961. Synthesis, Biological Evaluation of Certain Pyrazolo [3,4-D]Pyrimidines as Novel Anti-Inflammatory and Analgesic Agents

Hanan H. Kadry

Medicinal Chemistry Research, 23: 5269-5281 (2014)

In the present study, a series of pyrazolo[3,4-d]pyrimidin-4(5H)ones linked at 5-position to thiazoline or thiazolidinone ring systems through imino linkage (5–8) was designed and synthesized.

The compounds were assessed for their anti-inflammatory activity and analgesic in vivo. Also, their ability to inhibit ovine COX-1/COX-2 isozymes was evaluated using in vitro cyclooxygenase (COX) inhibition assay. The newly synthesized compounds 7, 8d, and 8e showed potent anti-inflammatory and analgesic activity. Moreover, compound 7 displayed preferential COX-2 inhibitory potency (IC50 = 0.53 IM and COX- 2 selectivity index = 10.07) which is more potent than the standard drug meloxicam. Interestingly, the tested compounds

showed excellent gastrointestinal safety profile and were well tolerated by experimental animals with high safety margins than the reference drug meloxicam.

Keywords: Pyrazolo[3,4-D]Pyrimidine; Thiazolidinone; Anti-Inflammatory; Analgesic; Cox-2 Inhibition; Ulcerogenic Effect.

Dept. of Pharmaceutical Technology and Industerial Pharmacy

962. Continuous Intrajejunal Infusion of Levodopa-Carbidopa Intestinal Gel for Patients With Advanced Parkinsons Disease: A Randomised, Controlled, Double-Blind, Double-Dummy Study

C Warren Olanow, Karl Kieburtz, Per Odin, Alberto J Espay, David G Standaert, Hubert H Fernandez, Arvydas Vanagunas, Ahmed A Othman, Katherine L Widnell, Weining Z Robieson, Yili Pritchett, Krai Chatamra, Janet Benesh, Robert A Lenz and Angelo Antonini

The Lancet Neurology, 13 (2): 141-149 (2014) IF: 21.823

Background: Levodopa is the most effective therapy for Parkinson's disease, but chronic treatment is associated with the development of potentially disabling motor complications. Experimental studies suggest that motor complications are due to non-physiological, intermittent administration of the drug, and can be reduced with continuous delivery. We aimed to assess efficacy and safety of levodopa-carbidopa intestinal gel delivered continuously through an intrajejunal percutaneous tube.

Methods: In our 12-week, randomised, double-blind, doubledummy, double-titration trial, we enrolled adults (aged =30 years) with advanced Parkinson's disease and motor complications at 26 centres in Germany, New Zealand, and the USA. Eligible participants had jejunal placement of a percutaneous gastrojejunostomy tube, and were then randomly allocated (1:1) to treatment with immediate-release oral levodopa-carbidopa plus placebo intestinal gel infusion or levodopa-carbidopa intestinal gel infusion plus oral placebo. Randomisation was stratified by site, with a mixed block size of 2 or 4.

The primary endpoint was change from baseline to final visit in motor off-time. We assessed change in motor on-time without troublesome dyskinesia as a prespecified key secondary outcome. We assessed efficacy in a full-analysis set of participants with data for baseline and at least one post-baseline assessment, and imputed missing data with the last observation carried forward approach. We assessed safety in randomly allocated patients who underwent the percutaneous gastrojejunostomy procedure. This study is registered with ClinicalTrials.gov, numbers NCT00660387 and NCT0357994.

Findings: From baseline to 12 weeks in the full-analysis set, mean off-time decreased by 4.04 h (SE 0.65) for 35 patients allocated to the levodopa-carbidopa intestinal gel group compared with a decrease of 2.14 h (0.66) for 31 patients allocated to immediate-release oral levodopa-carbidopa (difference -1.91 h [95% CI -3.05 to -0.76]; p=0.0015). Mean on-time without troublesome dyskinesia increased by 4.11 h (SE 0.75) in the intestinal gel group and 2.24 h (0.76) in the immediate-release oral group (difference 1.86 [95% CI 0.56 to 3.17]; p=0.0059). In the safety analyses 35 (95%) of 37 patients allocated to the levodopa-carbidopa intestinal gel group had adverse events (five [14%] serious), as did 34 (100%) of 34 patients allocated to the immediate-release oral levodopa-carbidopa group (seven [21%] associated with serious). mainly the percutaneous gastrojejunostomy tube.

Interpretation: Continuous delivery of levodopa-carbidopa with an intestinal gel offers a promising option for control of advanced Parkinson's disease with motor complications. Benefits noted with intestinal gel delivery were of a greater magnitude than were those obtained with medical therapies to date, and our study is, to our knowledge, the first demonstration of the benefit of continuous levodopa delivery in a double-blind controlled study. **Keywords**: Levodopa; Carbidopa; Lcig; Parkinson's Disease; Intestinal Gel.

963. A Randomized Trial of the Efficacy and Safety of the H3 Antagonist Abt-288 in Cognitive Impairment Associated With Schizophrenia

George M. Haig, Earle Bain, Weining Robieson, Ahmed A. Othman, Jeffrey Baker and Robert A. Lenz

Schizophrenia Bulletin, 40 (6): 1433-1442 (2014) IF: 8.607

Introduction: ABT-288 is a highly potent histamine-3 receptor antagonist that has demonstrated pro-cognitive effects in preclinical models relevant to schizophrenia. This study evaluated the efficacy and safety of two doses of ABT-288 in the treatment of cognitive impairment associated with schizophrenia.

Methods: A randomized, double-blind, placebo-controlled, parallel-group 12-week study was conducted at 23 centers in the United States. Clinically stable subjects with schizophrenia were randomized in an equal ratio to ABT-288 10mg, ABT-288 25mg, or placebo once daily while continuing their antipsychotic regimen. The primary efficacy measure was the change from baseline to day 84 evaluation on the Measurement and Treatment Research to Improve Cognition in Schizophrenia Consensus Cognitive Battery (MCCB) composite score vs placebo. Secondary measures included cognitive functioning and psychiatric scales. Safety assessments and sparse pharmacokinetic sampling were also conducted.

Results: A total of 214 subjects were randomized. The mean baseline MCCB composite score was 28.4. Approximately 80% of subjects completed the study. The MCCB composite score mean change from baseline to day 84 was numerically worse for both the 10mg (1.90, P = .618) and 25mg (0.64, P = .946) doses of ABT-288 vs placebo (2.19). Results from the secondary measures were consistent with the primary analysis. Subjects' schizophrenia symptoms remained stable throughout the study as evidenced by stable Positive and Negative Syndrome Scale scores. Overall, study medication was tolerated; however, an increased incidence of psychosis-related and sleep-related adverse events was associated with ABT-288.

Discussion: Neither dose of ABT-288 resulted in cognitive improvement in clinically stable adults with schizophrenia

Keywords: Histamine-3 Receptor; Cognition Disorders; Cognitive Dysfunction; Humans; Therapy

964. Exploiting Oxidative Microenvironments in the Body as Triggers for Drug Delivery Systems

Shivanjali Joshi-Barr, Caroline de Gracia Lux, Enas Mahmoud and Adah Almutairi

Antioxidants & Redox Signaling, 21: 730-754 (2014) IF: 7.667

Significance: Reactive oxygen species and reactive nitrogen species (ROS/RNS) play an important role in cell signaling pathways. However, the increased production of these species may disrupt cellular homeostasis, giving rise to pathological conditions. Biomaterials that are responsive to ROS/RNS can be strategically used to specifically release therapeutics and diagnostic agents to regions undergoing oxidative stress.

Recent Advances: Many nanocarriers intended to exploit redox micro-environments as triggers for drug release, summarized and

compared in this review, have recently been developed. We describe these carriers' chemical structures, strategies for payload protection and oxidation-selective release, and ROS/RNS sensitivity as tested in initial studies.

Critical Issues: ROS/RNS are unstable, so reliable measures of their concentrations in various conditions are scarce. Combined with the dearth of materials shown to respond to physiologically relevant levels of ROS/RNS, evaluations of their true sensitivity are difficult.

Future Directions: Oxidation-responsive nanocarriers developed thus far show tremendous potential for applicability in vivo; however, the sensitivity of these chemistries needs to be fine tuned to enable responses to physiological levels of ROS and RNS.

965. Population Pharmacokinetics of Daclizumab High-Yield Process in Healthy Volunteers: Integrated Analysis of Intravenous and Subcutaneous, Single- and Multiple-Dose Administration

Ahmed A. Othman, Jonathan Q. Tran, Meina T. Tang and Sandeep Dutta

Clinical Pharmacokinetics, 53 (10): 907-918 (2014) IF: 5.486

Background and Objective: Daclizumab is a humanized monoclonal antibody that blocks the a-subunit of the interleukin-2 receptor with demonstrated benefits in the treatment of multiple sclerosis. The present work aimed to characterize the pharmacokinetics of daclizumab high-yield process (HYP) in healthy volunteers.

Methods: Three double-blind, randomized, placebo-controlled, phase I studies evaluated the pharmacokinetics of daclizumab HYP in healthy volunteers following single subcutaneous administration (50, 150, or 300 mg), multiple subcutaneous administrations (100 or 200 mg biweekly with a 200 mg loading dose), or single intravenous administration (200 or 400 mg). Measurable serum concentrations (n = 925) from 70 subjects treated with daclizumab HYP in the three studies were analyzed using non-linear mixed-effects modeling.

Results: A two-compartment model with a first-order absorption and elimination adequately described daclizumab HYP pharmacokinetics. Daclizumab HYP clearance, intercompartmental clearance, and central and peripheral volumes of distribution were 10 mL/h, 44 mL/h, 3.89 L, and 2.52 L, respectively, scaled by [bodyweight (kg)/70] with 0.54 and 0.64 exponents for clearance and volume parameters, respectively. Lag-time, mean absorption time, and absolute bioavailability (100-300 mg) for subcutaneous administration were 2 h, 4.6 days, and 84 %, respectively. Bodyweight explained only ~20 % of daclizumab HYP pharmacokinetic variability. With this limited dataset, sex, age, race, or presence of antibodies did not correlate with daclizumab HYP clearance. The estimated effective half-life was 21-25 days. The developed model was robust in bootstrap evaluation and predicted the data adequately in stochastic simulations.

Conclusions: Daclizumab HYP is characterized by slow clearance, linear pharmacokinetics (at doses =100 mg), high subcutaneous bioavailability, and a half-life suitable for monthly administration.

Keywords: Daclizumab hyp; Population pharmacokinetics; Multiple sclerosis; Antibody.

966. Hot-Melts in Buccoadhesive Patches: an Approach for Bioavailability Enhancement of Highly-Metabolized Drugs With Short Elimination Half-Life

Galal M. El Mahrouk, Omaima N. ElGazayerly, Ahmed A. Aboelwafa and Maie S. Taha

European Journal of Pharmaceutics and Biopharmaceutics, 88: 1005-1011 (2014) IF: 4.245

The present study deals with the inclusion or incorporation of hotmelts into buccoadhesive patches. Our aim is to develop a patientfriendly dosage form that is capable of extending release of short elimination half-life drugs so to decrease dosing frequency and to increase the bioavailability of highly-metabolized drugs with the ultimate aim of dose reduction. Tizanidine hydrochloride (TIZ) was used as a model drug. TIZ was incorporated into Compritolbased hot-melts, and then further formulated into buccal patches prepared using HPMC, PVA and Polyox. A Central Composite Face-centered Design was employed to statistically optimize the formulation variables; HPMC solution/PVA solution weight ratio, Compritol/TIZ ratio in the hot-melts and percentage Polyox. The optimized formula suggested by the software was successful in controlling drug release, where 85% of TIZ was released after 4 h and the patch showed acceptable mucoadhesion properties. Pharmacokinetic parameters of TIZ from the optimized formula were compared to those of the immediate release tablet, Sirdalud, as reference in human volunteers using a randomized crossover design. Significant increase was observed for Cmax, Tmax, AUC(0-12) and AUC(0-1). The increase in relative bioavailability of TIZ from the optimized formula was 2.57 folds. Keywords: Buccoadhesive Patch Hot-Melts Central Composite Face-Centered Design Lc-Ms/Ms Mucus Glycoprotein Assay.

967. Silver Sulfadiazine Based Cubosome Hydrogels for Topical Treatment of Burns: Development and in Vitro/in Vivo Characterization

Mohammed Abdallah Ahmed Abdallah

European Journal of Pharmaceutics And Biopharmaceutics, 86: 178-189 (2014) IF: 4.245

The present study is concerned with the development and characterization of a novel nanaoparticulate system; cubosomes, loaded with silver sulfadiazine (SSD), which is the metallic salt of a sulfonamide derivative, and is considered as the drug of choice for topical treatment of infected burns. Cubosome dispersions were formulated by an emulsification technique using different concentrations of a lipid phase monoolein and the nonionic surfactant, Poloxamer 407, with or without polyvinyl alcohol. The prepared cubosomal dispersions were characterized regarding physical morphology, dimensional distribution, particle size, and in vitro drug release. The optimum formulae were incorporated in a chitosan, carbopol 940 or chitosan/carbopol mixture based hydrogels, to form cubosomal hydrogels (cubogels). The cubogels were characterized regarding in vitro release of SSD, rheological properties, pH, and mucoadhesion. For the optimal cubogel formulae, an in vivo histopathological study was conducted on rats to predict the effectiveness of the newly prepared cubogels in comparison with the commercially available cream (Dermazin®). In vivo histopathological study results showed that prepared cubogels were successful in the treatment of deep second degree burn which may result in better patient compliance and excellent

commercially available product.

Application of Liquid Crystalline Nanostructured Dispersions of Alpha Lipoic Acid as Anti-Wrinkle

healing results with least side effects in comparison with the

Keywords: Silver Sulphadiazine; Cubosomes; Hydrogels;

Saly Sherif, Ehab R. Bendas and Sabry Badawy

European Journal of Pharmaceutics and Biopharmaceutics, 86: 251-259 (2014) IF: 4.245

Topical 5% alpha lipoic acid (ALA) has shown efficacy in treatment of photo-damaged skin. The aim of this work was to evaluate the potential of poloxamer (P407) gel as a vehicle for the novel lipid base particulate system (cubosome dispersions) of ALA. Cubosome dispersions were formulated by two different approaches, emulsification of glyceryl monoolein (GMO) and poloxamer (P407) in water followed by ultrasonication, and the dilution method using a hydrotrope. Three different concentrations of GMO were used to formulate the cubosome dispersions using the first method, 5% (D1), 10% (D2) and 15% w/w (D3).

In the second technique an isotropic liquid was produced by combining GMO with ethanol, and this isotropic liquid was then diluted with a P407 solution (D4). The dispersions were characterized by zeta potential, light scattering techniques, optical and transmission electron microscopy, encapsulation efficiency and in vitro drug release. Results showed that D4 was not a uniform dispersion and that D1, D2 and D3 were uniform dispersions, in which by increasing the GMO content in the dispersion, the size of the cubosomes decreased, zeta potential became more negative, encapsulation efficiency increased up to 86.48% and the drug release rate was slower. P407 gels were prepared using the cold method.

Two concentrations of P407 gel were fabricated, 20 and 30% w/w. P407 gels were loaded with either ALA or dispersions containing ALA cubosomes. P407 gels were characterized by critical gelation temperature, rheological measurements and in vitro drug release studies. Results suggested that by increasing P407 concentration, the gelation temperature decreases and viscosity increases. Drug release in both cases was found to follow the Higuchi square root model. Gel loaded with ALA cubosomes provided a significantly lower release rate than the gel loaded with the un-encapsulated ALA. A double blinded placebo

controlled clinical study was conducted, aiming to evaluate the efficacy as an anti-wrinkle agent and volunteer's satisfaction upon application of topical 30% P407 gel loaded with ALA cubosomes. Results indicated reduction in facial lines, almost complete resolution of fine lines in the periorbital region and upper lip area and overall improvement in skin color and texture in most volunteers. There were no instances of irritation, peeling or other apparent adverse side effects.

Keywords: Liquid crystals; Drug release; Antioxidant; Alpha lipoic acid; Glyceryl monooleate; Cubosomes; Poloxamer gel; Cosmeceutical application; Clinical study.

969. Follicular Delivery of Spironolactone Via Nanostructured Lipid Carriers for Management of Alopecia

Rehab Nabil Shamma and Mona Hassan Aburahma

International Journal of Nanomedicine, 9: 5449-5460 (2014) IF: 4.195

Spironolactone (SL) is a US Food and Drug Administrationapproved drug for the treatment of hypertension and various edematous conditions. SL has gained a lot of attention for treating androgenic alopecia due to its potent antiandrogenic properties. Recently, there has been growing interest for follicular targeting of drug molecules for treatment of hair and scalp disorders using nanocolloidal lipid-based delivery systems to minimize unnecessary systemic side effects associated with oral drug administration. Accordingly, the objective of this study is to improve SL efficiency and safety in treating alopecia through the preparation of colloidal nanostructured lipid carriers (NLCs) for follicular drug delivery. SL-loaded NLCs were prepared by an emulsion solvent diffusion and evaporation method using 23 full factorial design. All of the prepared formulations were spherical in shape with nanometric size range (215.6-834.3 nm) and entrapment efficiency >74%. Differential scanning calorimetry thermograms and X-ray diffractograms revealed that SL exists in amorphous form within the NLC matrices. The drug release behavior from the NLCs displayed an initial burst release phase followed by sustained release of SL. Confocal laser scanning microscopy confirmed the potential of delivering the fluorolabeled NLCs within the follicles, suggesting the possibility of using SL-loaded NLCs for localized delivery of SL into the scalp hair follicles.

Keywords: Spironolactone; Androgenic alopecia; Nanostructured lipid carriers; Follicular targeting; Confocal laser scanning microscopy.

970. Nanosizing of A Poorly Soluble Drug: Technique Optimization, Factorial Analysis, and Pharmacokinetic Study in Healthy Human Volunteers

Ibrahim Elsayed, Aly Ahmed Abdelbary and Ahmed Hassen Elshafeey

International Journal of Nanomedicine, 9: 2943-2953 (2014) IF: 4.195

Context: Diacerein (DCN) has low aqueous solubility (3.197 mg/L) and, consequently, low oral bioavailability (35%–56%). To increase both the solubility and dissolution rate of DCN while maintaining its crystalline nature, high pressure homogenization was used but with only a few homogenization cycles preceded by a simple bottom-up technique.

Methods: The nanosuspensions of DCN were prepared using a combined bottom-up/top-down technique. Different surfactants – polyvinyl alcohol, sodium deoxycholate, and sodium dodecyl sulfate – with different concentrations were used for the stabilization of the nanosuspensions. Full factorial experimental design was employed to investigate the influence of formulation variables on nanosuspension characteristics using Design-Expert® Software. Particle size (PS), zeta potential, saturation solubility, in vitro dissolution, and drug crystallinity were studied. Moreover, the in vivo performance of the optimized formula was

assessed by bioavailability determination in healthy human volunteers.

Results: The concentration of surfactant had a significant effect on both the PS and polydispersity index values. The 1% surfactant concentration showed the lowest PS and polydispersity index values compared with other concentrations. Both type and concentration of surfactant had significant effects on the zeta potential. Formula F8 (containing 1% sodium deoxycholate) and Formula F12 (containing 1% sodium dodecyl sulfate) had the highest desirability values (0.952 and 0.927, respectively). Hence, they were selected for further characterization. The saturated solubility and mean dissolution time, in the case of F8 and F12, were significantly higher than the coarse drug powder. Techniques utilized in the nanocrystals' preparation had no effect on DCN crystalline state. The selected formula (F12) showed a higher bioavailability compared to the reference market product with relative bioavailability of 131.4%.

Conclusion: The saturation solubility, in vitro dissolution rate and relative bioavailability of DCN were significantly increased after nanocrystallization. Less time and power consumption were applied by the combination of bottom-up and top-down techniques.

Keywords: Nanocrystals, High Pressure Homogenization, Diacerein, Factorial Analysis, Pharmacokinetic Study

971. Compritol 888 Ato: A Multifunctional Lipid Excipient in Drug Delivery Systems and Nanopharmaceuticals

Aburahma MH and Badr-Eldin SM.

Expert Opin, 11 (12): 1865-1883 (2014) IF: 4.116

Introduction: Compritol® 888 ATO is a lipid excipient that is generally used in cosmetic industry as a surfactant, emulsifying agent and viscosity-inducing agent in emulsions or creams. Based on its chemical composition, Compritol 888 ATO is a blend of different esters of behenic acid with glycerol.

Areas Covered: Recently, there has been great interest in the multiple roles that Compritol 888 ATO plays in various pharmaceutical delivery systems. Accordingly, this review aimed at summarizing the current and potential applications of Compritol 888 ATO in various drug delivery areas.

Expert Opinion: Different researches have highlighted the feasibility of using Compritol 888 ATO as a lubricant or coating agent for oral solid dosage formulations. It has also been explored as a matrix-forming agent for controlling drug release. At present, the most common pharmaceutical application of Compritol 888 ATO is in lipid-based colloidal drug delivery system such as solid lipid microparticles, solid lipid nanoparticles and nanostructured lipid carriers. Although, Compritol 888 ATO has acceptable regulatory and safety profiles and although the number of articles that emphasize on its applicability as an innovative excipient in pharmaceutical technology is continuously increasing, it is not widely used in the pharmaceutical market products and its use is limited to its sustain release ability in extended release tablets.

Keywords: Compritol 888 Ato, Glyceryl Behenate, Lipid Excipients, Pharmaceutical.

972. Metronidazole and Pentoxifylline Films for the Local Treatment of Chronic Periodontal Pockets: Preparation, in Vitro Evaluation and Clinical Assessment

Labib GS, Aldawsari HM and Badr-Eldin SM.

Expert Opinion on Drug Delivery, 11(6): 855-865 (2014) IF: 4.116

Objective: Periodontitis is one of the most important chronic inflammatory dental diseases arising from the destructive actions caused by a variety of pathogenic organisms presented in the oral cavity. The aim of this study is the preparation and in vitro evaluation of films for the local treatment of periodontal pockets.

Methods: The prepared films contained either metronidazole (Mtr), for its antimicrobial effect in periodontal diseases, using a mixture of polymers namely hydroxypropyl methyl cellulose, Carbopol 934 or locally applied Pentoxifylline (PTX), for its antiinflammatory activity, using chitosan. All films were prepared using solvent casting technique and were evaluated for their physical characteristics, drug content uniformity, surface pH, swelling behavior, mechanical properties and in vitro release. Further characterization was done on the selected formulations using differential scanning calorimetry and scanning electron microscopy for surface structure. Clinical evaluation tests were also performed.

Result: Appropriate physical characteristics and mechanical properties for most formulations and their suitability for periodontal application were observed. In vitro drug release from most films showed a burst release rate for both Mtr and PTX during the first 2 h after which the release rate was markedly decreased. Clinical trials on patients revealed the advantageous use of Mtr and PTX as an adjunct treatment with traditionally used dental techniques.

Conclusion: The effectiveness of the co-therapy of either drug could add benefit in the eradication of chronic periodontal hazards.

Keywords: Chitosan; Clinical Assessment; Hydroxypropyl Methyl Cellulose; In Vitro Release; Local Drug Delivery; Metronidazole; Pentoxifylline; Solvent Casting Technique.

973. Chitosan Lactate Wafer as A Platform for the Buccal Delivery of Tizanidine HCI: in Vitro and in Vivo Performance

Galal M. El-Mahrouk, Omaima N. El-Gazayerly, Ahmed A. Aboelwafa and Maie S. Taha

International Journal of Pharmaceutics, 467: 100-112 (2014) IF: 3.785

Tizanidine HCl is a skeletal muscle relaxant that suffers from extensive hepatic metabolism resulting in 34-40% oral bioavailability. It also suffers from short half-life (2.1-4.2 h) that necessitates frequent administration thus reducing patient compliance. In addition, tizanidine HCl is water soluble, so it is a challenging candidate for controlled drug delivery. In our study, tizanidine was encapsulated in chitosan lactate beads cross-linked with sodium tripolyphosphate. The beads were further incorporated into chitosan lactate wafer to be easily applied to buccal mucosa, aiming to bypass the hepatic metabolism. A central composite face-centered design was applied to statistically optimize the formulation variables; tripolyphosphate concentration, chitosan lactate concentration and polymer/drug

ratio. The optimized formula suggested by the software composed of; 3.03% tripolyphosphate, 4.92% chitosan lactate and 2.13 polymer/drug ratio. It provided encapsulation efficiency of 56.5% and controlled tizanidine release over 8 h. It is also characterized by being mucoadhesive and nonirritant. Pharmacokinetic parameters of tizanidine from the optimized formula were compared to those of the immediate release tablet, Sirdalud1, as reference in human volunteers using a randomized crossover design. Significant increase was observed for Tmax and AUC(0– 1). The increase in relative bioavailability of TIZ from the optimized formula was 2.27 fold.

Keywords: Chitosan Lactate Na Tripolyphosphate Buccoadhesive Wafer Containing Beads Central Composite Facecentered Design.

974. Controlled-Release Triple Anti-Inflammatory Therapy Based on Novel Gastroretentive Sponges: Characterization and Magnetic Resonanceimaging in Healthy Volunteers

Tadros MI. and Fahmy RH.

International Journal of Pharmaceutics, 472(1-2): 27-39 (2014) IF: 3.785

The current work aimed to develop novel composite sponges of chitosan (CH)-chondroitin sulfate (CS) as a low-density gastroretentive delivery system for lornoxicam (LOR). This triple anti-inflammatory therapy-loaded matrices are expected to expand and float upon contact with gastric fluids for prolonged times. CH and CS solutions (3%, w/w) were prepared, mixed in different ratios, lyophilized, coated with magnesium stearate and compressed. The CH:CS interpolymer complex (IPC) was evaluated via FT-IR, DSC, and XRD. The compressed-sponges were evaluated for appearance, structure, porosity, pore diameter, density, wetting-time, floating characteristics, adhesion-retention, and LOR-release. The gastroretentivity of the best achieved magnetite-loaded sponges was monitored in healthy volunteers via MRI. The interaction between CH (protonated amino groups) and CS (anionic carboxylate/sulfate groups) proved IPC formation. DSC and XRD studies confirmed loss of LOR crystallinity. The sponges possessed interconnecting porousnetwork structures. The porosity, mean pore diameter, and bulk density of CH:CS (10:3) IPC sponges were 11.779%, 25.4 nm, and 0.670 g/mL, respectively. They showed complete wetting within seconds, gradual size-expansion within minutes and prolonged adhesion for hours. Controlled LOR-release profiles were tailored over 12 h to satisfy individual patient needs. Monitoring of sponges via MRI proved their gastroretentivity for at least 5 h.

Keywords: Lornoxicam; Chitosan–chondroitin sulfate interpolymer; Complex; Triple anti-inflammatory therapy; Gastroretentive sponges; Magnetic resonance imaging.

975. Design of Lipotomes as A Novel Dual Functioning Nanocarrier for Bioavailability Enhancement of Lacidipine: in-Vitro and in-Vivo Characterization

Nermeen Adel ElKasabgy, Ibrahim Elsayed and Ahmed Hassen Elshafeey

International Journal of Pharmaceutics, 472: 369-379 (2014) IF: 3.785 Lipotomes were designed to enhance lacidipine's oral bioavailability by improving its solubility and enhancing the oral lymphatic uptake. Lipotomes were prepared using cetyl alcohol and Tween1 80 using a thin film hydration technique. Cetyl alcohol was chosen for imparting a lipophilic environment that would enforce the lymphatic uptake while Tween1 80 would improve drug solubility within the lipotomes. Lipotomes were characterized by analyzing their particle size, solubilization efficiency and invitro drug release. Central composite design was applied to statistically optimize the formulations using Design-Expert1 software. The optimum formula (OLT) was made up of excipients:drug ratio of 36.59:1 w/w and Tween1 80:cetyl alcohol ratio of 4:1 w/w. OLT was lyophilized and filled into Eudragit1 L100 enteric coated capsules. Mannitol (10% w/v) was the ideal cryoprotectant to retain the physicochemical characteristics of the OLT formulation after lyophilization. In conclusion, the selected lyophilized formula (L3) succeeded in enhancing drug's oral bioavailability in human volunteers compared to the commercial product confirming the success of lipotomes as a novel oral nanocarrier for insoluble drugs having extensive first pass

metabolism. **Keywords**: Lipotomes Lacidipine Central Composite Lyophilization Enteric Coating.

976. Effect of Surface Charge on the Brain Delivery of Nanostructured Lipid Carriers in Situ Gels Via the Nasal Route

Yasmine M. Gaba, Amany O. Kamel, Omaima A. Sammoura, and Ahmed H. Elshafeey

Int. Journal of Pharmaceutics, 473: 442-457 (2014) IF: 3.785

The aim of this study was to investigate the influence of the nanocarrier surface charge on brain delivery of a model hydrophilic drug via the nasal route. Anionic and cationic nanostructured lipid carriers (NLCs) were prepared and optimized for their particle size and zeta potential. The optimum particles were incorporated in poloxamer in situ gels and their in vivo behavior was studied in the plasma and brain after administration to rats. Optimum anionic and cationic NLCs of size <200 nm and absolute zeta potential value of \approx 34 mV were obtained. Toxicity study revealed mild to moderate reversible inflammation of the nasal epithelium in rats treated with the anionic NLCs (A7), and destruction of the lining mucosal nasal epithelium in rats treated with the cationic NLCs (C7L). The absolute bioavailability of both drug loaded anionic and cationic NLCs in situ gels was enhanced compared to that of the intranasal solution (IN) of the drug with values of 44% and 77.3%, respectively. Cationic NLCs in situ gel showed a non significant higher Cmax (maximum concentration) in the brain compared to the anionic NLCs in situ gel. Anionic NLCs in situ gel gave highest drug targeting efficiency in the brain (DTE%) with a value of 158.5 which is nearly 1.2 times that of the cationic NLCs in situ gel.

Keywords: Nanostructured Lipid Carriers; Surface Charge; Brain Delivery; Intranasal; In Vivo.

977. Enhanced Bioavailability of Buspirone Hydrochloride Via Cup and Core Buccal Tablets: Formulation and in Vitro - in Vivo Evaluation

Mohamed A.A. Kassem, Aliaa N. ElMeshad and Ahmed R. Fares

Int. Journal of Pharmaceutics, 463: 68-80 (2014) IF: 3.785

This work aims to prepare sustained release buccal mucoadhesive tablets of buspirone hydrochloride (BH) to improve its systemic bioavailability. The tablets were prepared according to 5×3 factorial design where polymer type was set at five levels (carbopol, hydroxypropyl methylcellulose, sodium alginate, sodium carboxymethyl cellulose and guar gum), and polymer to drug ratio at three levels (1:1, 2:1 and 3:1). Mucoadhesion force, ex vivo mucoadhesion time, percent BH released after 8 h (O8h) and time for release of 50% BH ($T_{50\%}$) were chosen as dependent variables. Additional BH cup and core buccal tablets were prepared to optimize BH release profile and make it unidirectional along with the tablets mucoadhesion. Tablets were evaluated in terms of content uniformity, weight variation, thickness, diameter, hardness, friability, swelling index, surface pH, mucoadhesion strength and time and in vitro release. Cup and core formula (CA10) was able to adhere to the buccal mucosa for 8 h, showed the highest Q8h (97.91%) and exhibited a zero order drug release profile. Pharmacokinetic study of formula CA10 in human volunteers revealed a 5.6 fold increase in BH bioavailability compared to the oral commercial Buspar® tablets. Conducting level A in vitro/in vivo correlation showed good correlation ($r^2 = 0.9805$) between fractions dissolved *in vitro* and fractions absorbed in vivo.

Keywords: Buspirone HCL; Mucoadhesive dosage forms; Buccal tablets; Cup and core tablets; Pharmacokinetic study; LC/MS/MS.

978. In Vitro and in Vivo Evaluation of Self-Nanoemulsifying Drug Delivery Systems of Cilostazol for Oral and Parenteral Administration

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International Journal of Pharmaceutics, 476: 60-69 (2014) IF: 3.785

The current investigation was aimed to improve the solubility of poorly soluble drug, cilostazol (CLZ). Self-nanoemulsifying drug delivery system (SNEDDS) composed of oil, surfactant and cosurfactant for both oral and parenteral administration of CLZ was formulated. The components for SNEDDS were identified by solubility studies, and pseudo-ternary phase diagrams were plotted to identify the efficient self-emulsification regions. The optimum formula, composed of Capryol 90 as an oil phase, Cremophor EL as a surfactant, and Transcutol HP as a cosurfactant in a ratio of 19.8:30.5:49.7 by weight, was able to solubilize CLZ 2000 times higher than its solubility in water. This formula was able to form grade "A" nanoemulsion when diluted with water, resulted in emulsification time of 50 1.1 s, particle size of 14.3 nm, PDI of 0.5 and % transmittance was 97.40% 0.65. It showed excellent in vitro dissolution of 93.1% and 81.5% after 5 min in 0.3% sodium lauryl sulphate solution and phosphate buffer pH 6.4, respectively when compared with the marketed tablet formulation and drug suspension as the tablets showed only 44.3% and 9.9% while CLZ suspension showed 33.9% and 8.8% in 0.3% sodium lauryl sulphate solution and phosphate buffer pH 6.4, respectively. It was found to be robust to dilution, thermodynamically stable with low viscosity values of 14.20 0.35 cP. In vivo study revealed significant increase in bioavailability of CLZ in rabbits to 3.94 fold compared with the marketed tablet formulation after oral administration. This formula could be sterilized by autoclaving and did not cause significant hemolysis to human blood which indicates its safety for intravenous administration with a 1.12 fold increase in bioavailability compared with its oral administration. Our study

illustrated the potential use of SNEDDS of poorly soluble CLZ orally, and its successful administration of parenterally when required in acute cases of myocardial and cerebral infarction. **Keywords**: Cilostazol; Self-Nanoemulsyfying Systems; Pharmacokinetics; Oral Administration; Intravenous Administration.

979. Instantaneous Enteric Nano-Encapsulation of Omeprazole: Pharmaceutical and Pharmacological Evaluation

Ehab R. Bendas and Aly A. Abdelbary

International Journal of Pharmaceutics, : - (2014) IF: 3.785

Recently, great attention has been paid to nanocapsules. The interest of these structures is due to their promising applications as drug delivery systems. The objective of this study was to develop novel enteric coating technique based on instantaneous encapsulation of the acid-labile drug, omeprazole in innovative enteric nanocapsules. Omeprazole enteric nanocapsules were formulated by varying the type and amount of the enteric polymer. The particle size (PS), polydispersity index (PDI), zeta potential (ZP) and encapsulation efficiency (EE) values of the prepared enteric nanocapsules were determined. A full 2131 factorial design was used for planning and analysis of the experimental trials to select the optimized formulation. The highest desirability value was 0.7463 for formula E3 (containing 200 mg hydroxypropyl methylcellulose phthalate (HPMCP)). The stability of omeprazole was reflected by the absence of the exothermal peak when the drug was encapsulated as detected by differential scanning calorimetry (DSC) thermograms. In vitro drug release study confirmed the USP specifications required to meet the key formulation characteristics of gastro-resistance. In vivo pharmacological assessment showed that the optimized nanocapsules were able to protect rat stomach against ulcer formation compared to the aqueous suspension of the drug which showed less significant protection.

Keywords: Enteric Nanocapsules; Omeprazole; Hydroxypropyl Methylcellulose Phthalate; In Vivo Antiulcer Activity.

980. Nano-Transfersomal Ciprofloxacin Loaded Vesicles for Non-Invasive Trans-Tympanic Ototopical Delivery: in-Vitro Optimization, Ex-Vivo Permeation Studies, and in-Vivo Assessment

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International Journal of Pharmaceutics, 472: 304-314 (2014) IF: 3.785

Ciprofloxacin is a synthetic fluoroquinolone antibiotic that has been used for systemic treatment of otitis media in adults. It was approved for topical treatment of otorrhea in children with tympanostomy tubes. The aim of this work was to enhance the local non-invasive delivery of ciprofloxacin to the middle ear across an intact tympanic membrane (TM) in an attempt to treat acute otitis media (AOM) ototopically. In order to achieve this goal, ciprofloxacin nano-transfersomal vesicles were prepared by thin film hydration (TFH) technique, using several edge activators (EAs) of varying hydrophilic-lipophilic balance (HLB) values. A full factorial design was employed for the optimization of formulation variables using Design-Expert® software. The optimal formulation was subjected to stability testing, ex-vivo permeation studies (through ear skin and TM of rabbits), and invivo evaluation. Results revealed that the optimal formulation (composed of phospholipid and sodium cholate as an EA at a molar ratio of 5:1) exhibited enhanced ex-vivo drug flux through ear skin and TM when compared with the commercial product (Ciprocin® drops). It demonstrated a greater extent of in-vivo drug deposition in the TM of albino rabbits relative to Ciprocin®. Consequently, transfersomes could be promising for the noninvasive trans-tympanic delivery of ciprofloxacin.

Keywords: Transfersomes;Thin Film hydration; Acute otitis Media; Ex-Vivo Tympanic membrane permeation; In-Vivo drug Deposition studies.

981. Ocular Supersaturated Self-Nanoemulsifying Drug Delivery Systems (S-SNEDDS) to Enhance Econazole Nitrate Bioavailability

Nermeen Adel ElKasabgy

International Journal of Pharmaceutics, 460: 33-44 (2014) IF: 3.785

Econazole nitrate (ECO) is a poorly water soluble antifungal drug. Having low aqueous solubility affects negatively its use for ocular treatment. This work aimed to prepare ocular supersaturated selfnanoemulsifying drug delivery systems (S-SNEDDS) of ECO employing hydroxypropyl methylcellulose as a precipitation inhibitor to improve the drug solubility by avoiding its precipitation after administration.

Various oils, surfactants and co-surfactants were used to construct SNEDDS. The SNEDDS were evaluated for globule size, polydispersity index and their irritation potential using hen's egg test-chorioallantoic membrane (HET-CAM). The best SNEDDS was loaded with ECO and HPMC to prepare S-SNEDDS. Invitro precipitation test of the S-SNEDDS was done to study the effect of the precipitation inhibitor. ECO permeation in rabbits' eyes from the selected S-SNEDDS (with and without HPMC) was evaluated. The results showed that SNEDDS-X consisting of 20% Capmul® MCM C10 as an oil, 60% Cremophor RH40® as a surfactant and 20% Transcutol® HP as co-surfactant possessed the lowest PDI value and a non-irritant effect on the CAM. The in-vitro precipitation test showed that the use of HPMC successfully sustained the supersaturated state by avoiding ECO precipitation. Higher Cmax, AUC0-8 and longer tmax confirm the development of a successful ECO-loaded S-SNEDDS. Keywords: Econazole Nitrate Hen;S Egg Test-Chorioallantoic Membrane Supersaturated Self-Nanoemulsifying Systems

Precipitation Inhibitor In-Vitro Precipitation Test.

982. Optimization of Long Circulating Mixed Polymeric Micelles Containing Vinpocetine Using Simple Lattice Mixture Design, in Vitro and in Vivo Characterization

Rania Moataz El-Dahmy, Ibrahim Elsayed Ahmed Hassen Elshafeey, Nabaweya Abdelaziz Abd El Gawad and Omaima Naim El-Gazayerly

International Journal of Pharmaceutics, 477(1-2):39-46 (2014) IF: 3.785

The aim of this study was to increase the in vivo mean residence time of vinpocetine after IV injection utilizing long circulating mixed micellar systems. Mixed micelles were prepared using Pluronics L121, P123 and F127. The systems were characterized by testing their entrapment efficiency, particle size, polydispersity index, zeta potential, transmission electron microscopy and in vitro drug release. Simple lattice mixture design was planned for the optimization using Design-Expert1 software. The optimized formula was lyophilized, sterilized and imaged by scanning electron microscope. Moreover, the in vivo behavior of the optimized formula was evaluated after IV injection in rabbits. The optimized formula, containing 68% w/w Pluronic L121 and 32% w/w Pluronic F127, had the highest desirability value (0.621).

Entrapment efficiency, particle size, polydispersity index and zeta potential of the optimized formula were 50.74 3.26%, 161.50 7.39 nm, 0.21 0.03 and 22.42 1.72 mV, respectively. Lyophilization and sterilization did not affect the characteristics of the optimized formula. Upon in vivo investigation in rabbits, the optimized formula showed a significantly higher elimination half-life and mean residence time than the market product. Finally, mixed micelles could be considered as a promising long circulating nanocarrier for lipophilic drugs.

Keywords: Pluronic, Vinpocetine micelles lyophilization Sterilization Vivo Mean Residence Time.

983. Population Pharmacokinetics of Levodopa in Subjects With Advanced Parkinsons Disease: Levodopa-Carbidopa Intestinal Gel Infusion Vs. Oral Tablets

Ahmed A. Othman and Sandeep Dutta

British Journal of Clinical Pharmacology, 78 (1): 94-105 (2014) IF: 3.688

Aims: Levodopa-carbidopa intestinal gel (LCIG) provides continuous levodopa-carbidopa delivery through intrajejunal infusion. This study characterized the population pharmacokinetics of levodopa following a 16h jejunal infusion of LCIG or frequent oral administration of levodopa-carbidopa tablets (LC-oral) in subjects with advanced Parkinson's disease (PD).

Methods: A non-linear mixed-effects model of levodopa pharmacokinetics was developed using serial plasma concentrations from an LCIG phase 1 study and a phase 3 doubleblind, double-dummy study of the efficacy and safety of LCIG compared with LC-oral in advanced PD patients (n=68 for model development; 45 on LCIG and 23 on LC-oral). The final model was internally evaluated using stochastic simulations and bootstrap and externally evaluated using sparse pharmacokinetic data from 311 subjects treated in a long term safety study of LCIG.

Results: The final model was a two compartment model with a transit compartment for absorption, first order elimination, bioavailability for LCIG (97%; confidence interval = 95% to 98%) relative to LC-oral, different first order transit absorption rate constants (LCIG = 9.2h (-1) vs. LC-oral= 2.4h(-1); corresponding mean absorption time of 7 min for LCIG vs. 25?min for LC-oral) and different residual (intra-subject) variability for LCIG (15% proportional error, 0.3µg ml-1 additive error) vs. LC-oral (29% proportional error, 0.59µg ml-1 additive error). Estimated oral clearance and steady-state volume of distribution for levodopa were 24.8 lh (-1) and 1311, respectively. **Conclusions**: LCIG administration results in faster absorption, comparable levodopa bioavailability and significantly reduced intra-subject variability in levodopa concentrations relative to LC-oral administration.

Keywords: Duodopa; Intestinal gel; Levodopa; Parkinson's disease; Population pharmacokinetics.

984. The H3 Antagonist ABT-288 is Tolerated at Significantly Higher Exposures in Subjects With Schizophrenia Than in Healthy Volunteers

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British Journal of Clinical Pharmacology, 77 (6): 965-974 (2014) IF: 3.688

Aims: ABT-288 is a potent and selective H3 receptor antagonist with procognitive effects in several preclinical models. In previous studies, 3?mg once daily was the maximal tolerated dose in healthy volunteers. This study characterized the safety, tolerability and pharmacokinetics of ABT-288 in stable subjects with schizophrenia.

Methods: This was a randomized, double-blind, placebocontrolled, dose-escalating study of ABT-288 (10 dose levels, from from 1 to 60 mg once daily for 14 days) in stable subjects with schizophrenia treated with an atypical antipsychotic. In each dose group, five to seven and two to three participants were assigned to ABT-288 and placebo, respectively.

Results: Of the 67 participants enrolled, nine participants (on ABT-288) were prematurely discontinued, in seven of these due to adverse events. ABT-288 was generally safe and tolerated at doses up to 45 mg once daily. The most common adverse events, in decreasing frequency (from 31 to 5%), were abnormal dreams, headache, insomnia, dizziness, somnolence, dysgeusia, dry mouth, psychotic disorder, parosmia and tachycardia. Adverse events causing early termination were psychotic events (four) and increased creatine phosphokinase, pyrexia and insomnia (one each). The half-life of ABT-288 ranged from 28 to 51h, and steady state was achieved by day12 of dosing. At comparable multiple doses, ABT-288 exposure in subjects with schizophrenia was 45% lower than that previously observed in healthy subjects. At trough, ABT-288 cerebrospinal fluid concentrations were 40% of the total plasma concentrations.

Conclusions: ABT-288 was tolerated at a 15-fold higher dose and 12-fold higher exposures in subjects with schizophrenia than previously observed in healthy volunteers. The greater ABT-288 tolerability was not due to limited brain uptake.

Keywords: Abt-288; Cognitive Deficits; Histamine H3 Receptors; Schizophrenia; Tolerability

985. A Randomized Study of H3 Antagonist ABT-288 in Mild-To-Moderate Alzheimer''s Dementia

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Journal of Alzheimer's Disease, 42 (3): 959-971 (2014) IF: 3.612

Background: ABT-288, a highly selective histamine-3 receptor antagonist, demonstrated efficacy across several preclinical cognitive domains, and safety in healthy subjects and elderly volunteers. Objective: Evaluate the efficacy and safety of ABT-288 in subjects with mild-to-moderate Alzheimer's dementia.

Methods: The study used a randomized, double-blind, placeboand active-controlled, parallel group design with pre-defined futility criteria to permit early study termination. A total of 242 subjects were randomized in an equal ratio to ABT-288 1 mg or 3 mg, donepezil 10 mg, or placebo once daily for 12 weeks. The primary efficacy endpoint was the change from baseline to final evaluation on the 13-item Alzheimer's Disease Assessment Scale-cognitive subscale (ADAS-Cog) total score.

Results: The study was prematurely terminated because futility criteria were met. Point estimates on the ADAS-Cog scores for both ABT-288 dose groups were numerically inferior to placebo but no statistical differences were detected. Donepezil demonstrated statistically significant improvement. Adverse events were generally mild and self-limiting.

Conclusion: ABT-288 did not demonstrate efficacy in the symptomatic treatment of Alzheimer's dementia.

Keywords: Abt-288, Alzheimer's Dementia, Cognition, Drug Therapy, H3 Antagonists, Humans

986. Design and Optimization of Self-Nanoemulsifying Delivery System to Enhance Quercetin Hepatoprotective Activity in Paracetamol-Induced Hepatotoxicity

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Journal Of Pharmaceutical Sciences, 103(2): 602-612 (2014) IF: 3.007

He present study aimed to develop optimized quercetin (QT)loaded self-nanoemulsifying drug delivery system (SNEDDS) that offers protective effect against liver damage. Solubility study of QT in different oils, surfactants, and cosurfactants was performed. Ternary phase mixtures of the selected components were constructed to select a suitable range for each component. Experimental mixture design was utilized to optimize SNEDDSs that possess smaller globule size with enhanced emulsification and dissolution rates. QT SNEDDS was compared with QT suspension control and silymarin. In vivo evaluation and histopatholgical study of the selected QT SNEDDSs were achieved after administration of paracetamol over dosage to albino rats. Two optimized formulations were selected; one based on Sefsol and the other based on linoleic acid as an oily phase, Tween(®) 80 and polyethylene glycol 400 as surfactant and cosurfactant, respectively. Both Sefsol and linoleic-acidoptimized SNEDDS formulation showed no symptoms associated with toxicity and offered protective effect against paracetamolinduced hepatotoxicity by scavenging free radicals, attenuating lipid peroxidation, and enhancing the activity of antioxidants. The histopatholgical observations revealed that the inflammatory infiltrations induced by paracetamol were significantly ameliorated.

Keywords: Snedds; Dynamic Light Scattering; Emulsion; Hepatoprotective Activity; Mixture Design; Nanoparticles; Nanotechnology; Optical Activity; Quercetin.

987. Provesicular Granisetron Hydrochloride Buccal Formulations: in Vitro Evaluation and Preliminary Investigation of in Vivo Performance

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European Journal of Pharmaceutical Sciences, 60: 10-23 (2014) *IF*: 3.005

Granisetron hydrochloride (granisetron) is a potent antiemetic that has been proven to be effective in acute and delayed emesis in cancer chemotherapy. Granisetron suffers from reduced oral bioavailability (60%) due to hepatic metabolism. In this study the combined advantage of provesicular carriers and buccal drug delivery has been explored aiming to sustain effect and improve bioavailability of granisetron via development of granisetron provesicular buccoadhesive tablets with suitable quality characteristics (hardness, drug content, in vitro release pattern, ex vivo bioadhesion and in vivo bioadhesion behavior).

Composition of the reconstituted niosomes from different prepared provesicular carriers regarding type of surfactant used and cholesterol concentration significantly affected both entrapment efficiency (%EE) and vesicle size. Span 80 proniosome-derived niosomes exhibited higher encapsulation efficiency and smaller particle size than those derived from span 20. Also, the effect of %EE and bioadhesive polymer type on in vitro drug release and in vivo performance of buccoadhesive tablets was investigated.

Based on achievement of required in vitro release pattern (20– 30% at 2 h, 40–65% at 6 h and 80–95% at 12 h), in vivo swelling behavior, and in vivo adhesion time (>14 h) granisetron formulation (F19, 1.4 mg) comprising HPMC:carbopol 974P (7:3) and maltodextrin coated with the vesicular precursors span 80 and cholesterol (9:1) was chosen for in vivo study.

In vivo pharmacokinetic study revealed higher bioavailability of buccal formulation relative to conventional oral formulation of granisetron (AUC0–1 is 89.97 and 38.18 ng h/ml for buccal and oral formulation, respectively). A significantly lower and delayed Cmax (12.09 \pm 4.47 ng/ml, at 8 h) was observed after buccal application compared to conventional oral tablet (31.66 \pm 10.15 ng/ml, at 0.5 h). The prepared provesicular buccoadhesive tablet of granisetron (F19) might help bypass hepatic first-pass metabolism and improve bioavailability of granisetron with the possibility of reducing reported daily dose (2 mg) and reducing dosing frequency.

Keywords: Granisetron hydrochloride; Proniosomes; Provesicular Powder; Buccal Delivery; Bioavailability Study.

988. Feasibility of Optimizing Trimetazidine Dihydrochloride Release from Controlled Porosity Osmotic Pump Tablets of Directly Compressed Cores

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Journal of Advanced Research, Volume 5, Issue 3: 347-356 (2014) IF: 3

The aim of this study was to develop and optimize Trimetazidine dihydrochloride (TM) controlled porosity osmotic pump (CPOP) tablets of directly compressed cores.A23 full factorial design was used to study the influence of three factors namely: PEG400 (10% and25% based on coating polymer weight), coating level (10% and20% of tablet core weight) and hole diameter (0 "no hole" and 1 mm). Other variables such as tablet cores, coating mixture of ethylcellulose (4%) and dibutylphthalate (2%) in 95% ethanol and pan coating conditions were kept constant. The responses studied (Yi) were cumulative percentage released after 2 h (Q%2h), 6 h (Q%6h), 12 h (Q%12h) and regression coefficient of release data fitted to zero order equation (RSQzero), forY1,Y2,Y3, andY4, respectively. Polynomial equations were used to study the influence of different factors on each response individually. Response surface methodology and multiple response optimization were used to search for an optimized formula. Response variables for the optimized formula were

restricted to 10% 6 Y1 6 20%, 40% 6 Y2 6 60%, 80% 6 Y3 6 100%, and Y4>0.9. The statistical analysis of the results revealed that PEG400 had positive effects on Q%2h, Q%6h and Q%12h, hole diameter had positive effects on all responses and coating level had positive effect on Q%6h, Q%12h and negative effect on RSQzero. Full three factor interaction (3FI) equations were used for representation of all responses except Q%2h which was represented by reduced (3FI) equation. Upon exploring the experimental space, no formula in the tested range could satisfy the required constraints. Thus, direct compression ofTMcores was not suitable for formation of CPOP tablets. Preliminary trials of CPOP tablets with wet granulated cores were promising with an intact membrane for 12 h and high RSQzero. Further improvement of these formulations to optimize TM release will be done in further studies.

Keywords: Trimetazidine; Controlled porosity osmotic Pump Tablets; Factorial design; Response surface methodology.

989. Antioxidant and Hepatoprotective Effects of Silymarin Phytosomes Compared To Milk Thistle Extract in CCl₄ Induced Hepatotoxicity in Rat

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Journal of Microencapsulation, 31(1):23-30 (2014) IF: 1.878

Milk thistle extract is a well-known hepatoprotectant with low bioavailability (20–50%). The objective of the present study is to prepare and characterize silymarin phytosomes and to test the hepatoprotective effect of the phytosomes in CCl4 induced liver injury in rats compared to milk thistle extract. Phytosomes were prepared using lecithin from soybeans and from egg yolk.

The prepared phytosomes were examined using scanning electron microscopy, transmission electron microscopy, differential scanning calorimetry, Fourier transform infrared spectroscopy and proton nuclear magnetic resonance spectroscopy (H1NMR). The loading efficiency was 485% in all phytosomal formulations. Formula P2 (with the molar ratio of soybean lecithin to silybin 1:1) and P4 (with the molar ratio of egg-yolk lecithin to silybin 0.25:1) exhibited significantly (p50.05) faster release than milk thistle extract. The in vivo study revealed that phytosomes significantly (p50.05) decreased glutamic pyruvic transaminase and super oxide dismutase activities compared to milk thistle extract.

Keywords: Liver enzymes; Phosphatidylcholine; Silybin.

990. Pharmaceutical and Pharmacokinetic Evaluation of A Novel Fast Dissolving Film Formulation of Flupentixol Dihydrochloride

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Aaps Pharmscitech, 15: 1603-1610 (2014) IF: 1.776

The objective of the present study was to develop fast dissolving oral film of the antipsychotic drug, flupentixol dihydrochloride, to enhance its bioavailability, optimize its therapeutic effect when used to treat depression with anxiety, and increase the convenience and compliance by the mentally ill, developmentally disable, elderly, and pediatric patients. Six formulae were prepared with different concentrations of water-soluble polymers vis. hydroxypropyl methylcellulose (HPMC E5) and carboxymethyl cellulose (CMC) by solvent casting technique. The prepared films were subjected to characterization for folding endurance, weight variations, thickness, disintegration time, drug release pattern, and drug content. Physical compatibility between the drug and excipients was guaranteed in the selected formulation (2% HPMC) by means of differential scanning calorimetry analysis and Fouriertransform infrared spectroscopy. This formulation revealed high stability after testing according to the International Conference on Harmonisation guidelines. In vivo studies based on single phase parallel design were carried out for the optimized formulation in healthy human volunteers. The concentration of flupentixol dihydrochloride in plasma samples was analyzed by a developed validated LC-MS/MS assay method and the pharmacokinetic parameters of the established formulation were compared with the commercially available oral tablets. Faster rate of absorption of flupentixol could be obtained from the oral film formulation and the relative bioavailability was found to be 151.06% compared to the marketed product.

Keywords: Fast dissolving; Flupentixol dihydrochloride; Lc-Ms/Ms Analysis; Oral Film; Pharmacokinetics.

991. Design of Innovated Lipid-Based Floating Beads Loaded With An Antispasmodic Drug: in-Vitro and in-Vivo Evaluation

Sally Adel and Nermeen Adel ElKasabgy

Journal of Liposome Research, 24: 136-149 (2014) IF: 1.533

Context: Drotaverine hydrochloride (DRT) is used to treat gastrointestinal spasms accompanied with diarrhoea. Hence, the drug suffers from brief residence in the highly moving intestine during diarrhoea which leads to poor bioavailability and frequent dosing.

Objective: This study aimed to extend DRT residence in the stomach.

Methods: Calcium alginate floating beads were prepared using sodium alginate, isopropylmyristate (oil), and Gelucire43/01 (lipid) adopting emulsion gelation technique. The beads were evaluated for their floating ability, DRT entrapment efficiency and in-vitro release. Gelucire43/01 /oil-based beads of the selected formula were coated using ethylcellulose and different plasticizers as polyethylene glycol 400 and triethyl citrate to retard the drug release.

The coated beads were re-characterized. Finally, the best formulae were investigated for their in-vivo floating ability in dogs besides their delivery to the systemic circulation compared to drug powder in human volunteers.

Results: Incorporation of Gelucire43/01 to oil-based beads enhanced the in-vitro performance of the beads. Coated beads prepared using drug:sodium alginate ratio of 1:3 (w/w), 20% (w/v) isopropylmyristate, 20% (w/v) Gelucire43/01 showed promising in-vitro performance. The beads floated for 12 h in the dogs' stomach and produced three-fold increase of the total amount of DRT absorbed within 24 h compared to that of DRT powder.

Conclusions: Gelucire43/01 /isopropylmyristate-based calcium alginate floating beads coated with ethylcellulose using either PEG 400 or TEC as plasticizers proved to be a successful dosage form in extending DRT release.

Keywords: Drotaverine Hydrochloride; Glass Transition Temperature; Isopropylmyristate; Pharmacokinetics.

992. Formulation and Preclinical Evaluation of ^{99m}Tc–Gemcitabine as A Novel Radiopharmaceutical for Solid Tumor Imaging

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Journal of Radioanalytical and Nuclear Chemistry, 302: 179-186 (2014) IF: 1.415

The aim of this study is the formulation of a new radiopharmaceutical for imaging solid tumor bearing. Gemcitabine is a nucleoside analogue used as chemotherapeutic agent. Gemcitabine was formulated and radiolabeled with one of the most important diagnostic radioactive isotopes (technetium-99m) to be investigated in solid tumor imaging. The labeling parameters such as gemcitabine amount, stannous chloride amount, pH of the reaction mixture, and reaction time were optimized. 99mTc-gemcitabine was prepared at pH 9 with a maximum labeling yield of 96 \pm 0.3 % without any notable decomposition at room temperature over a period of 8 h. The preclinical evaluation and biodistribution in solid tumor bearing mice showed that 99mTc-gemcitabine had solid tumor selectivity, preclinical high biological accumulation in tumor cells and high retention. Tumor/normal muscle (T/NT) ratios increased with time showing high T/NT ratio (T/NT = 4.9 ± 0.27 at 120 min post injection) and high Tumor/ Blood ratio (3.4 \pm 0.06), suggesting 99mTc-gemcitabine as a novel solid tumor imaging agent.

Keywords: Gemcitabine Technetium-99M Formulation Tumor.

993. Preparation of Radioiodinated Ritodrine as A Potential Agent for Lung Imaging

H. M. Rashed, I. T. Ibrahim, M. A. Motale and A. Abd El-Bary

Journal of Radioanalytical and Nuclear Chemistry, 300: 1227-1233 (2014) IF: 1.415

Ritodrine (a beta-2 adrenergic receptor agonist) was successfully labeled with ¹²⁵I via direct electrophilic substitution reaction at ambient temperature. ¹²⁵I-ritodrine was obtained with a maximum labeling yield of 97 \pm 0.163 % and in vitro stability up to 24 h. Biodistribution studies showed that maximum in vivo uptake of 125I-ritodrine in lungs was 20.4 \pm 0.22 % injected activity/g tissue at 1 h post-injection, whereas the clearance from mice appeared to proceed mainly via the renal pathway. 125I-ritodrine is not a blood product and so it is more safe than the currently available 99mTc-MAA, and its lung uptake is higher than that of the recently discovered 99mTc(CO)5I and 99mTc-DHPM. As a conclusion, radioiodinated ritodrine could be used as a novel radiopharmaceutical for lung perfusion scan safer than the currently available 99mTc-MAA and more potential than the recently discovered 99mTc(CO)5I and 99mTc-DHPM.

Keywords: Ritodrine; 125 I; Chloramine-T; Lung imaging.

994. Adoption of Polymeric Micelles To Enhance the Oral Bioavailability of Dexibuprofen: Formulation, in-Vitro Evaluation and in-Vivo Pharmacokinetic Study in Healthy Human Volunteers

Ghada Abdelbary and Amal Makhlouf

Pharmaceutical Development and Technology, 19: 717-727 (2014) IF: 1.335

This work aimed to incorporate Dexibuprofen (DXI), the pharmacologically active and more potent form of ibuprofen, into polymeric micelles based tablets with enhanced oral bioavailability. Thin film hydration technique was employed to prepare DXI polymeric micelles using Pluronic® F127 and/or P123 solutions in different ratios (ranging from 1:1 up to 1:10). Prepared micelles were characterized regarding particle size, drug loading and entrapment efficiency. Selected formulae were lyophilized in presence of cryoprotectants and subjected to solidstate characterization as well as scanning and transmission electron microscopy. Subsequently, tablets were prepared and evaluated in-vitro regarding physical properties and drug release. An in-vivo pharmacokinetic study was performed in six healthy human volunteers in comparison to the commercially available tablet of DXI. Solid-state characterization proved that DXI was homogenously dispersed in Pluronic micelles' matrices. Formula TF5 tablets comprising lyophilized micelles (F5; DXI: Pluronic F127 in 1:1 ratio and 0.25% mannitol) showed higher Cmax and earlier tmax values than those of the commercial formula, where the relative bioavailability was calculated to be 160.15%. The experimental evidence in this research leads to the conclusion that polymeric micelles present enabling properties for oral delivery of drugs with low solubility.

Keywords: Dexibuprofen; Healthy human volunteers; Pharmacokinetic study; Pluronics; Polymeric micelles.

995. Comparison of Nanomilling and Coprecipitation on the Enhancement of in Vitro Dissolution Rate of Poorly Water-Soluble Model Drug Aripiprazole

Abdelbary AA, Li X, El-Nabarawi M, Elassasy A and Jasti B.

Pharmaceutical Development and Technology, 19: 491-500 (2014) IF: 1.335

The aim of this study was to evaluate the effect of coprecipitation and nanomilling on the crystallinity of a model drug, aripiprazole and evaluate the in vitro dissolution rate (IDR). Aripiprazole compositions were prepared by physical mixing, coprecipitation and nanomilling using hydroxypropylcellulose (HPC), polyvinylpyrrolidone (PVP) K17 and pluronic F127. The particle size, solubility, IDR and drug crystallinity were studied. Aripiprazole pluronic compositions were compressed into tablets and dissolution rate was evaluated. The particle size of nanomilled compositions was significantly smaller than that of the other compositions. The saturation solubility of aripiprazole from nanoparticle (NP) and coprecipitate (CP) from PVP and Pluronic was comparable, however, NP of HPC containing composition showed higher solubility when compared to its CP compositions. The crystallinity of aripiprazole decreased from physical mixtures to coprecipitates and further in NPs. The increased aripiprazole IDR was due to decreased crystallinity from coprecipitate compositions and disruption of crystallinity from nanomilled compositions. Aripiprazole tablets prepared from nanomilled powder dissolved >75% within 10 min compared with 17% and 20% for tablets prepared from physical mixture and coprecipitate powders, respectively. The increase in IDR due to nanomilling was more significant than coprecipitation and NPs retained the IDR after compression into tablets.

Keywords: Aripiprazole; Crystallinity; Dissolution rate; Nanoparticles; Particle size; Tablets.

996. Nanostructured Lipid Carriers (Nlcs) Versus Solid Lipid Nanoparticles (Slns) for Topical Delivery of Meloxicam

Rawia M. Khalil, A. Abd-Elbary, Mahfoz A. Kassem, Mamdouh M. Ghorab and Mona Basha

Pharmaceutical Development and Technology, 19: 304-314 (2014) IF: 1.335

Objective: The aim of this study was to develop nanostructured lipid carriers (NLCs) as well as solid lipid nanoparticles (SLNs) and evaluate their potential in the topical delivery of meloxicam

(MLX). Materials and methods: The effect of various compositional variations on their physicochemical properties was investigated. Furthermore, MLX-loaded lipid nanoparticles-based hydrogels were formulated and the gels were evaluated as vehicles for topical application. Results and discussion: The results showed that NLC and SLN dispersions had spherical shapes with an average size between 215 and 430 nm. High entrapment efficiency was obtained ranging from 61.94 to 90.38% with negatively charged zeta potential in the range of 19.1 to 25.7 mV. The release profiles of all formulations exhibited sustained release characteristics over 48 h and the release rates increased as the amount of liquid lipid in lipid core increased. Finally, Precirol NLC with 50% Miglyol812 and its corresponding SLN were incorporated in hydrogels. The gels showed adequate pH, non- Newtonian flow with shear-thinning behavior and controlled release profiles. The biological evaluation revealed that MLX-loaded NLC gel showed more pronounced effect compared to MLX-loaded SLN gel.

Conclusion: It can be concluded that lipid nanoparticles represent promising particulate carriers for topical application.

Keywords: Hydrogels; Meloxicam; Nanostructured lipid Carriers; Solid lipid nanoparticles; Topical delivery.

997. Novel Delivery Approach for Ketotifen Fumarate: Dissofilms Formulation Using 3² Experimental Design: in Vitro/in Vivo Evaluation

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Pharmaceutical Development And Technology, 19: 521-530 (2014) IF: 1.335

Orally dissolving films (dissofilms) have gained increasing popularity and attention due to their ease of administration and avoidance of first pass metabolism. Ketotifen fumarate (KF) bioavailability is reported to be only $\sim 50\%$ due to hepatic firstpass metabolism. Aiming to surmount this drawback and improve patients' compliance, a 3² full factorial design was applied to formulate KF Orodispersible films, and to investigate the effects and interactions of the concentrations of the novel film former; Lycoat NG73® and the film modifier: maltodextrin (MDX) on the characteristics of the films prepared using solvent casting technique. The dissofilms were thoroughly evaluated regarding their weight uniformity, content uniformity, moisture uptake, in vivo mouth dissolving time (MDT) and their thermal behavior via differential scanning calorimetry. Statistical analysis revealed the significant influence of Lycoat NG73® concentration on percent elongation, percent KF dissolved after 5 min, and in vivo MDT, while MDX concentration had significant effect only on percent elongation. Further, storage of the optimal selected formula (15% Lycoat NG73 and 0% MDX) at 40 °C/75% relative humidity for 12 weeks caused no significant change in appearance, KF content

or drug dissolution profile. Pharmacokinetic study revealed that the orally dissolving films showed significantly higher absorption extent than the reference marketed product, while no significant difference was observed for $C_{\rm max}$.

Keywords: Ketotifen Fumarate; Lycoat Ng73; Maltodextrin; Mouth-Dissolving Films; Orodispersible Films.

998. Utility of Mannitol and Citric Acid for Enhancing the Solubilizing and Taste Masking Properties of β-Cyclodextrin: Development of Fast-Dissolving Tablets Containing Extremely Bitter Drug

Emad B. Basalious, Asmaa Abdullah and Magdy Ibrahim

J. of Pharmaceutical Innovation, 9: 309-320 (2014) IF: 1.25

Introduction: Development of Fast dissolved tablets (FDTs) in which taste is masked, and drug dissolution is improved, is a major challenge especially in case of extremely bitter drug with poor water solubility such as aceclofenac.

Purpose: The purpose of this study was to enhance the taste masking and solubilizing properties of β -cyclodextrin using citric acid and mannitol through preparation of acid soluble taste masked granules of aceclofenac (ASTMGA).

Methods: General factorial design was applied to optimize FDTs containing ASTMGA so to have short disintegration time (<30 sec.), acceptable taste and enhanced drug dissolution in gastric fluid. Three formulation variables; the type of sugar / cellulose based diluents, X₁ (Galen IQ® and Prosolv®), superdisintegrant type, X₂ (Crospovidone®, Glycolys® and Ac-Di-<u>Sol</u>®) and superdisintegrant concentration, X₃ (10 % and 20 %) were included in the design. The systems were assessed for hardness, friability, in vitro disintegration, wetting time, in vitro dissolution and in vivo oral study.

Results: The combination of Prosolv® and Crospovidone® in the formulation of FDT gave optimum disintegration time. The stability of the optimized FDT in different package materials was retained after storage at 40 °C/75 % RH for six months. Contrary to FDT containing conventional aceclofenac β -cyclodextrin inclusion complex, FDT containing ASTMGA showed highest dissolution rate in both simulated salivary and gastric fluids and excellent ability to mask the bitterness of drug.

Conclusions: Our results propose that the combination of citric acid, mannitol and β -cyclodextrin could be promising to improve taste masking and solubilizing properties of β -cyclodextrin.

Keywords: Aceclofenac; β-Cyclodextrin; Mannitol; Fast;Dissolving tablet; Citric acid; Taste masking.

999. Radioiodinated Acebutolol as A New Highly Selective Radiotracer for Myocardial Perfusion Imaging

M. M. Swidan, T. M. Sakr, M. A. Motaleb, A. Abd El-Bary and M. T. El-Kolaly

Journal of Labelled Compounds & Radiopharmaceuticals, 57: 593-599 (2014) IF: 1.187

Acebutolol was successfully labeled with 125I via direct electrophilic substitution reaction. Radioiodinated acebutolol was prepared with a maximum radiochemical yield of 96.5 \pm 0.3% and in vitro stability up to 72 h. The in vivo biological distribution of radioiodinated acebutolol showed high heart uptake of 37.8 \pm 0.14% injected activity/g organ with low lungs and liver uptakes at 5 min post-injection. In vivo receptor

blocking study was carried out in mice to evaluate its selectivity to heart. Radioiodinated acebutolol showed fast heart accumulation with high heart/liver ratio, which provides the ability for fast myocardial imaging with significant decrease in the radiation hazards risk on patients. So, radioiodinated acebutolol could be displayed as a radiotracer drug of choice in case of emergency patients for myocardial perfusion imaging.

Keywords: Myocardial Perfusion Imaging; Radioiodination; Acebutolol; Chloramin-T

1000. Chromium Picolinate Loaded Superporous Hydrogel and Superporous Hydrogel Composite as A Controlled Release Device: in Vitro and in Vivo Evaluation

S.A. Abdel Halim, S.A. Yehia and M.A. El-Nabarawi

Journal of Drug Delivery Science and Technology, 24(4): 326-337 (2014) IF: 0.774

The aim of this work was to develop chromium picolinate (CP) loaded gastroretentive device using superporous hydrogel (SPH) and superporous hydrogel composite (SPHC). The drug was considered as good candidate for such systems owing to its narrow absorption window. Swelling ratio, apparent density, scanning electron microscopy (SEM), drug content and drug release in pH 1.2 were evaluated for hydrogels. SEM of hydrogels showed interconnected pores with extensive capillary insertion. Swelling ratio for CP-SPH was higher than that of SPHC while apparent densities were lower. Both SPH and SPHC retarded drug release as values of half-life attained 3.64 and 2.94 h, respectively, while plain drug 0.22 h. The mechanical strength of SPHC was higher than SPH, so it was selected for in vivo studies in dogs. Radiographic examination in dogs showed that gastric retention persisted for 24 h. Percentage relative bioavailability was 298.8 %. SPHC could be thus considered as good gastroretentive device for CP.

Keywords: Controlled release formulations ; Chromium Picolinate ; Superporous hydrogel composite ; Gastric retention ;Radiographic examination.

1001. Development of Nanoparticulate Formulations for Ocular Delivery of Prednisolone Acetate: Preparation and Characterization

S.A. Abdel Halim and S. Salah

Journal of Drug Delivery Science and Technology, 24(2): 159-165 (2014) IF: 0.734

This study describes the development and characterization of biodegradable prednisolone acetate nanoparticles indicated for ocular use. Nanoparticles were prepared by oil-in-water emulsion/solvent evaporation and nanoprecipitation techniques using poly lactide-co-glycolide (50:50) and poly DL-lactide. A 24 factorial design was applied to optimize the drug formulation. The effect of independent variables such as polymer type, drug-to-polymer ratio, surfactant concentration and method of preparation on entrapment efficiency (EE%), particle size, zeta potential and drug release were investigated. Further studies such as differential scanning calorimetry (DSC), X-ray diffraction (XRD) and transmission electron microscope were carried out on the selected formula. O/W emulsion/solvent evaporation technique was superior to the nanoprecipitation method in terms of EE% . In vitro release study showed extended drug release. DSC and XRD

indicated the dispersion of the drug within the nanoparticles. These results demonstrate the feasibility of encapsulating prednisolone acetate inside biodegradable nanoparticles for ocular delivery.

Keywords: Prednisolone Acetate; Biodegradable Nanoparticles; Factorial design; O/W solvent evaporation; Nanopreciptation technique; Intravitreal injection.

1002. Olmesartan Medoxomil Surface Solid Dispersion-Based Orodispersible Tablets: Formulation And in Vitro Characterization

A. Abd-El Bary, D. Louis and S. Sayed

Journal of Drug Delivery Science and Technology, 24: 665-672 (2014) IF: 0.734

This work aims to improve the dissolution of the poorly water soluble drug olmesartan medoxomil by using the surface solid dispersion (SSD) technique. Insoluble carriers, namely Avicel PH 102, Aerosil 200, silicified microcrystalline cellulose, Lycatab, Starlac, sodium starch glycolate (SSG), and Kyron T-314, were used at three different drug: carrier ratios (1:1, 1:5, and 1:9 w/w) to prepare SSDs by solvent evaporation method. SSD18 consisting of drug:SSG at 1:9 ratio and SSD20 consisting of drug:Kyron T-314 at 1:5 ratio showed the highest enhancement in the dissolution rate and efficiency compared to the plain drug and the physical mixture. The selected dispersion was formulated into orodispersible tablets (ODTs) by using four different disintegrants. F3 DC ODT (consisting of SSD20 and 5 % crospovidone) and F6 DC ODT (consisting of SSD18 and no disintegrant) exhibited low in vitro disintegration time and high percentage of olmesartan medoxomil dissoluted within 10 min.

Keywords: Olmesartan Medoxomil; Poorly water soluble; Surface solid dispersion; Co-evaporation technique; Solvent evaporation; Dissolution rate; Kyron T-314; Sodium starch glycolate; Orodispersible tablet.

1003. Recrystallized Agglomerated Meloxicam: Evaluation of Anti-Nociceptive Effect

M. Farid, D.A. El-Setouhy, M.A. El-Nabarawi and T. El-Bayomi

Journal Of Drug Delivery Science And Technology, 24 (6): 645-652 (2014) IF: 0.734

Meloxicam (Mel) is a non steroidal anti-inflammatory drug belonging to BCS class II category. Hence, its pharmacological effect is affected by its low water solubility. The aim of this study was to improve the solubility and dissolution rate of meloxicam. Mel was recrystallized into spherical agglomerates (SA) with or without different polymers (PEG 4000, Inutec SP1, PVP k30, Pluronic F127 and HPBCD) at three different concentrations (0.0125, 0. 025 and 0.05 % w/v) using quasi emulsion solvent diffusion (QESD) and neutralization techniques (NT). Mel SA containing low concentration level of polymer (0.0125 % w/v) showed highest solubility and dissolution rate enhancement compared to pure Mel. DSC and IR outcome showed no chemical alteration in the recrystallized drug. DSC and PXRD studies showed that crystallinity of Mel was retained in all of the prepared SA (although slightly reduced compared to pure Mel). The anti-nociceptive effect of F2 (QESD) and F29 (NT) (showing highest dissolution in simulated gastric fluid) was assessed in mice using acetic acid induced abdominal writhing in comparison to pure drug. The selected formulae showed significantly higher analgesic activity in comparison to the pure drug and the control.

Keywords: Meloxicam – Spherical Agglomeration ; Solubility ; Dissolution Rate ; Anti-Nociceptive Effect.

Dept. of Pharmacognosy

1004. Interstrand DNA-DNA Cross-Link Formation Between Adenine Residuse And Abasic Sites in Duplex DNA

Nathan E. Price, Kevin M. Johnson, Jin Wang, Mostafa I. Fekry, Yinsheng Wang and Kent S. Gates

Journal of the American Chemical Society, 136: 3483-3490 (2014) IF: 11.444

The loss of a coding nucleobase from the structure of DNA is a common event that generates an abasic (Ap) site (1).Ap sites exist as an equilibrating mixture of a cyclic hemiacetal and a ringopened aldehyde. Aldehydes are electrophilic functionalgroups that can form covalent adducts with nucleophilic sites in DNA. Thus, Ap sites present a potentially reactive aldehyde as part of the internal structure of DNA. Here we report evidence that the aldehyde group of Ap sites in duplex DNA can form a ovalent adduct with the N6-amino group of adenine residues on the opposing strand. The resulting interstrand DNA-DNA cross-link occurs at 5'-ApT/5'-AA sequences in remarkably high yields (15-70%) under physiologically relevant conditions. This naturally occurring DNA-templated reaction has the potential to generate cross-links in the genetic material of living cells. **Keywords:** Dna;Cross-Link;Abasic Sites.

Keywords. Dila, Closs-Link, Abasic Siles.

1005. Enantioselective Divergent Syntheses of Several Polyhalogenated Plocamium Monoterpenes and Evaluation of Their Selectivity for Solid Tumors

Carl V. Voge, Halina Pietraszkiewicz, Omar M. Sabry, William H. Gerwick, Frederick A. Valeriote and Christopher D. Vanderwa

Angewandte Chemie-International Edition, 53/45: 12205-12209 (2014) IF: 11.336

The family of polyhalogenated monoterpenes from Plocamium counts over a hundred known members. Using glyceraldehyde acetonide as a chiral-pool precursor, an enantioselective and divergent strategy was developed that provides a blueprint for the synthesis of many of the small yet complex acyclic members of this family. The broad applicability of this approach is demonstrated with the short, eight-step synthesis of four natural products and three analogues. These syntheses are the first of any members of the acyclic polyhalogenated Plocamium monoterpenes and permitted the evaluation of their selectivity against a range of tumor cell lines.

Keywords: Antitumor Agents; Chlorination; Olefination; Stereocontrol; Total Synthesis

1006. Structural and Biochemical Impact of C8-Aryl-Guanine Adducts Within the Nari Recognition Dna Sequence:Influence of Aryl Ring Size on Targeted Andsemi-Targeted Mutagenicity

Michael Sproviero, Anne M.R. Verwey, Katherine M. Rankin, Aaron A. Witham, Dmitriy V. Soldatov, Richard A. Manderville, Mostafa I. Fekry Shana J. Sturla Purshotam Sharma and Stacey D. Wetmore

Nucleic Acids Research, 42(21): 13405-13421 (2014) IF: 8.808

Chemical mutagens with an aromatic ring system may be enzymatically transformed to afford aryl radical species that preferentially react at the C8-site of 2'-deoxyguanosine (dG). The resulting carbon-linked C8-aryl-dG adduct possesses altered biophysical and genetic coding properties compared to the precursor nucleoside. Described herein are structural and in vitro mutagenicity studies of a series of fluorescent C8-aryl-dG analogues that differ in aryl ring size and are representative of authentic DNA adducts. These structural mimics have been inserted into a hotspot sequence for frameshift mutations, namely, the reiterated G3-position of the NarI sequence within 12mer (NarI(12)) and 22mer (NarI(22)) oligonucleotides. In the NarI(12) duplexes, the C8-aryl-dG adducts display a preference for adopting an anti-conformation opposite C, despite the strong syn preference of the free nucleoside. Using the NarI(22) sequence as a template for DNA synthesis in vitro, mutagenicity of the C8aryl-dG adducts was assayed with representative high-fidelity replicative versus lesion bypass Y-family DNA polymerases, namely, Escherichia coli pol I Klenow fragment exo- (Kf-) and Sulfolobus solfataricus P2 DNA polymerase IV (Dpo4). Our experiments provide a basis for a model involving a two-base slippage and subsequent realignment process to relate the miscoding properties of C-linked C8-aryl-dG adducts with their chemical structures.

Keywords: DNA; C8; Aryl; Guanine; Mutagenicity.

1007. Cytotoxic Activity of Acyl Phloroglucinols Isolated From the Leaves of Eucalyptus Cinerea F. Muell. Ex Benth. Cultivated in Egypt

Fathy M. Soliman, Magda M. Fathy, Maha M. Salama, Ahmed M. Al-Abd, Fatema R. Saber and Ali M. El-Halawany

Scientific Reports, 1: 1-6 (2014) IF: 5.078

Two acyl phloroglucinol compounds namely; Sideroxylonal B (1) and Macrocarpal A (2) were isolated from the Sideroxylonal-Rich Extract (SRE) of the juvenile leaves of *Eucalyptus cinerea*; F. Muell. ex Benth cultivated in Egypt. Identification of the isolated compounds was established on the basis of physico-chemical properties and spectral analysis (1D & 2D NMR).

The two compounds were isolated for the first time from this species.

The SRE alongside with the isolated compounds were tested against three human cancer cell lines; MCF7 (breast carcinoma cell line), HEP2 (laryngeal carcinoma), CaCo (colonic adenocarcinoma) and one type of normal human cell line;10 FS (fibroblast cells).

The SRE, (1), and (2) showed cytotoxic activity with IC₅₀ 13.6 \pm 0.62, 7.2 \pm 0.5, 14.8 \pm 0.55 µg mL–1 against HEP2 respectively, 11.6 \pm 0.47, 4 \pm 0.36, 11.4 \pm 0.45 µg mL–1 against CaCo, respectively, and 8.6 \pm 0.29, 4.4 \pm 0.25, and 7.8 \pm 0.3 µg mL–1 against MCF7, respectively. Meanwhile, the (SRE) together with (1) and (2) exhibited low cytotoxicity against normal cell line 10 FS, with IC₅₀ 55.4 \pm 1.4, 43 \pm 0.8 and 50.1 \pm 1.12 µg mL–1, respectively.

The antiprofilerative activity of the tested compounds was evaluated. The cell cycle profile of cells treated with Sideroxylonal-B and Macrocarpal-A indicates possible S-phase specific effects.

Keywords: Eucalyptus cinerea; Sideroxylonal B; Macrocarpal A; Cytotoxicity.

1008. Protective Effect of Aframomum Melegueta Phenolics Against CCl₄-Induced Rat Hepatocytes Damage; Role of Apoptosis and Pro-Inflammatory Cytokines Inhibition

Ali M. El-Halawany, Riham Salah El Dine, Nesrine S. El Sayed and Masao Hattori

Scientific Reports, 4: 1-9 (2014) IF: 5.078

Aframomum melegueta is a commonly used African spice. Through a hepatoprotective bioassay-guided isolation, the chloroform fraction of A.melegueta seeds yielded one new diarylheptanoid named 3-(S)-acetyl-1-(4'-hydroxy-3', 5'-di methoxyphenyl)-7-(3",4", 5"-trihydroxyphenyl)heptane (1), and two new hydroxyphenylalkanones, [8]-dehydrogingerdione (2) and [6]-dehydroparadol (3), in addition to six known compounds (4-9). The hepatoprotective effect of A. melegueta methanol extract, sub-fractions and isolated compounds was investigated using carbon tetrachloride (CCl₄)-induced liver injury in a rat hepatocytes model. The methanol, chloroform extracts and compounds 1, 5, 8 and 9 of A. melegueta significantly inhibited the elevated serum alanine aminotransferase (ALT), thiobarbituric acid reactive substances (TBARS), tumor necrosis factor (TNFa), interleukin-1beta (II-1 β), caspase3 and 9 and enhanced the reduced liver glutathione (GSH) level caused by CCl₄ intoxication. These results indicate that A.melegueta extracts, and isolated compounds play a protective role in CCl₄ induced acute liver injury which might be due to elevated antioxidative defense potentials, suppressed inflammatory responses and apoptosis of liver tissue.

Keywords: Hepatoprotective; Tbars; Alt; Aframomum; Hydroxyphenylalkanes.

1009. Classification of Commercial Cultivars of Humulus Lupulus L. (Hop) by Chemometric Pixel Analysis of Two Dimensional Nuclear Magnetic Resonance Spectra

Mohamed A. Farag and Engy A. Mahrous

Metabolomics, 10: 21-32 (2014) IF: 3.965

he development of fast and effective spectroscopic methods that can detect most compounds in an untargeted manner is of increasing interest in plant extracts fingerprinting or profiling projects. Metabolite fingerprinting by nuclear magnetic resonance (NMR) is a fast growing field which is increasingly applied for quality control of herbal products, mostly via 1D H-1 NMR coupled to multivariate data analysis. Nevertheless, signal overlap is a common problem in H-1 NMR profiles that hinders metabolites identification and results in incomplete data interpretation. Herein, we introduce a novel approach in coupling 2D NMR datasets with principal component analysis (PCA) exemplified for hop resin classification. Heteronuclear multiple bond correlation (HMBC) profile maps of hop resins (Humulus lupulus) were generated for a comparative study of 13 hop cultivars. The method described herein combines reproducible metabolite fingerprints with a minimal sample preparation effort and an experimental time of ca. 28 min per sample, comparable to that of a standard HPLC run. Moreover, HMBC spectra provide not only unequivocal assignment of hop major secondary metabolites, but also allow to identify several isomerization and degradation products of hop bitter acids including the sedative principal of hop (2-methylbut-3-en-2-ol). We do believe that

combining 2D NMR datasets to chemometrics, i.e. PCA, has great potential for application in other plant metabolome projects of (commercially relevant) nutraceuticals and or herbal drugs.

Keywords: Humulus Lupulus L. Hop; 2D Nmr Metabolomics; Bitter Acids; Principal component Analysis; Quality control; Hmbc; Pixel Analysis.

1010. Metabolite Profiling and Fingerprinting of Hypericum Species: A Comparison of Ms and Nmr Metabolomics

Andrea Porzel and Mohamed A. Farag

Metabolomics, 10: 574-588 (2014) IF: 3.965

Hypericum perforatum, commonly known as St. John's wort, is a popular herbal supplement used for the treatment of mild to moderate depression. The major secondary metabolites of St. John's wort extracts include phenylpropanoids, flavonoids, xanthones, phloroglucinols, and naphthodianthrones. There are over 400 species in the genus Hypericum world-wide, most of which are little or not characterized in terms of phytochemical or pharmacological properties. Metabolomics techniques were used to investigate the natural product diversity within the genus Hypericum (Hypericaceae) and its correlation to bioactivity, exemplified by cytotoxic properties. Utilizing nuclear magnetic resonance (NMR) fingerprinting and mass spectrometry (MS) metabolic profiling techniques, MS and NMR spectra of extracts from H. perforatum, H. polyphyllum, H. tetrapterum, H. androsaemum, H. inodorum, H. undulatum and H. kouvtchense were evaluated and submitted to statistical multivariate analyses. Although comparable score plots in principal component analysis were derived from both MS and NMR datasets, loading plots reveal, that different set of metabolites contribute for species segregation in each dataset. Major peaks in H-1 NMR and MS spectra contributing to species discrimination were assigned as those of hyperforins, lipids, chlorogenic and shikimic acid. Shikimic acid and its downstream phenylpropanoids were more enriched in H. perforatum, H. androsaemum, H. kouytchense and H. inodorum extracts; whereas a novel hyperforin was found exclusively in H. polyphyllum. Next to H. perforatum, H. polyphyllum and H. tetrapterum show the highest levels of hypericins, and H. perforatum and H. polyphyllum are highest in phloroglucinols, suggesting that the latter species might be used as an alternative to St. John's wort. However, the major hyperforin-type compound in H. polyphyllum possesses a novel constitution of yet unknown bioactivity. Anti-cancer in vitro assays to evaluate the ability of extracts from Hypericum species in inhibiting prostate and colon cancer growth suggest that such bioactivity might be predicted by gross metabolic profiling.

Keywords: H. Perforatum; H. Polyphyllum; H-1 Nmr-Based Metabolomics; Lc-MS; Hyperforin; Anticancer activity prediction.

1011. Isolation of Antiosteoporotic Compounds from Seeds of Sophora Japonica

Hossam M. Abdallah, Ahmed M. Al-Abd, Gihan F. Asaad and Ashraf B. Abdel-Naim

Ali M. El-halawanyPlos One, : - (2014) IF: 3.534

Chemical investigation of Sophora japonica seeds resulted in the isolation of seven metabolites identified as: genistin (1), sophoricoside (2), sophorabioside (3), sophoraflavonoloside (4),

genistein 7,4'-di-O-b-D-glucopyransoide (5), kaempferol 3- O-a-L-rhamnopyranosyl (1R6) b-D-glucopyranosyl (1R2)b-D glucopyranoside (6) and rutin (7). Compounds 1, 2 and 5 showed significant estrogenic proliferative effect in MCF-7 cell in subcytotoxic concentration range. Compounds 1 and 2 showed minimal cell membrane damaging effect using LDH leakage assay. Accordingly, compound 2 (sophoricoside, (SPH)) was selected for further in-vivo studies as a potential anti-osteoporosis agent. The anti-osteoporotic effect of SPH was assessed in ovarectomized (OVX) rats after oral administration (15 mg/kg and 30 mg/kg) for 45 days compared to estradiol (10 mg/kg) as a positive control. Only in a dose of 30 mg/kg, SPH regained the original mechanical bone hardness compared to normal nonosteoporotic group. However, SPH (15 mg/kg) significantly increased the level of alkaline phosphatase (ALP) to normal level. Treatment with SPH (30 mg/kg) increased the level of ALP to be higher than normal group. SPH (15 mg/kg) did not significantly increase the serum level of osteocalcin (OC) compared to OVX group. On the other hand, treatment with SPH (30 mg/kg) significantly increased the level of OC to 78% higher than normal non-ovarectomized animals group. In addition, SPH (15 mg/kg) decreased the bone resorption marker, acid phosphatase (ACP) to normal level and SPH (30 mg/kg) further diminished the level of serum ACP. Histopathologically, sophoricoside ameliorated the ovarectomy induced osteoporosis in a dose dependent manner. The drug showed thicker bony trabeculae, more osteoid, and more osteoblastic rimming compared to OVX group.

Keywords: Sophoricoside; Osteoporosis.

1012. Developmental Changes in Leaf Phenolics Composition From Three Artichoke Cvs. (Cynara Scolymus) As Determined Via Uhplc-Ms and Chemometrics

Amira S. El Senousy, Mohamed A. Farag, Dalia A. Al-Mahdy, Ludger A. Wessjohann

Phytochemistry, 108: 67-76 (2014) IF: 3.35

The metabolomic differences in phenolics from leaves derived from 3 artichoke cultivars (Cynara scolymus): American Green Globe, French Hyrious and Egyptian Baladi, collected at different developmental stages, were assessed using UHPLC-MS coupled to chemometrics. Ontogenic changes were considered as leaves were collected at four different time intervals and positions (top and basal) during artichoke development. Unsupervised principal component analysis (PCA) and supervised orthogonal projection to latent structures-discriminant analysis (O2PLS-DA) were used for comparing and classification of samples harvested from different cultivars at different time points and positions. A clear separation among the three investigated cultivars was revealed, with the American Green Globe samples found most enriched in caffeic acid conjugates and flavonoids vs. other cultivars. Furthermore, these metabolites also showed a marked effect on the discrimination between leaf samples from cultivars harvested at different positions, regardless of the plant age. Metabolite absolute quantifications further confirmed that discrimination was mostly influenced by phenolic compounds, namely caffeoylquinic acids and flavonoids. This study demonstrates an effect of artichoke leaf position, regardless of plant age, on its secondary metabolites composition. To the best of our knowledge, this is the first report for compositional differences among artichoke leaves, based on their positions, via a metabolomic approach and

suggesting that top positioned artichoke leaves present a better source of caffeoylquinic acids, compared to basal ones

Keywords: Cynara Scolymus L. (Asteraceae); Uhplc-Ms; Principal Component Analysis (Pca); Orthogonal Projection To Latent Structures-Discriminant Analysis (Opls-Da); Developmental Stages.

1013. Metabolomics Driven Analysis of Six Nigella Species Seeds Via UPLIC-qTOF-MS and GC-MS Coupled To Chemometrics

Mohamed A. Farag, Haidy A. Gad, Andreas G. Heiss and Ludger A. Wessjohann

Food Chemistry, 151: 333-342 (2014) IF: 3.259

Nigella sativa, commonly known as black cumin seed, is a popular herbal supplement that contains numerous phytochemicals including terpenoids, saponins, flavonoids, alkaloids. Only a few of the ca. 15 species in the genus Nigella have been characterized in terms of phytochemical or pharmacological properties. Here, large scale metabolic profiling including UPLC-PDA-MS and GC-MS with further multivariate analysis was utilized to classify 6 Nigella species. Under optimized conditions, we were able to annotate 52 metabolites including 8 saponins, 10 flavonoids, 6 phenolics, 10 alkaloids, and 18 fatty acids. Major peaks in UPLC-MS spectra contributing to the discrimination among species were assigned as kaempferol glycosidic conjugates, with kaempferol-3-O-[glucopyranosyl-(1 \rightarrow 2)-galactopyranosyl-(1 \rightarrow 2)-glucopyranoside, identified as potential taxonomic marker for N. sativa. Compared with GC-MS, UPLC-MS was found much more efficient in Nigella sample classification based on genetic and geographical origin. Nevertheless, both GC-MS and UPLC-MS support the remote position of Nigella nigellastrum in relation to the other taxa. (C) 2013 Elsevier Ltd. All rights reserved.

Keywords: Black Cumin; Metabolomics; Natural Products; Gc-Ms; Uplc-Ms; Principal Component Analysis; N. Arvensis; N. Damascena; N. Hispanica; N. Nigellastrum; N. Orientalis; N. Sativa.

1014. Metabolomic Fingerprints of 21 Date Palm Fruit Varieties From Egypt Using UPLC/PDA/ESIqTOF-MS And GC-MS Analyzed By Chemometrics

Mohamed A. Farag, Mahmoud Mohsen, Ramona Heinkeand Ludger A. Wessjohann

Food Research International, 64: 218-226 (2014) IF: 3.05

Date palm fruits of the species Phoenix dactylifera exhibit a great diversity in sensory attributes including skin color, smell and taste. This study attempts to elucidate the primary and secondary metabolite profiles of 21 date varieties from Egypt. A major difficulty is sugar rich matrix and skin-fibers embedding the secondary metabolites. A total of 49 metabolites extracted from the fruit skin were evaluated in a UPLC/PDA/ESI-qTOF-MS based metabolomics study. The total phenolic contents of the varieties varied from 233 to 1897 mg/100 g (2.3-19 g/kg) dry weight. The predominant flavones were glycosides of luteolin and apigenin, quercetin conjugates were the principal flavonols, whereas caffeoyl shikimic acid was the main hydroxycinnamic acid conjugate. Aside from these major phenolic classes, a group of sphingolipids, fatty and other organic acids was also identified. The total non-fatty organic acid content correlates with reported

shelf lives. GC-MS was further utilized to localize primary metabolites in fruits (i.e. sugars and organic acids) with glucose and fructose accounting for up to 95% of TIC among most varieties. Principal component and clustering analyses reveal that flavonols and sugars, both contribute the most to variety classification. This study provides the most complete map for polyphenol & sugar distribution in Egyptian date fruit varieties. By describing the metabolite profiles in a diverse dataset of P. dactylifera, this study provides the basis for future investigations of date fruit nutritional value beyond providing energy and its potential for nutraceutical enhancement or storability. (C) 2014 Elsevier Ltd. All rights reserved.

Keywords: Phoenix Dactylifera; Metabolite Profiling; Uplc/Pda/Esi-Qtof-Ms; Gc-Ms; Flavonoids; Principal Component Analysis.

1015. Immunomodulatory Effect of Red Onion (Allium Cepa Linn) Scale Extract on Experimentally Inducedatypical Prostatic Hyperplasia in Wistar Rats

Essam Abdel-Hamid Abdel-Sattar

Mediators of Inflammation, 0: 1-13 (2014) IF: 2.417

Red onion scales (ROS) contain large amounts of flavonoids that are responsible for the reported antioxidant activity, immune enhancement, and anticancer property. Atypical prostatic hyperplasia (APH) was induced in adult castrated Wistar rats by both s.c. injection of testosterone (0.5 mg/rat/day) and by smearing citral on shaved skin once every 3 days for 30 days. Saw palmetto (100 mg/kg) as a positive control and ROS suspension at doses of 75, 150, and 300 mg/kg/day were given orally every day for 30 days.

All medications were started 7 days after castration and along with testosterone and citral.

The HPLC profile of ROS methanolic extract displayed two major peaks identified as quercetin and quercetin-4'-β-O-Dglucoside. Histopathological examination of APH-induced prostatic rats revealed evidence of hyperplasia and inflammation and with cellular proliferation reduced apoptosis Immunohistochemistry showed increased tissue expressions of IL-6, IL-8, TNF-a, IGF-1, and clusterin, while TGF-β1 was decreased, which correlates with the presence of inflammation. Both saw palmetto and RO scale treatment have ameliorated these changes. These ameliorative effects were more evident in RO scale groups and were dose dependent. In conclusion, methanolic extract of ROS showed a protective effect against APH induced rats that may be attributed to potential anti-inflammatory and immunomodulatory effects.

Keywords: Red Onion Scales (Ros).

1016. Protective Effect of Calligonum Comosum on Haloperidol-Induced Oxidative Stress in Rat

Essam A Abdel-Sattar, Samar M Mouneir, Gihan F Asaad and Hossam M Abdallah

Toxicology And Industrial Health, 30: 147-153 (2014) IF: 1.71

The aqueous and methanolic extracts of Calligonum comosum were investigated for their antioxidant and dopaminergic effects on haloperidol (HL)-induced neuro- and hepatotoxicities in male albino rat model. The total phenolics, flavonoid content and free radical-scavenging activity of the extracts were determined. The results showed that the antioxidant activity of the methanolic extract was higher than the aqueous one. HL significantly reduced GSH and increased MDA in brain and liver tissues. These values were nearly normalized, in the examined tissues, on concomitant administration of C. comosum methanolic extract with HL. Superoxide dismutase activity in the examined tissues was significantly decreased by HL administration that was normalized by the coadministration of the methanolic extract and, to a less extent, the water extract. Determination of the brain neurotransmitter contents revealed a marked decrease in norepinephrine, dopamine and serotonin, which were restored to near control values by concomitant administration of both C. comosum extracts with HL. The results of this study showed that C. comosum methanolic and aqueous extracts ameliorated HLinduced neuro- and hepatotoxicities in rats.

Keywords: Calligonum Comosum, Antioxidant, Neurotoxicity, Hepatotoxicity, Haloperidol, Neurotanmitters, Dopaminergic.

1017. Chemical Composition of The Essential Oil and Botanical Study of the Flowers of Mentha Suaveolens

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Pharmaceutical Biology, 52: 688-697 (2014) IF: 1.337

Context: Herbal medicines play a paramount role in the treatment of wide range of diseases, so there is a growing need for their quality control and standardization. Traditionally, histological and morphological inspections have been the usual methods to authenticate herbs intended for medicinal applications. Mentha suaveolens Ehrh. (Lamiaceae) is native to Africa Temperate Asia and Europe and it's cultivated in Egypt.

Objective: The macro- and micromorphology of the flowers of M. suaveolens Ehrh. cultivated in Egypt were studied to find the diagnostic characters of this species. In addition, the chemical composition of the essential oil of the flowers was also studied to define the chemotype of the plant.

Materials and Methods: Photographs of macro- and micromorphology were taken using Casio and Leica DFC500 digital cameras, respectively. In addition, the essential oil was prepared by hydrodistillation followed by gas chromatographic/mass spectrometric (GC/MS) analysis for identification of its components.

Results: The macro- and micromorphological characteristics of M. suaveolens were determined. The yield of the essential oil obtained by hydrodistillation from M. suaveolens flowers was 1.7% calculated on dry weight basis. GC/MS analysis of the oil resulted in identification of 29 components, which amounted to 99.77% of the total oil composition. The major component was carvone (50.59%) followed by limonene (31.25%).

Discussion and conclusion: The results obtained herein revealed for the macro, micromorphological and chemical composition characteristics of the flowers. The results of GC/MS analysis of the essential oil supported that M. suaveolens cultivated in Egypt could be categorized as carvone-rich chemotype since this compound pertained its high relative percentile.

Keywords: Apple mint;Botanical study; Carvone; Inflorescence; Taxonomy.

1018. Chemical Composition and Bioactivity of the Volatile Oil From Leaves and Stems of Eucalyptus Cinerea

Fathy M. Soliman, Magda M. Fathy, Maha M. Salama, and Fatema R. Saber

Pharmaceutical Biology, 52: 1272-1277 (2014) IF: 1.336

Context: Eucalyptus cinerea F. Muell. ex Benth. (Myrtaceae) is a medium-sized tree cultivatedin Egypt.

Objective: First, to determine the chemical composition of the volatile oil of the juvenile leavesand stems of E. cinerea to identify its chemotype. Second, to study the in vivo antioxidantactivity and in vitro antimicrobial activity of the studied volatile oils against selected Grampositive, Gramnegative bacteria, yeast, and mycelia fungi.

Materials and Methods: The volatile oil was prepared by hydrodistillation and then identified by GC/MS analysis. Broth microdilution and agar dilution methods were applied for determining the MIC. The antioxidant activity was studied by determination of glutathione level in blood ofalloxan-induced diabetic rats.

Results: The yield of the volatile oil hydrodistilled from the juvenile leaves and stems of E. cinerea was 4.5 and 0.5%, respectively. 1,8-Cineole was the major identified oxygenated monoterpenoid (84.55% and 60.15% in the juvenile leaves and stems, respectively). The antibacterial activity of the oil of the juvenile leaves was more potent against all the tested organisms than that of the stems. The (MIC) of volatile oil of the juvenile leaves against Escherichia coli, Pseudomonas aeruginosa, Streptococcus faecalis, Candida albicans, andAspergillus flavus were 5.2, 5.6, 4, 4.8, and 12.8 mg/ml, respectively. Also, the juvenile leaves' oil was more active as an antioxidant than that of the stems. They restored glutathione level by 33.7 ± 1.1 and 29.6 ± 0.7 mg/dl, respectively, compared with vitamin E (35.9 ± 1.2 mg/dl)which was used as a reference.

Discussion and conclusion: Results suggest that the volatile oil is 1,8-cineole chemotype. Moreover, the oil of the juvenile leaves of E. cinerea might find usefulness as a therapeutic agent following further development.

Keywords: 1,8-Cineole, Antimicrobial, Antioxidant, Chemotype, Eucalyptus Cinerea F. Muell. Ex Benth., Gc/Ms, Glutathione, Mic, Myrtaceae.

1019. A New α-Glucosidase Inhibitor From Achillea Fragrantissima (Forssk.) Sch. Bip. Growing in Egypt

Ezzat SM and Salama MM.

Natural Product Research, 28: 812-818 (2014) IF: 1.225

 α -Glucosidase inhibitors (AGIs) represent a class of oral antidiabetic drugs that delay the absorption of ingested carbohydrates, reducing the postprandial glucose and insulin peaks to reach normoglycaemia. In this study, a bioassay-guided fractionation of the ethanolic extract of the aerial parts of Achillea fragrantissima (Forssk.) Sch. Bip. growing in Egypt led to the isolation of a new potent AGI; acacetin-6-C-(6"-acetyl- β -D-glucopyranoside)-8-C- α -L-arabinopyranoside (5) alongside with four known compounds: chondrillasterol (1), quercetin-3,6,7-trimethyl ether (chrysosplenol-D) (2), isovitexin-4'-methyl ether (3) and isovitexin (4). The structure of the new compound (5) was elucidated on the basis of its spectral data, including HR-FAB-MS, UV, (1)H NMR, (13)C NMR, (1)H-(1)H COSY, HSQC and

HMBC. The new compound (5) exhibited the most significant α -glucosidase inhibitory activity (IC₅₀ 1.5 ± 0.09 µg/mL). Under the assay conditions, all the tested compounds were more potent than the positive control acarbose (IC₅₀ 224 ± 2.31 µg/mL).

Keywords: A. Fragrantissima; A-Glucosidase Inhibitors; Chondrillasterol; Chrysosplenol- D; Isovitexin; Acacetin-6-C-(600-Acetyl-B-D-Glucopyranoside)-8-C-A-L-Arabinopyranoside.

1020. A New Flavonol Glycoside and Biological Activities of Adenanthera Pavonina L. Leaves

R.S. Mohammed, A.H. Abou Zeid, E.A. El-Kashoury, A.A. Sleem and D.A. Waly

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Adenanthera pavonina is a plant belonging to family Fabaceae. The 95% ethanol extract (EtOH) of the dried powdered leaves of the plant and successive extracts with solvents of increasing polarities were prepared. Fractionation of the successive aqueous EtOH extract on polyamide column and purification of the isolated compounds on Sephadex LH20 led to the isolation of a new methoxy flavonol glycoside named as quercetin 3-Oadirhamnopyranosyl- $(1'' \rightarrow 2'', 1''' \rightarrow 6'')$ -b-glucopyranoside-40methoxy (1), as well as kaempferol-3-O-a-dirhamnopyranosyl- $(1'' \rightarrow 2'', 1''' \rightarrow 6'')$ -b-glucopyranoside (2), isovitexin (3), quercetin-3-O-rhamnopyranosyl($1'' \rightarrow 4''$)-b-glucopyranoside (4), quercetin-3-O-b-glucopranoside-40-O-rhamnopyranoside (5), kaempfero 1-3-O- arhamnopyranosyl $(1'' \rightarrow 2'')$ -b- glucopyranoside (6). quercetin-3-O-rhamnopyranosyl $(1'' \rightarrow 2'')$ -b-glucopyranoside (7), quercetin-3-O-b-glucopyranoside (8), kaempferol (9) and quercetin (10). Structures of the isolated compounds were established by spectroscopic analysis. Antioxidant activities of EtOH extract, successive extracts and compounds 1 and 2 were evaluated. The ethyl acetate (EtOAc) extract and EtOH extract showed 62.67% and 49.30% free radical scavenging activity, respectively. Cytotoxic activities of the EtOH extract and compounds (1) and (2) were evaluated. The EtOH extract showed a significant cytotoxic activity against Hep G-2 (IC₅₀ ¼ 2.50mg) as compared with cisplatin (IC₅₀ \cdot 10 mg).

Keywords: Adenanthera pavonina; Methoxy flavanol glycoside; Antioxidant; Cytotoxic.

1021. Anti-Influenza A Virus Activity of A New Dihydrochalcone Diglycoside Isolated From the Egyptian Seagrass Thalassodendron Ciliatum (Forsk.) Den Hartog

Nabaweya Mostafa ALi El-fiky

Natural Product Research, 28 (6): 377-382 (2014) IF: 1.225

One new dihydrochalcone diglycoside has been isolated from the EtOAc fraction of the Egyptian seagrass Thalassodendrin ciliatum (Forsk.) den Hartog, and was identified as 6'-O-rhamnosyl-(1''-6')-glucopyranosyl asebogenin for which a trivial name Thalassodendrone was established. Furthermore, five known phenolics were isolated and identified as asebotin, quercetin 3,7-diglucoside, protocatechuic acid, ferulic acid and p-hydroxybenzoic acid.

The structures of all the isolated compounds were established based on 1D and 2D NMR spectroscopy and high-resolution-mass spectrometer. High-resolution electrospray ionization mass spectra (HR-ESI-MS) were obtained using a JEOL JMS-T100TD spectrometer (JEOL Ltd., Tokyo, Japan). The anti-influenza A virus activity of the isolated new compound and asebotin was evaluated, and the obtained results revealed that the inhibition dose concentration of asebotin was more than that of Thalassodendrone with IC50 = 2.00 and $1.96 \mu g/mL$, respectively, and with cytotoxic concentration (CC50) of 3.36 and 3.14 $\mu g/mL$, respectively.

Keywords: Thalassodendron Ciliatum (Forsk.) Den Hartog, Cymodoceaceae, Dihydrochalcones, Phenolics, Antiviral, Structure–Activity Relationship Studies.

1022. Profiling the Chemical Content of Ficus Lyrata Extracts Via UPLC-PDA-qTOF-MS and Chemometrics

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Natural Product Research, 28: 1549-1556 (2014) IF: 1.225

This study attempts to elucidate the secondary metabolite profiles of Ficus lyrata leaves and fruits grown in Egypt. Non-targeted metabolite profiling via ultra performance liquid chromatography (UPLC)-qTOF-MS was used to identify various chemical classes in F. lyrata fruits and leaves (i.e. flavonoids, phenolic acids and fatty acids) analysed by chemometrics. A total of 72 metabolites were evaluated via a UPLC-qTOF-MS-based metabolomic study. Seventeen flavonoids were characterised and tentatively identified with the main constituents being catechins/procyanidins, O- and C-linked flavonoid glycosides.

The major procyanidins were dimers and trimers comprising (epi)catechin and (epi)afzelechin units, whereas the predominant flavones were C-glycosides of luteolin and apigenin. Aside from these major flavonoid classes, a group of benzoic acids, caffeoylquinic acids, fatty acid and sphingolipids were also annotated. This study provides the most complete map for polyphenol distribution in F. lyrata leaves and fruits and the basis for future investigation of its fruits nutritional value or possible nutraceutical uses.

Keywords: Phoenix Dactylifera; Metabolite Profiling; Uplc/Pda/Esi-Qtof-Ms; Gc-Ms; Flavonoids; Principal component Analysis.

1023. Triterpenes as Uncompetitive Inhibitors of A-Glucosidase from Flowers of Punica Granatum L.

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Natural Product Research, 28: 2191-2194 (2014) IF: 1.225

The a-glucosidase and maltase inhibitory effects of Punica granatum L. flowers (PGF) were investigated. The methanol extract (PGFMe), n-hexane extract (PGFH), chloroform extract (PGFC) and the remaining water fraction (PGFW) were assayed for their a-glucosidase and maltase inhibitory effects. PGFW showed potent aglucosidase inhibition with IC50 of 0.8mg/mL followed by PGFMe (IC50 of 4.0mg/mL) then PGFC (IC50 of 5.21mg/mL) in comparison to acarbose (0.9mM). Due to its selectivity towards a-glucosidase, PGFC was subjected to bioactivity-guided isolation of its main active constituents. Five known compounds (1–5) were identified as bistosterol (1), oleanolic acid (2), ursolic acid (3), p-coumaric acid (4) and apigenin (5). Ursolic and oleanolic acids showed potent a-glucosidase inhibition (IC50 of 39.0 and 35.0mM, respectively), while they did not show significant maltase inhibition. Kinetic

study using the double Lineweaver–Burk plot revealed that ursolic acid uncompetitively inhibited a-glucosidase in comparison with acarbose as a competitive inhibitor

Keywords: Punica Granatum Flower; A-Glucosidase; Ursolic Acid; Uncompetitive.

1024. Cholinesterase Inhibiting Activity and A New Piperidine Alkaloid From Lobelia Laxiflora L. Roots (Campanulaceae)

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Records Of Natural Product, 8: 199-202 (2014) IF: 1.019

The total alkaloidal fraction of Lobelia laxiflora L. roots was tested for cholinesterase inhibiting activity using spectrophotometric method.

The IC50 value of the alkaloidal fraction recorded was close to that of eserine (286.3 $\hat{1}/4$ g/mL and 270 $\hat{1}/4$ g/mL, respectively). This biologically active alkaloidal fraction was subjected to a phytochemical study to isolate and identify its major constituents. Two piperidine alkaloids, N-methyl-2(2'- methoxybutyl),6(2"-hydroxybutyl)- $\hat{1}^{"}A^{3}$ -piperidine (1) and N-methyl-2(2'- hydroxybutyl),6(2"-hydroxybutyl),6(2"-hydroxybutyl)- $\hat{1}^{"}A^{3}$ - piperidine (2), were isolated. The structures of the two compounds were established based on their spectral data, including MS, A^{1} H- and 13C-NMR, COSY, HMQC and HMBC spectral experiments. Compound (1) is a new natural compound while compound (2) was previously isolated from the aerial parts of the same plant.

Keywords: Lobelia Laxiflora; Piperidine Alkaloids; Cholinesterase Inhibiting Activity.

1025. Anti-Infl Ammatory Activity of Selected Plants From Saudi Arabia

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Zeitschrift Für Naturforschung C, 69C: 1-9 (2014) IF: 0.569

For possible anti-infl ammatory activity using the carrageenininduced paw edema model in rats. The methanolic extracts of Vernonia schimperi, Trichodesma trichodesmoides var. tomentosum, and Anabasis articulata exhibited the highest antiinfl ammatory activity.

The active extracts were further subjected to fractionation with chloroform, ethyl acetate, and n-butanol and tested together with their mother liquor for their anti-infl ammatory activity in the same rat model. The most potent fractions were the n-butanol fractions of Anabasis articulata and Vernonia shimperi and the aqueous mother liquor of Trichodesma trichodesmoides.

Nevertheless, the three potent methanolic extracts showed higher anti-infl amatory activities than their individual fractions. The antioxidant properties were assessed by their in vitro 1,1diphenyl-2-picryl-hydrazyl (DPPH) radical scavenging activities. It was concluded that the anti-infl ammatory activity is dependent, at least in part, on the reduction of prostaglandin (PGE2) and tumour necrosis factor-a (TNF-a) levels and cyclooxygenase-2 (COX-2) activity.

Keywords: Anti-Infl Ammatory, Saudi Arabian Plants, Cox.

1026. Effect of Seasonal Variation on the Composition of the Essential Oil of Solidago Canadensis Cultivated in Egypt

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Journal Of Essential Oil Bearing Plants, 17: 891-898 (2014) IF: 0.187

The hydrodistilled essential oils of the fresh flowers and the remaining green aerial parts of Solidago canadensis L., family Asteraceae, recently introduced into Egypt were investigated by GC-MS analysis.

A comparative study on the composition of the essential oils obtained in the four seasons of the year was carried out to assess the effect of seasonal variation on the collected oil samples. The major compounds detected in the oil samples of all seasons were germacrene D (9.86-29.47 %), a-pinene (3.38-29.17%), γ -cadinene (0.39-20.36 %), myrecene (2.98-13.74 %) and limonene (4.81-11.47 %). Summer samples contained the highest percentage of monoterpene hydrocarbons, while winter samples showed the highest percentage of sesquiterpene hydrocarbons. Oil samples collected in summer and winter showed potential cytotoxic activity against human liver, breast and cervix carcinoma; Hepg2, MCF7 and Hela respectively. Winter samples showed a relatively higher cytotoxic activity compared to the summer samples.

Keywords: Solidago Canadensis L., Essential Oil Seasonal Variations, Cytotoxic Activity.

1027. Antihyperglycemic and Antihyperlipidemic Effects of the Methanol Extracts of Cleome Ramosissima Parl., Barleria Bispinosa (Forssk.) Vahl. and Tribulus Macropterus Boiss.

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Bulletin of Faculty of Pharmacy, Cairo University, 52: 1-7 (2014)

The antihyperglycemic and antihyperlipidemic effects of the methanolic extracts of the aerial parts of Cleome ramosissima Parl. (Cleomaceae), Barleria bispinosa (Forssk.) Vahl. (Acanthaceae) and Tribulus macropterus Boiss. (Zygophyllaceae) were evaluated in streptozotocin (STZ) induced diabetic rats at a dose of 500 mg/kg bw. The reduction in fasting blood glucose level (BGL) was observed in the following order C. ramosissima, B. bispinosa and T. macropterus at the 4th week of administration. C. ramosissima and T. macropterus also showed significant increase in plasma insulin by 100.6% and 189.9%, respectively. The studied plant extracts induced an increase in both utilization and tolerance of glucose in diabetic rats. The hypolipidemic effect of C. ramosissima and T. macropterus was demonstrated by a significant reduction in plasma total cholesterol (TC) (42.6% and 37.2%, respectively) and low density lipoprotein cholesterol (LDL-C) (48.0% and 42.1%, respectively) and the increase of high density lipoprotein cholesterol (HDL-C) by 81.0% and 91.9%, respectively. B. bispinosa decreased the blood levels of LDL-Cand increased the levels of HDL-C, while it did not affect the TC blood levels. The present data suggest that C. ramosissima and T. macropterus have both antihyperglycemic and hypolipidemic effects with high insulin-secreting activity.

Keywords: Antidiabetic; Hypolipidemic; Insulin Restoring; Cleome Ramosissima; Barleria Bispinosa; Tribulus Macropterus.

1028. Natural Anti-Obesity Agents

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Obesity is a complex disease caused by the interaction of a myriad of genetic, dietary, lifestyle, and environmental factors, which favors a chronic positive energy balance, and leads to increased body fat mass. The incidence of obesity is rising at an alarming rate and is becoming a major public health concern with incalculable social costs. Indeed, obesity facilitates the development of metabolic disorders such as diabetes, hypertension, and cardiovascular diseases in addition to chronic diseases such as stroke, osteoarthritis, sleep apnea, some cancers, inflammationbased pathologies. Recent researches and demonstrated the potential of natural products to counteract obesity. Multiple-natural product combinations may result in a synergistic activity that increases their bioavailability and action on multiple molecular targets, offering advantages over chemical treatments. In this review, we discuss the anti-obesity potential of natural products and analyze their mechanisms.

Keywords: Obeisity; Tools; Plants; Flavonoids; Triterpenes.

Dept. of Pharmacology and Toxicology

1029. Activation of Poly(Adp-Ribose) Polymerase-1 Delays Wound Healing By Regulating Keratinocyte Migration and Production of Inflammatory Mediators

Tarek El-Hamoly, Csaba Hegedűs, Petra Lakatos, Katalin Kovács, Péter Bai, Mona A El-Ghazaly, Ezzeddin S El-Denshary, Éva Szabó, and László Virág

Mol Med, 20: 363-371 (2014) IF: 4.824

Poly (ADP-ribosyl) ation (PARylation) is a protein modification reaction regulating various diverse cellular functions ranging from metabolism, DNA repair and transcription to cell death. We set out to investigate the role of PARylation in wound healing, a highly complex process involving various cellular and humoral factors. We found that topically applied poly[ADP-ribose] polymerase (PARP) inhibitors 3-aminobenzamide and PJ-34 accelerated wound closure in a mouse model of excision wounding. Moreover, wounds also closed faster in PARP-1 knockout mice as compared with wild-type littermates. Immunofluorescent staining for poly(ADP-ribose) (PAR) indicated increased PAR synthesis in scattered cells of the wound bed. Expression of interleukin (IL)-6, tumor necrosis factor (TNF)-a, inducible nitric oxide synthase and matrix metalloproteinase-9 was lower in the wounds of PARP-1 knockout mice as compared with control, and expression of IL-1B, cyclooxygenase-2, TIMP-1 and -2 also were affected. The level of nitrotyrosine (a marker of nitrating stress) was lower in the wounds of PARP-1 knockout animals as compared with controls. In vitro scratch assays revealed significantly faster migration of keratinocytes treated with 3-aminobenzamide or PJ34 as compared with control cells. These data suggest that PARylation by PARP-1 slows down the wound healing process

by increasing the production of inflammatory mediators and nitrating stress and by slowing the migration of keratinocytes. **Keywords**: Keratinocyte; Inflammatory Mediators; Wound Healing.

1030. Cilostazol Renoprotective Effect: Modulation of PPAR-γ, NGAL, KIM-1 and IL-18 Underlies its Novel Effect in A Model of Ischemia-Reperfusion

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Plos One, 9: 1-12 (2014) IF: 3.534

Cilostazol, a phosphodiesterase-III inhibitor, reportedly exhibits positive effects against ischemia/reperfusion (I/R)-induced injury in several models. However, its potential role against the renal I/R insult has not been elucidated. To test whether the PPAR- γ (of peroxisome proliferator activated receptor gamma) pathway is involved in the cilostazol effect, rats were randomized into sham, I/R, cilostazol (50 and 100 mg/kg per day, orally), pioglitazone (3 and 10 mg/kg per day, orally) and their combination at the low dose levels. Drugs regimens were administered for 14 days prior to the I/R induction. Pretreatment with cilostazol or pioglitazone provided significant protection against the I/R-induced renal injury as manifested by the attenuated serum levels of creatinine, blood urea nitrogen and cystatin C. Both drugs have also opposed the I/R-induced elevation in tissue contents/activity of neutrophil gelatinase-associated lipocalin (NGAL), kidney injury molecule-1 (Kim-1), nuclear factor-_KB, interleukin-18, caspase-1, as well as malondialdehyde, iNOS, myeloperoxidase, ICAM-1 and VCAM-1. Nevertheless, the drugs increased both the PPAR- γ transcriptional activity and the content of glutathione. Furthermore, combining the two low doses of both drugs produced effects comparable to that of the high dose level of either drug, advocating the fortification of pioglitazone renoprotective effect when given concomitantly with cilostazol. conclusion, cilostazol purveyed conceivable In novel renoprotective mechanisms and alleviated incidents associated with acute renal injury either alone or in combination with pioglitazone partially via the elevation of PPAR-y besides the amendment of the aforementioned biomarkers.

Keywords: Cilostazol; Kidney; Pioglitazone; NGAL; kim-1.

1031. Novel Coq10 Antidiabetic Mechanisms Underlie Its Positive Effect: Modulation of Insulin and Adiponectine Receptors, Tyrosine Kinase, Pi3k, Glucose Transporters, Srage and Visfatin in Insulin Resistant/Diabetic Rats

Mohamed M. Amin, Gihan F. Asaad, Rania M. Abdel Salam, Hanan S. El-Abhar and Mahmoud S. Arbid

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As a nutritional supplement, coenzyme Q10 (CoQ10) was tested previously in several models of diabetes and/or insulin resistance (IR); however, its exact mechanisms have not been profoundly explicated. Hence, the objective of this work is to verify some of the possible mechanisms that underlie its therapeutic efficacy. Moreover, the study aimed to assess the potential modulatory effect of CoQ10 on the antidiabetic action of glimebiride. An insulin resistance/type 2 diabetic model was adopted, in which rats were fed high fat/high fructose diet (HFFD) for 6 weeks followed by a single sub-diabetogenic dose of streptozotocin (35 mg/kg, i.p.). At the end of the 7(th) week animals were treated with CoQ10 (20 mg/kg, p.o) and/or glimebiride (0.5 mg/kg, p.o) for 2 weeks. CoQ10 alone opposed the HFFD effect and increased the hepatic/muscular content/activity of tyrosine kinase (TK), phosphatidylinositol kinase (PI3K), and adiponectin receptors. Conversely, it decreased the content/activity of insulin receptor isoforms, myeloperoxidase and glucose transporters (GLUT4; 2). Besides, it lowered significantly the serum levels of glucose, insulin, fructosamine and HOMA index, improved the serum lipid panel and elevated the levels of glutathione, sRAGE and adiponectin. On the other hand, CoQ10 lowered the serum levels of malondialdehyde, visfatin, ALT and AST. Surprisingly, CoQ10 effect surpassed that of glimepiride in almost all the assessed parameters, except for glucose, fructosamine, TK, PI3K, and GLUT4. Combining CoQ10 with glimepiride enhanced the effect of the latter on the aforementioned parameters. Keywords: Coq10; Diabetes; Pi3k; Glut4; Tk.

1032. Telmisartan Attenuates Colon Inflammation, Oxidative Perturbations and Apoptosis in A Rat Model of Experimental Inflammatory Bowel Disease

Hany H. Arab, Muhammad Y. Al-Shorbagy, Dalaal M. Abdallah and Noha N. Nassar

Plos One, 9: 1-16 (2014) IF: 3.534

Accumulating evidence has indicated the implication of angiotensin II in the pathogenesis of inflammatory bowel diseases (IBD) via its proinflammatory features. Telmisartan (TLM) is an angiotensin II receptor antagonist with marked anti-inflammatory and antioxidant actions that mediated its cardio-, reno- and hepatoprotective actions. However, its impact on IBD has not been previously explored.

Thus, we aimed to investigate the potential alleviating effects of TLM in tri-nitrobenezene sulphonic acid (TNBS)-induced colitis in rats. Pretreatment with TLM (10 mg/kg p.o.) attenuated the severity of colitis as evidenced by decrease of disease activity index (DAI), colon weight/length ratio, macroscopic damage, histopathological findings and leukocyte migration. TLM suppressed the inflammatory response via attenuation of tumor necrosis factor- α (TNF- α), prostaglandin E2 (PGE2) and myeloperoxidase (MPO) activity as a marker of neutrophil infiltration besides restoration of interleukin-10 (IL-10). TLM also suppressed mRNA and protein expression of nuclear factor kappa B (NF- κ B) p65 and mRNA of cyclo-oxygenase-2 (COX-2) and inducible nitric oxide synthase (iNOS) proinflammatory genes with concomitant upregulation of PPAR- γ .

The alleviation of TLM to colon injury was also associated with inhibition of oxidative stress as evidenced by suppression of lipid peroxides and nitric oxide (NO) besides boosting glutathione (GSH), total anti-oxidant capacity (TAC) and the activities of superoxide dismutase (SOD) and glutathione peroxidase (GPx). With respect to apoptosis, TLM downregulated the increased mRNA, protein expression and activity of caspase-3. It also suppressed the elevation of cytochrome c and Bax mRNA besides the upregulation of Bcl-2. Together, these findings highlight evidences for the beneficial effects of TLM in IBD which are mediated through modulation of colonic inflammation, oxidative stress and apoptosis25

Keywords: Telmisartan; Tnbs; Colitis; Apoptosis; Oxidative Stress.
1033. Tempol, A Superoxide Dismutase Mimetic Agent, Ameliorates Cisplatin-Induced Nephrotoxicity Through Alleviation of Mitochondrial Dysfunction in Mice

Lamiaa A. Ahmed, Nagwa I. Shehata, Noha F. Abdelkader and Mahmoud M. Khattab

Plos One, 9 (10): (2014) IF: 3.534

Background: Mitochondrial dysfunction is a crucial mechanism by which cisplatin, a potent chemotherapeutic agent, causes nephrotoxicity where mitochondrial electron transport complexes are shifted mostly toward imbalanced reactive oxygen species versus energy production. In the present study, the protective role of tempol, a membrane-permeable superoxide dismutase mimetic agent, was evaluated on mitochondrial dysfunction and the subsequent damage induced by cisplatin nephrotoxicity in mice.

Methods and Findings: Nephrotoxicity was assessed 72 h after a single i.p. injection of cisplatin (25 mg/kg) with or without oral administration of tempol (100 mg/kg/day). Serum creatinine and urea as well as glucosuria and proteinuria were evaluated. Both kidneys were isolated for estimation of oxidative stress markers, adenosine triphosphate (ATP) content and caspase-3 activity. Moreover, mitochondrial oxidative phosphorylation capacity, complexes I-IV activities and mitochondrial nitric oxide synthase (mNOS) protein expression were measured along with histological examinations of renal tubular damage and mitochondrial ultrastructural changes. Tempol was effective against cisplatin-induced elevation of serum creatinine and urea as well as glucosuria and proteinuria. Moreover, pretreatment with tempol notably inhibited cisplatin-induced oxidative stress and disruption of mitochondrial function by restoring mitochondrial oxidative phosphorylation, complexes I and III activities, mNOS protein expression and ATP content. Tempol also provided significant protection against apoptosis, tubular damage and mitochondrial ultrastructural changes. Interestingly, tempol did not interfere with the cytotoxic effect of cisplatin against the growth of solid Ehrlich carcinoma.

Conclusion: This study highlights the potential role of tempol in inhibiting cisplatin-induced nephrotoxicity without affecting its antitumor activity via amelioration of oxidative stress and mitochondrial dysfunction.

Keywords: Cisplatin; Mitochondria; Nephrotoxicity; Tempol.

1034. Naringenin Adds To the Protective Effect of L-Arginine in Monocrotaline-Induced Pulmonary Hypertension in Rats: Favorable Modulation of Oxidative Stress, Inflammation and Nitric Oxide

Lamiaa A. Ahmed, Al Arqam Z. Obaid, Hala F. Zaki and Azza M. Agha

European Journal of Pharmaceutical Sciences, 62: 161-170 (2014) IF: 3.005

The present study was directed to investigate the possible modulatory effect of naringenin when co-administered with L-arginine in monocrotaline-induced pulmonary hypertension in rats. Pulmonary hypertension was induced by a single subcutaneous injection of monocrotaline (60 mg/kg). L-arginine (500 mg/kg) and naringenin (50 mg/kg) were orally administered daily, alone and in combination, for 3 weeks. Mean arterial blood pressure, electrocardiography and echocardiography were then recorded and rats were sacrificed and serum was separated for

determination of total nitrate/nitrite level. Right ventricles and lungs were isolated for estimation of oxidative stress markers, tumor necrosis factor-alpha, total nitrate/nitrite and transforming growth factor-beta. Myeloperoxidase and caspase-3 activities in addition to endothelial and inducible nitric oxide synthase protein expression were also determined. Moreover, histological analysis of pulmonary arteries and cardiomyocyte cross-sectional area was therapy provided a significant performed. Combined improvement in L-arginine protective effect toward preserving hemodynamic changes and alleviating oxidative stress, inflammatory and apoptotic markers induced by monocrotaline treatment. Furthermore, combined therapy prevented monocrotaline-induced changes in endothelial and inducible nitric oxide synthase protein expression as well as histological analysis compared with either treatment alone. In conclusion, naringenin significantly adds to the protective effect of L-arginine in pulmonary hypertension induced by monocrotaline in rats.

Keywords: Monocrotaline; Naringenin; Pulmonary hypertension; L-Arginine.

1035. Enhanced Efficacy and Reduced Side Effects of Diazepam By Kava Combination

Rasha A. Tawfiq , Noha N. Nassar, Wafaa I. El-Eraky, Ezzeldein S. El-Denshary

Journal Of Advanced Research, 5: 587-594 (2014) IF: 3

The long term use of antiepileptic drugs possesses many unwanted effects; thus, new safe combinations are urgently mandated. Hence, the present study aimed to investigate the anticonvulsant effect of kava alone or in combination with a synthetic anticonvulsant drug, diazepam (DZ). To this end, female Wistar rats were divided into two subsets, each comprising 6 groups as follows: group (i) received 1% Tween 80 p.o. and served as control, while groups (ii) and (iii) received kava at two dose levels (100 and 200 mg/kg, p.o.). The remaining three groups received (iv) DZ alone (10 mg/kg p.o.) or kava in combination with DZ (v) (5 mg/kg, p.o.) or (vi) (10 mg/kg, p.o.). Results of the present study revealed that kava increased the maximal electroshock seizure threshold (MEST) and enhanced the anticonvulsant effect of diazepam following both acute and chronic treatment. Moreover, neither kava nor its combination with DZ impaired motor co-ordination either acutely or chronically. Furthermore, kava ameliorated both the reduction in locomotor activity as well as changes in liver function tests induced by chronic administration of DZ. Moreover, no elevation was shown in the creatinine concentration vs. control group following chronic administration of kava or DZ either alone or in combination with kava. In conclusion, the present study suggests the possibility of combining a low dose DZ with kava to reduce harmful effects and might be recommended for clinical use in patients chronically treated with this synthetic anticonvulsant drug.

Keywords: Kava; Diazepam; Anticonvulsant; Locomotor Activity; Mest.

1036. Exploring the Protective Role of Apocynin, A Specific Nadph Oxidase Inhibitor, in Cisplatin-Induced Cardiotoxicity in Rats

Maha M. El-Sawalhi and Lamiaa A. Ahmed

Chemico-Biological Interactions, (207): 58-66 (2014) IF: 2.982

Despite the clinical reports, few studies have focused on reducing the cardiotoxicity of cisplatin. In the present study, cardiotoxicity was examined after a single ip injection of cisplatin (7mg/kg) in rats. Apocynin was given in drinking water (600mg/L) for five successive days before and after cisplatin injection. At the end of the experiment, hemodynamic parameters were recorded, animals were sacrificed and serum creatine kinase-MB activity was determined. The whole ventricle was isolated for estimation of tumor necrosis factor-alpha (TNF-α) content, NADPH oxidase, myeloperoxidase and caspase-3 activities in addition to nuclear factor erythroid 2-related factor 2 (Nrf2), heme oxygenase-1 (HO-1) and nuclear factor kappa B (NF-KB) gene expressions. Furthermore, oxidative stress markers and antioxidant enzymes were measured in postmitochondrial and mitochondrial fractions. Mitochondrial membrane potential, nuclear DNA fragmentation and cardiomyocyte cross-sectional area were also evaluated. Apocynin was effective against cisplatin-induced decrement in heart rate and blood pressure. Moreover, pretreatment with apocynin notably ameliorated the state of oxidative stress, mitigated inflammation and preserved mitochondrial membrane potential. Apocynin provided also a significant cardioprotection as revealed by alleviating the overexpression of Nrf2, HO-1 and NF- kB, the elevation of caspase-3 activity, the prominent nuclear DNA fragmentation and the decreased cardiomyocyte crosssectional area. This study highlights the potential role of apocynin inhibiting cisplatin-induced hemodynamic changes, in postmitochondrial and mitochondrial damage as indicated by improvement in the state of oxidative stress, inflammation and apoptosis.

Keywords: Apocynin; Cardiotoxicity; Cisplatin; Inflammation; Oxidative stress.

1037. Overexpression of NMDAR 2B in an Inflammatory Model of Alzheimer'S Disease: Modulation By Nos Inhibitors

Maher A, El-Sayed NS, Breitinger HG and Gad MZ

Brain Research Bulletin, 109: 109-116 (2014) IF: 2.974

Background: Alzheimer's disease (AD) is a common form of age-related dementia, characterized by deposition of amyloid A β plaques, neuroinflammation and neurodegeneration. N-methyl-D-aspartate receptors (NMDAR) are postsynaptic glutamate receptors that play a role in memory formation and are targets for memantadine, an anti-AD drug. Nitric oxide (NO) signaling has been involved in both memory development through neuronal NO synthase (iNOS), and neuroinflammation through inducible NO synthase (iNOS) which mediates CNS inflammatory processes.

Aim: To study the expression of the NMDAR2B subunit in an inflammatory model of AD before and after treatment with NO modulators.

Materials and Methods: AD was induced in mice by a single dose of lipopolysaccharide (LPS). Behavioral tests for spatial and non-spatial memories and locomotor activity were performed to assess disease severity and progression. The effects of L-NAME (general NOS inhibitor), 1400W (iNOS inhibitor), diflunisal (systemic anti-inflammatory drug that does not cross the blood brain barrier), and L-arginine, the substrate for NOS was determined. Immunohistochemistry was done to confirm AD and brain lysates were tested for A β formation, levels of NMDAR2B subunits, and brain NO levels.

Results: Systemic LPS induced AD, as shown by cognitive impairment; increased levels of $A\beta$ and concomitant increase in

the brain NO concentrations. This was associated with overexpression of NMDAR2B. All tested drugs improved behavioral dysfunction, prevented $A\beta$ formation and NMDAR overexpression, and lead to decrease in NO concentration in the brain. L-Arginine alone, however, did not produce similar improvements.

Conclusion: NMDAR2B subunits are overexpressed in an inflammatory model of AD and NO inhibitors ameliorate this expression.

Keywords: Alzheimer-Nitric Oxide- Nmdar- Nos Inhibitors-Diflunisal- Lps.

1038. Pyrrolidine Dithiocarbamate Protects Against Scopolamine-Induced Cognitive Impairment in Rats

Mai A. Abd-El-Fattah, Noha F. Abdelakader and Hala F. Zaki

European Journal of Pharmacology, 723: 330-338 (2014) IF: 2.684

Alzheimer's disease (AD) is a chronic neurodegenerative disorder that leads to disturbances of cognitive functions. Although the primary cause of AD remains unclear, brain acetylcholine deficiency, oxidative stress and neuroinflammation may be considered the principal pathogenic factors. The present study was constructed to investigate the anti-amnestic effect of pyrrolidine dithiocarbamate (PDTC) on scopolamine-induced behavioral, neurochemical and biochemical changes in rats. PDTC (50 and 100mg/kg) and donepezil (2.5mg/kg) were orally administered for 14 successive days. Dementia was induced at the end of the treatment period by a single injection of scopolamine (20mg/kg; i.p.), and Y-maze test was conducted 30min thereafter. Rats were then sacrificed and homogenates of cortical and hippocampal tissues were used for the estimation of noradrenaline, dopamine, serotonin and heat shock protein 70 contents along with acetylcholinesterase activity. In addition, certain oxidative stress markers, pro-inflammatory and antiinflammatory cytokines were assessed. Histological examination of cortical and hippocampal tissues was also performed. Scopolamine resulted in memory impairment that was coupled by alterations in the estimated neurotransmitters, heat shock protein 70, acetylcholinesterase activity, oxidative stress as well as inflammatory biomarkers. Histological analysis revealed serious damaging effects of scopolamine on the structure of cerebral cortex and hippocampus. Pretreatment of rats with PDTC in both doses mitigated scopolamine-induced behavioral, biochemical, neurochemical and histological changes in a manner comparable to donepezil. The observed anti-amnestic effect of PDTC makes it a promising candidate for clinical trials in patients with cognitive impairment.

Keywords: Acetylcholineesterase; Dementia; Heat shock protein 70; Neuroinflammation; Oxidative stress; Pyrrolidine dithiocarbamate.

1039. Role of Oxidative Stress, Inflammation, Nitric Oxide and Transforming Growth Factor-Beta in the Protective Effect of Diosgenin in Monocrotaline-Induced Pulmonary Hypertension in Rats

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European Journal of Pharmacology, 740: 379-387 (2014) IF: 2.684

Pulmonary hypertension is a progressive disease of various origins that is associated with right ventricular dysfunction. In the present study, the protective effect of diosgenin was investigated in monocrotaline-induced pulmonary hypertension in rats. Pulmonary hypertension was induced by a single subcutaneous injection of monocrotaline (60 mg/kg). Diosgenin (100 mg/kg) was given by oral administration once daily for 3 weeks. At the end of the experiment, mean arterial blood pressure, electrocardiography and echocardiography were recorded. Rats were then sacrificed and serum was separated for determination of total nitrate/nitrite level. Right ventricles and lungs were isolated for estimation of oxidative stress markers, tumor necrosis factor-alpha, total nitrate/nitrite and transforming growth factorbeta contents. Myeloperoxidase and caspase-3 activities in addition to endothelial and inducible nitric oxide synthase protein expression were also determined. Moreover, histological analysis of pulmonary arteries and cardiomyocyte cross-sectional area was performed. Diosgenin treatment provided a significant improvement toward preserving hemodynamic changes and alleviating oxidative stress, inflammatory and apoptotic markers induced by monocrotaline in rats. Furthermore, diosgenin therapy prevented monocrotaline-induced changes in nitric oxide production, endothelial and inducible nitric oxide synthase protein expression as well as histological analysis. These findings support the beneficial effect of diosgenin in pulmonary hypertension induced by monocrotaline in rats.

Keywords: Diosgenin; Monocrotaline; Nitric Oxide; Oxidative Stress; Pulmonary hypertension.

1040. Sulforaphane Increases the Survival Rate in Rats With Fulminant Hepatic Failure Induced by ^D-Galactosamine and Lipopolysaccharide

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Nutrition Research, 34: 982-989 (2014) IF: 2.585

Fulminant hepatic failure (FHF) is a life-threatening clinical syndrome, with liver transplantation being the only effective therapy. Sulforaphane (SFN) is a natural compound that is extracted from cruciferous vegetables and possesses potent antiinflammatory, antioxidant, and anticancer activities. This study was designed to test the hypothesis that SFN (3 mg/kg) may protect against FHF induced in rats by administering a combination of d-galactosamine (GalN; 300 mg/kg) and lipopolysaccharide (LPS; 30 µg/kg). The rats were given a single intraperitoneal injection of SFN, 1 hour before the FHF induction. Sulforaphane reduced the mortality and alleviated the pathological liver injury. In addition, SFN significantly reduced the increase in serum aminotransferase activities and lipid peroxidation. The glutathione content decreased in the GalN/LPS group, and this decrease was attenuated by SFN. Increases in serum tumor necrosis factor a, interleukin-6, and interleukin-10, which were observed in GalN/LPS-treated rats, were significantly reduced after using SFN. The GalN/LPS treatment increased the expression of superoxide dismutase-1, glutathione peroxidase 2, catalase, and heme oxygenase-1 genes. Sulforaphane inhibited the induction of reactive oxygen species scavenging proteins. Moreover, SFN inhibited GalN/LPS-induced caspase-3 activation and suppressed FAS and FASL expression. These findings suggest that SFN alleviates GalN/LPS-induced liver injury, possibly by exerting antioxidant, anti-inflammatory, and antiapoptotic effects and modulating certain antioxidant defense enzymes.

Keywords: Sulforaphane; Rats; Fulminant Hepatic Failure; D-Galactosamine; Lipopolysaccharide.

1041. Synergistic Apoptotic Effect of Doxil and Aminolevulinic Acid-Based Photodynamic Therapy on Human Breast Adenocarcinoma Cells

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Photodiagnosis and Photodynamic Therapy, 11: 227-238 (2014) IF: 2.524

Background: 5-Aminolevulinic acid (ALA) is a natural heme precursor metabolized into protoporphyrin IX (PpIX). PpIX preferentially accumulates in tumor cells resulting in the formation of singlet oxygen upon exposure to visible light. Doxil(®), an active agent against breast and ovarian cancer, is a nano-formulation of doxorubicin. This study aimed to investigate in vitro synergistic cytotoxic effect of low doses of combined chemotherapy and ALA/PDT to human breast adenocarcinoma cells (MCF-7) compared to high doses of each individual therapy. Methods: MCF-7 cells were pretreated with Doxil(®) (48 h) followed by ALA/PDT (4h). The cell viability was evaluated by trypan blue assay and PpIX production was measured spectrofluorometrically. Alkaline phosphatase was determined as a marker for cellular differentiation. Apoptosis and necrosis were evaluated by fluorescence stains. The apoptosis cell death pathways were investigated: detection of mitochondrial membrane potential ($\Delta \Psi m$) and percent of DNA fragmentation, malondialdehyde, histone deacetylase (HDAC) activity, caspase-3 and death receptors (DR4 and DR5). Vascular endothelial growth factor (VEGF) was determined by ELISA, as an angiogenic mediator.

Results: There was a higher reduction in cell viability in Doxil(®)+ALA/PDT-treated cells compared with their individual effect. The combined therapy showed enhanced apoptosis with a significant increase in the loss of $\Delta \Psi m$, DNA fragmentation %, caspase-3, DR4, DR5 and lipid peroxides and inhibited HDAC. Pretreatment with Doxil(®) resulted in a twofold increase in the intracellular PpIX, by increasing the PDT killing of MCF-7 cells. Conclusion: The combined therapy using 50% of IC50 of ALA/PDT and Doxil(®) possessed a synergistic apoptotic effect on MCF-7 cells compared to 100% of IC50 of each therapy through enhancing both intrinsic and extrinsic apoptotic pathways, thus may minimize side effects of Doxil(®) and ALA. Keywords: Breast Cancer: 5-Aminolevulinic acid: Protoporphyrin Ix; Doxil; Apoptosis; Death receptors.

1042. Anti-Depressant Effect of Hesperidin in Diabetic Rats

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Canadian Journal of Physiology and Pharmacology, 92: 945-952 (2014) IF: 1.546

This study aimed to investigate the anti-depressant effect of hesperidin (Hsp) in streptozotocin (STZ)-induced diabetic rats. Additionally, the effect of Hsp on hyperglycaemia, oxidative stress, inflammation, brain-derived neurotrophic factor (BDNF),

and brain monoamines in diabetic rats was also assessed. The Wistar rats in the experimental groups were rendered hyperglycaemic with a single dose of STZ (52.5 mg•(kg body mass)-1, by intraperitoneal injection). The normal group received the vehicle only. Hyperglycaemic rats were treated with Hsp (25.0, 50.0, or 100.0 mg•(kg body mass)-1•day-1, per oral) and fluoxetine (Flu) (5.0 mg•(kg body mass)-1•day-1, per oral) 48 h after the STZ injection, for 21 consecutive days. The normal and STZ control groups received the vehicle (distilled water). Behavioral and biochemical parameters were then assessed. When Hsp was administered to the STZ-treated rats, this reversed the STZ-induced increase in immobility duration in the forced swimming test (FST) and attenuated hyperglycaemia, decreased malondialdehyde (MDA), increased reduced glutathione (GSH) decreased interleukin-6 (IL-6), and increased BDNF levels in the attenuated brain. Treatment with Hsp STZ-induced neurochemical alterations, as indicated by increased levels of monoamines in the brain, namely, norepinephrine (NE), dopamine (DA), and serotonin (5-hydroxytryptamine; 5-HT). All of these effects of Hsp were similar to those observed with the established anti-depressant Flu. This study shows that Hsp exerted anti-depressant effect in diabetic rats, which may have been partly mediated by its amelioration of hyperglycaemia as well as its anti-oxidant and anti-inflammatory activities, the enhancement of neurogenesis, and changes in the levels of monoamines in the brain.

Keywords: Hesperidin; Anti-depressant; Forced swimming Test; Streptozotocin; Fluoxetine.

1043. Red Yeast Rice and Coenzyme Q_{10} As Safe Alternatives To Surmount Atorvastatin-Induced Myopathy in Hyperlipidemic Rats

Marwan Abdelbaset, Marwa M. Safar, Sawsan S. Mahmoud, Seham A. Negm, and Azza M. Agha

Canadian Journal of Physiology and Pharmacology, 92(6): 481-489 (2014) IF: 1.546

Statins are the first line treatment for the management of hyperlipidemia. However, the primary adverse effect limiting their use is myopathy. This study examines the efficacy and safety of red yeast rice (RYR), a source of natural statins, as compared with atorvastatin, which is the most widely used synthetic statin. Statin interference with the endogenous synthesis of coenzyme Q10 (CoQ10) prompted the hypothesis that its deficiency may be implicated in the pathogenesis of statinassociated myopathy. Hence, the effects of combination of CoQ10 with either statin have been evaluated. Rats were rendered hyperlipidemic through feeding them a high-fat diet for 90 days, during the last 30 days of the diet they were treated daily with either atorvastatin, RYR, CoQ10, or combined regimens. Lipid profile, liver function tests, and creatine kinase were monitored after 15 and 30 days of drug treatments. Heart contents of CoQ9 and CoQ10 were assessed and histopathological examination of the liver and aortic wall was performed. RYR and CoQ10 had the advantage over atorvastatin in that they lower cholesterol without elevating creatine kinase, a hallmark of myopathy. RYR maintained normal levels of heart ubiquinones, which are essential components for energy production in muscles. In conclusion, RYR and CoQ10 may offer alternatives to overcome atorvastatin-associated myopathy.

Keywords: Atorvastatin; Red Yeast Rice; Coenzyme Q10;Hyperlipidemia; Myopathy; Ubiquinones.

1044. Ellagic Acid Antiinflammatory and Antiapoptotic Potential Mediate Renoprotection in Cisplatin Nephrotoxic Rats

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Journal of Biochemical and Molecular Toxicology, 28(10): 472-479 (2014) IF: 1.317

Ellagic acid (EA) renoprotective effect against cisplatin (CIS)induced nephrotoxicity remains elusive. Therefore, male Sprague-Dawley rats received CIS alone or EA (10 and 30 mg/kg, p.o.) for 5 days before and after CIS injection. CIS increased serum levels of blood urea nitrogen, creatinine, y-glutamyl transferase, and reduced those of albumin and total protein. It also raised serum endothelin-1, as well as serum and renal nitric oxide, tumor necrosis factor- α , and monocyte chemoattractant protein-1. CIS enhanced the renal caspase-3, hemeoxygenase (HO)-1, nuclear factor-kB, and inducible nitric oxide. EA hampered CIS-induced nephrotoxicity manifested by an enhancement of the glomerular filtration rate which was associated by the reduction of inflammatory mediators and the apoptotic marker in the serum and/or kidney. The present study discloses that EA suppresses HO-1 and, its renoprotection is also linked to its antiinflammatory and antiapoptotic properties, as well as the reduction of nitric oxide and endothelin-1

Keywords: Apoptosis; Cisplatin; Ellagic acid; Inflammation; Nephrotoxicity.

1045. Evaluation of Plant Phenolic Metabolites as A Source of Alzheimer''s Drug Leads

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Biomed Research International, 2014: 1-10 (2014) IF: 0.1

Epidemiological studies have proven an association between consumption of polyphenols and prevention of Alzheimer's disease, the most common form of dementia characterized by extracellular deposition of amyloid beta plaques. The aim of this study is pharmacological screening of the aqueous alcohol extract of Markhamia platycalyx leaves, Schotia brachypetala leaves and stalks, and piceatannol compared to aqueous alcohol extract of Camellia sinensis leaves as potentialAlzheimer's disease drugs. LC-HRESI (-ve)-MSn was performed to identify phenolics' profile of Schotia brachypetala stalks aqueous alcohol extract and revealed ten phenolic compounds as first report: daidzein, naringin, procyanidin isomers, procyanidin dimer gallate, quercetin 3-O-rhamnoside, quercetin 3-O-glucuronide, quercetin hexose gallic acid, quercetin hexose protocatechuic acid, and ellagic acid. Alzheimer's disease was induced by a single intraperitoneal injection of LPS. Adult male Swiss albino mice were divided into groups of 8-10 mice each receiving treatment for six days. In vivo behavioral tests (Ymaze and object recognition) and in vitro estimation of amyloid beta 42 by ELISA showed significant differences between results of treated and nontreated animals.

Keywords: Alzheimer; Beta Amyloid;Green Tea; Schotia;Camellia.

1046. Modulatory Role of Chelating Agents in Diet-Induced Hypercholesterolemia in Rats

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Bulletin of Faculty of Pharmacy, Cairo University, 52: 27-35 (2014)

Introduction: Hypercholesterolemia is a major risk factor for the development of atherosclerosis and endothelial dysfunction. Chelating agents may play a modulatory role in atherosclerosis by removal of calcium from atherosclerotic plaques.

Aim: The present study aimed to explore the effects of calcium disodium ethylenediaminetetraacetic acid (CaNa2EDTA) and meso-2,3-dimercaptosuccinic acid (DMSA) on diet-induced hypercholesterolemia in rats using simvastatin as a reference standard.

Methods: Hypercholesterolemia was induced by feeding rats with cholesterol-rich diet for six weeks. Rats were divided into five groups (n= 8): normal control, hypercholesterolemic control, simvastatin (20 mg/kg; p.o.), CaNa2EDTA (100 mg/kg; i.p.) and DMSA (100 mg/kg; i.p.). Treatments continued daily for the six weeks of diet feeding.

Results: Diet-induced hypercholesterolemia resulted in alterations in the lipid profile markers and a state of oxidative stress coupled by compensatory increase in serum nitric oxide (NO) level and decreased aortic endothelial nitric oxide synthase (eNOS) activity parallel to increased inducible nitric oxide synthase (iNOS) activity, aortic calcium content and aortic wall thickness. Treatment with simvastatin, CaNa2EDTA and DMSA improved lipid profile and oxidative stress markers. In addition, they attenuated hypercholesterolemia-induced changes in serum NO level, aortic eNOS and iNOS activities, calcium content and aortic wall thickness.

Keywords: Cana2edta; Dmsa; Hypercholesterolemia; Oxidative Stress; Lipid Profile; Nitric Oxide Synthases.

1047. Naringenin Protects Against Scopolamine-Induced Dementia in Rats

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Bulletin of Faculty of Pharmacy, Cairo University, 52: 15-25 (2014)

Background: Alzheimer's disease (AD), the most common cause of progressive dementia in the elderly population, is a chronic neurodegenerative disorder that leads to disturbances of cognitive functions. Although the primary cause of AD remains unclear, brain acetylcholine defi-ciency and oxidative stress are principal pathogenic factors.

Aim of the study: The present study was constructed to investigate the anti-amnestic effect of naringenin on scopolamine-induced behavioral and neurochemical changes in rats.

Methods: Naringenin (50 and 100 mg/kg) and donepezil (2.5 mg/kg) were orally administered for 7

successive days. Dementia was induced at the end of the treatment period by a single injection of scopolamine (20 mg/kg; i.p.). Conditioned avoidance and Y-maze tests were conducted 30 min thereafter then rats were sacrificed and brain homogenates were used for the estimation of noradrenaline, dopamine, serotonin and c-amino butyric acid contents along with acetylcholinesterase activity. In addition, certain inflammatory

and oxidative stress markers as well as histopathologic studies were performed.

Results: Scopolamine resulted in memory impairment that was coupled by alterations in the estimated neurotransmitters and acetylcholinesterase activity as well as increased brain oxidative stress. Pretreatment of rats with naringenin in both doses mitigated scopolamine-induced behavioral, neurochemical and histological changes in a manner comparable to donepezil.

Conclusions: The observed anti-amnestic effect of naringenin makes it a promising candidate for clinical trials in patients with cognitive impairment.

Keywords: Dementia; Scopolamine; Naringenin; Oxidative Stress; Acetylcholinesterase.

The National Cancer Institute

Dept. of Clinical Pathology

1048. The Induction of the P53 Tumor Suppressor Protein Bridges the Apoptotic and Autophagic Signaling Pathways to Regulate Cell Death in Prostate Cancer Cells

Ringer L, Sirajuddin P, Tricoli L, Waye S, Choudhry MU, Parasido E, Sivakumar A, Heckler M, Naeem A, Abdelgawad I, Liu X, Feldman AS, Lee RJ, Wu CL, Yenugonda V, Kallakury B, Dritschilo A, Lynch J, Schlegel R, Rodriguez O, Pestell RG, Avantaggiati ML and Albanese C

Oncotarget, 5(21): 10678-10691 (2014) IF: 6.627

The p53 tumor suppressor protein plays a crucial role in influencing cell fate decisions in response to cellular stress. As p53 elicits cell cycle arrest, senescence or apoptosis, the integrity of the p53 pathway is considered a key determinant of anti-tumor responses. p53 can also promote autophagy, however the role of p53-dependent autophagy in chemosensitivity is poorly understood. VMY-1-103 (VMY), a dansylated analog of purvalanol B, displays rapid and potent anti-tumor activities, however the pathways by which VMY works are not fully defined. Using established prostate cancer cell lines and novel conditionally reprogrammed cells (CRCs) derived from prostate cancer patients; we have defined the mechanisms of VMYinduced prostate cancer cell death. Herein, we show that the cytotoxic effects of VMY required a p53-dependent induction of autophagy, and that inhibition of autophagy abrogated VMYinduced cell death. Cancer cell lines harboring p53 missense mutations evaded VMY toxicity and treatment with a small molecule compound that restores p53 activity re-established VMY-induced cell death. The elucidation of the molecular mechanisms governing VMY-dependent cell death in cell lines, and importantly in CRCs, provides the rationale for clinical studies of VMY, alone or in combination with p53 reactivating compounds, in human prostate cancer.

Keywords: P53; Apoptosis; Autophagy; Primary cells; Prostate.

Dept. of Clinical Pathology

1049. High-Dose Methotrexate in Egyptian Pediatric Acute Lymphoblastic Leukemia: the Impact of ABCG2 C421a Genetic Polymorphism on Plasma Levels, What is Next?

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Journal of Cancer Research and Clinical Oncology, 140: 1359-1365 (2014) IF: 3.009

Purpose High-dose methotrexate (HD-MTX) is a cornerstone antineoplastic drug in most treatment protocols of pediatric acute lymphoblastic leukemia (AL). Among the membrane efflux transporters of MTX, the human breast cancer resistant protein is the second member of the G subfamily of AT P-binding cassette (ABC) efflux pump (ABCG2). A single-nucleotide polymorphism (SNP) in ABCG2, the exchange of C to A at position 421, represents 13 % in the Middle Eastern population. We studied the effect of this SNP on the plasma levels of HD-MTX in Egyptian pediatric ALL. Methods T wo hundred AL patients were recruited from Children's Cancer Hospital Egypt-57357, and all were treated according to the St Jude Total XV protocol. Determination of plasma MTX levels was done at 23, 42 and 68 h. Genotyping of C421A of ABCG2 was done by polymerase chain reactionrestriction fragment length polymorphism. Results We found 14.5 % of the variant allele of the ABCG2 C421A SNP. The statistical association between ABCG2 421C>A SNP and the cutoff toxic plasma level of 24 h HD-MTX infusion at different time points tested was not statistically significant. There was no statistical significance between steady-state plasma concentration in patients with and without with this SNP. Conclusion T o date, this is the largest study on Egyptian AL patients for this SNP. This study shows that there is no effect of ABCG2 421C>A on plasma concentrations of HD-MTX. Replacing candidate gene association studies with genome-wide studies of HD-MTX is now mandatory and is part of our research blueprint.

Keywords: High-Dose Methotrexate; Egyptian Pediatric Acute Lymphoblastic Leukemia; Abcg2 C421a Genetic Pplymorphism; Plasma Level.

1050. Evaluation of Serum PIVKA-II and Mif as Diagnostic Markers for HCV/HBV Induced Hepatocellular Carcinoma

Mahmoud M. Kamel, Mohamed F. Saad, Amal A. Mahmoud, Awatief A. Edries and Ahmed S. Abdel-Moneim

Microbial Pathogenesis, 77: 31-35 (2014) IF: 2

Viral hepatitis is the most significant predisposing factor for hepatocellular carcinoma (HCC). Liver cancer grows silently with mild or no symptoms until the disease is advanced and with little hope of cure. Early recognition of the onset of HCC would help to select more effective therapies for patients leading to a better prognosis and life span. The current study aims to evaluate two diagnostic and prognostic markers - Prothrombin induced by vitamin K absence-II (PIVKA-II) and macrophage migration inhibitory factor (MIF) in the serum of patients with HCC and those with a high risk of developing hepatic cancers. Serum samples from hepatocellular carcinoma, hepatitis C and normal subjects were subjected to quantitative determinations of different parameters including alpha-fetoprotein (AFP), PIVKA-II and MIF. Significant differences between the various groups were recorded. PIVKA-II and AFP showed a higher specificity and sensitivity compared to MIF, and there was considerable correlation between AFP and both PIVKA and MIF. It is concluded that analysis of PIVKA-II and AFP can serve as useful non-invasive markers for the early detection of HCC with good sensitivity and specificity.

Keywords: AFP; HBV; HCV; HCC; MIF; PIVKA II.

1051. P Selectin and T Cell Profiles Provide Verification To Understand the Pathogenesis of Liver Cirrhosis in HCV and Schistosoma Mansoni Infections

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Microbial Pathogenesis, 73: 19-24 (2014) IF: 2

Hepatitis C virus (HCV) and Schistosoma mansoni are two major causes of chronic liver disease (CLD). Both immune alteration and thrombocytopenia are common complications in the majority of cirrhotic patients. The current study aimed to monitor the effect

of T cell profile and platelets activation on the pathogenesis of liver cirrhosis in patients suffered from single or concomitant schistosomiasis and HCV infections. The subjects were divided into 4 groups: Group I, patients infected with schistosomiasis; Group II, patients infected with HCV; Group III, patients with combined liver diseases and Group IV: healthy individuals. All groups were subjected to full clinical evaluation as well as laboratory examination including ELISA anti-HCV antibodies screening, parasitological examination, and complete blood picture as well as flow cytometry for CD41, CD42, CD62P (P selectin), CD63, CD4 and CD8. The platelets count was significantly decreased in HCV and/or schistosoma infected patients compared to controls. The percentage of the total Tlymphocytes and T-helper was significantly reduced in all infected groups, while the percentage of T-cytotoxic was increased. The patients possessed a significantly higher percentage of the platelets activation markers than control group. There were considerable correlations between the platelets counts and P selectin and MFI. Thrombocytopenia was a common finding in patients with CLD. Patients with CLD showed increased platelets activation which may contribute to the occurrence of thrombocytopenia and play a role in the pathogenesis of CLD. Infected patient showed reduction in the cell-mediated-immunity as evidenced by low T ehelper cells. Keywords: HCV; Hepatitis; P Selectin; Schistosoma Mansoni; Viral Immunity.

1052. Impact of Vitamin D Receptor Gene Polymorphisms in Pathogenesis of Type-1 Diabetes Mellitus

Mahmoud M Kamel, Shawky A. Fouad, Omina Salaheldin, Abd El-Rahman A Abd El-Razek and Abeer I. AbdEl-Fatah

International Journal of Clinical and Experimental Medicine, 7(12): 5505-5510 (2014) IF: 1.422

Background: Type 1 diabetes mellitus (TIDM) results from an immune-mediated destruction of insulin-producing-cells in the pancreatic islets of Langerhans. There are clear differences in immunogenetic predisposition to type1 diabetes among countries. Studies have indicated that vitamin D supplementation in early childhood decreases the risk of TIDM. Vitamin D exerts its action via the nuclear vitamin D receptor (VDR), which shows an extensive polymorphism. VDR gene polymorphisms have been associated with altered gene expression or gene function. Four single nucleotide polymorphisms (SNPs) in the VDR gene produce variation in four recognition sites. These recognition sites variants include Fok I, Bsm I, Apa I and Taq I.

Aim of the study: TO investigate the relationship between VDR gene polymorphisms (at positions Taq I and Apa I) and the incidence of TIDM in Egyptian peoples. Subjects and methods: This study included 74 patients with type 1 DM in addition to 28 healthy age and sex matched control subjects. All of them were subjected to full history taking and clinical examination. Three ml of venous blood were withdrawn from each patient at fasting and postprandial times and used for genomic DNA extraction, estimation of Hb A1C, as well as, fasting and postprandial C-peptide and blood glucose levels.

Results: Apa I recognition site was found in low frequency in diabetic patients (14/74) 18.9% while, its frequency was high (16/28) 57.1% among normal subjects. Taq I has two recognition sites. The first was found at nucleotide number 293 that was found in a frequency of (2/28) 7.1% in normal non-diabetic

individuals while it was detected in (14/74) 18.9% in diabetic patients. The second Taq I recognition site was found at nucleotide number 494 without any differences between diabetic and normal individuals.

Conclusion: This study indicates that there is an association between VDR genetic polymorphism and incidence of TIDM in Egyptian patients.

Keywords: Vitamin D Receptor (VDR); Polymorphism; Type 1 Diabetes Mellitus (TIDM).

1053. Comparing Prothrombin Induced By Vitamin K Absence-Ii (PIVKA-II) With the Oncofetal Proteins Glypican-3, ALPHA Feto Protein and Carcinoembryonic Antigen in Diagnosing Hepatocellular Carcinoma Among Egyptian Patients

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Journal of the Egyptian National Cancer Institute, 26: 79-85 (2014)

Background: Hepatocellular carcinoma (HCC) is usually asymptomatic in the early stage and does not show elevated alpha-feto protein (AFP). AFP shows 60–80% sensitivity in diagnosing HCC. Glypican3 (GPC-3) is an oncofetal protein that is only detected in HCC cells but not in benign liver tissues, while Carcinoembryonic antigen (CEA) is expressed in various neoplasms including HCC. Although, it is not specific for HCC. Prothrombin induced by vitamin K absence-II (PIVKA-II) is an abnormal prothrombin protein that is increased in the serum of HCC patients. It has higher sensitivity and specificity compared to AFP. The aim of this study is to compare the clinical utility of PIVKA-II with GPC-3, AFP and CEA in diagnosing HCC. **Keywords**: HCC; Pivka-Ii; Oncofetal Antigens.

Dept. of Medical & Cancer Epidemics Statistics

1054. Dexmedetomidine as an Adjunctive Analgesic With Bupivacaine in Paravertebral Analgesia for Breast Cancer Surgery

Nelly Hassan Mohamed Alieldin, Sahar A. Mohamed, Khaled M. Fares and Ashraf A. Mohamed

Pain Physician, 17 (5): E589-98 (2014) IF: 4.766

Background: There is little systematic research on the efficacy and tolerability of the addition of adjunctive analgesic agents in paravertebral analgesia. The addition of adjunctive analgesics, such as fentanyl and clonidine, to local anesthetics has been shown to enhance the quality and duration of sensory neural blockades, and decrease the dose of local anesthetic and supplemental analgesia.

Objectives: Investigation of the safety and the analgesic efficacy of adding 1 μ g/kg dexmedetomidine to bupivacaine 0.25% in thoracic paravertebral blocks (PVB) in patients undergoing modified radical mastectomy.

Study Design: A randomized, double-blind trial.

Setting: Academic medical center.

Methods: Sixty American Society of Anesthesiologists physical status -I - III patients were randomly assigned to receive thoracicPVB with either 20 mL of bupivacaine 0.25% (Group B, n = 30), or 20 mL of bupivacaine 0.25% + 1 µg/kg dexmedetomidine (Group BD, n= 30). Assessment parameters

included hemodynamics, sedation score, pain severity, time of first analgesics request, total analgesic consumption, and side effects in the first 48 hours.

Results: There was a significant reduction in pulse rate and diastolic blood pressure starting at 30 minutes in both groups, but more evidenced in group BD (P < 0.001). Intraoperative Systolic blood pressure showed a significant reduction at 30 minutes in both groups (P < 0.001) then returned to baseline level at 120 minutes in both groups. There was a significant increase in pulse rate starting 2 hours postoperative until 48 hours postoperatively in group B but only after 12 hours until 48 hours in group BD (P < 0.001). The time of the first rescue analgesic requirement was significantly prolonged in the group BD (8.16 \pm 42 hours) in comparison to group B (6.48 ± 5.24 hours) (P = 0.04). The mean total consumption of intravenous tramadol rescue analgesia in the postanesthesia care unit in the firtst 48 hours postoperatively was significantly decreased in group BD (150.19 ± 76.98 mg) compared to group B (194.44 \pm 63.91 mg) (P = 0.03). No significant serious adverse effects were recorded during the study. Limitations: This study is limited by its sample size.

Conclusion: The addition of dexmedetomidine 1 μ g/kg to bupivacaine 0.25% in thoracic PVB in patients undergoing modified radical mastectomy improves the quality and the duration of analgesia and also provides an analgesic sparing effect with no serious side effects.

Keywords: Dexmedetomidine; Paravertebral Block.

1055. Efficacy and Safety of Dexmedetomidine Added to Caudal Bupivacaine in Pediatric Major Abdominal Cancer Surgery

Nelly Hassan Mohamed Alieldin, Khaled Mohamed Fares and Ahmed H. Othman

Pain Physician, 17(5): 393-400 (2014) IF: 4.766

Background: Caudal analgesia has been prolonged by the addition of various adjuvants. Dexmedetomidine is a highly selective alpha-2 agonist with sedative and analgesic properties.

Objective: To investigate the effect of addition of dexmedetomidine to 0.25% bupivacaine for caudal analgesia in children undergoing major abdominal cancer surgery.

Study Design: A randomized double-blind trial.

Setting: Academic medical center.

Methods: Forty pediatric patients, aged 3 - 12 years, weighting 10 - 40 kg, and of American Society of Anesthesiologists (ASA) physical status I and II scheduled for major abdominal cancer surgeries under general anesthesia combined with caudal analgesia were enrolled. They were randomly allocated into 2 groups: Group I (BD): (n = 20) received 1 mL/kg bupivacaine 0.25% with dexmedetomidine 1 μ g/kg and group II (B): (n = 20) received 1 mL/kg bupivacaine 0.25%. Heart rate (HR), mean arterial pressure (MAP), and oxygen saturation (SPO2) were recorded for 120 minutes. Pain was assessed immediately postoperative and at hours 2, 4, 6, 12, 18, and 24 of postoperative period by Face, Legs, Activity, Cry and Consolability (FLACC) score. Time to first request for analgesia and total analgesic consumption in the first 24 hours were recorded. The level of sedation was recorded using Ramsay's sedation scale [Intravenous acetaminophen 15mg/kg (perfalgan, Squibb)]. Adverse effects were recorded and treated.

Results: There was significant reduction in FLACC score in group BD at 2, 4, 6, and 12 hours postoperatively compared to group B. At the eighteenth and twenty-fourth hour there was no

significant difference. Time of the first rescue analgesic requirement was significantly prolonged in group BD compared to group B. The mean total consumption of rescue analgesia in the 24 hours of the postoperative period was significantly decreased in group BD (405.00 ± 215.03) mg when compared with group B (810.35 ± 200.93) mg.

Limitations: This study is limited by its small sample size.

Conclusion: Addition of dexmedetomidine $(1 \ \mu g/kg)$ to caudal bupivacaine 0.25% (1 mL/kg) in pediatric major abdominal cancer surgeries achieved significant postoperative pain relief for up to 19 hours, with less use of postoperative analgesics, and prolonged duration of arousable sedation. Hemodynamic changes were statistically significant, yet of no clinical significance.

Keywords: Dexmedetomidine, Caudal Block, Pediatric Cancer Surgery.

1056. Age At Diagnosis In Women With Non-Metastatic Breast Cancer: Is It Related to Prognosis?

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Journal of the Egyptian National Cancer Institute, 26: 23-30 (2014)

Objective: Primary objective was to verify whether breast cancer patients aged less than 40 years at diagnosis have poorer prognosis than older patients. Secondary to assess prognostic factors influencing disease free survival.

Methods: 941 women were diagnosed with non-metastatic breast cancer at NCI, Cairo in 2003. Epidemiologic, clinico-pathological characteristics, treatment modalities and disease free survival were compared among the two age groups. Prognostic factors were evaluated for association with disease-free survival.

Results: One hundred-eighty-one patients (19.2%) were younger than 40 years and 760 (80.8%) were older. Older women presented with higher rates of comorbidities and younger women presented with more hormone non-responsive tumors. Young women presented with larger tumors pT4 = 13.8% compared to 8.6% in older women, yet not significant. Young women were treated with more conservative surgery, more adjuvant chemotherapy and radiotherapy while older women with more radical mastectomies and more hormonal treatment. Recurrence rates were significantly higher among young women 44.2% compared to 34.5% in older women. Five year disease free survival in young women was $38.9\% \pm 4.6\%$ compared to 48.6% \pm 2.5% with adjusted hazard ratio of 1.22 95% CI (0.91–1.64), p = 0.19. Multivariate analyses identified positive axillary lymph nodes (pN2-pN3), larger tumor size (pT3-pT4), hypertension, lobular carcinoma type and lack of adjuvant systemic treatment as independent factors associated with poor DFS.

Conclusion: Young women were not found to have poorer prognosis, yet they presented with more ER negative tumors. Most of women presented with advanced stage and young women had higher recurrence rates.

Keywords: Breast Cancer; Young Age; Disease-Free Survival; Prognostic Factors.

Dept. of Medical Oncology

1057. Anastrozole For Prevention of Breast Cancer In High-Risk Postmenopausal Women (IBIS-II): An International, Double-Blind, Randomised Placebo-Controlled Trial

Hussein Mostafa Mosa Khaled

Lancet, 383: 1041-1048 (2014) IF: 39.207

Background: Aromatase inhibitors effectively prevent breast cancer recurrence and development of new contralateral tumours in postmenopausal women. We assessed the efficacy and safety of the aromatase inhibitor anastrozole for prevention of breast cancer in postmenopausal women who are at high risk of the disease.

Methods: Between Feb 2, 2003, and Jan 31, 2012, we recruited postmenopausal women aged 40-70 years from 18 countries into an international, double-blind, randomised placebo-controlled trial. To be eligible, women had to be at increased risk of breast cancer (judged on the basis of specific criteria). Eligible women were randomly assigned (1:1) by central computer allocation to receive 1 mg oral anastrozole or matching placebo every day for 5 years. Randomisation was stratified by country and was done with blocks (size six, eight, or ten). All trial personnel, participants, and clinicians were masked to treatment allocation; only the trial statistician was unmasked. The primary endpoint was histologically confirmed breast cancer (invasive cancers or noninvasive ductal carcinoma in situ). Analyses were done by intention to treat. This trial is registered, number ISRCTN31488319.

Findings: 1920 women were randomly assigned to receive anastrozole and 1944 to placebo. After a median follow-up of 5.0 years (IQR 3.0-7.1), 40 women in the anastrozole group (2%) and 85 in the placebo group (4%) had developed breast cancer (hazard ratio 0.47, 95% CI 0.32-0.68, p<0.0001). The predicted cumulative incidence of all breast cancers after 7 years was 5.6% in the placebo group and 2.8% in the anastrozole group. 18 deaths were reported in the anastrozole group and 17 in the placebo group, and no specific causes were more common in one group than the other (p=0.836).

Interpretation: Anastrozole effectively reduces incidence of breast cancer in high-risk postmenopausal women. This finding, along with the fact that most of the side-effects associated with oestrogen deprivation were not attributable to treatment, provides support for the use of anastrozole in postmenopausal women at high risk of breast cancer.

Keywords: Anastrozole Breast Cancer.

1058. Progression Free Survival Rate at 9 and 18 Weeks Predict Overall Survival in Patients With Malignant Pleural Mesothelioma: an Individual Patient Pooled Analysis of 10 European Organisation for Research And Treatment of Cancer Lung Cancer Group Studies and an Independent Study Validation

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European Journal Of Cancer, 50: 2771-2782 (2014) IF: 4.819

Response criteria have always been difficult to apply to malignant pleural mesothelioma (MPM), due to its unique pattern of growth.

We developed some models to show that progression free survival rate (PFSR) could be a better predictor of overall survival (OS) than the response rate (RR) in MPM patients. The results were validated independently in the European Organisation for Research and Treatment of Cancer (EORTC) 08052, a phase II study in MPM.

Methods: Individual patient data from 10 EORTC-Lung Cancer Group (LCG) studies of first-line chemotherapy in MPM were pooled. Response to therapy was assessed according to World Health Organisation (WHO) criteria in all except the two most recent trials, which used Response Evaluation Criteria in Solid Tumours (RECIST). Landmark analyses (LA) at 9 weeks and 18 weeks after registration/randomisation were performed to assess the association between PFSR and OS. Independent validation of the results was conducted in EORTC 08052 study (82 patients) employing the same LA.

Results: All 10 studies (N=523 patients) were included in the LA of PFSR at 9 and 18 weeks (PFSR-9 and PFSR-18). PFSR-9 and PFSR-18 were confirmed as predictors of OS, with hazard ratio (HR) of 0.37 (95% confidence interval (CI), 0.30-0.47) and 0.50 (0.38-0.65) and C-index of 0.62 and 0.58, respectively. In the validation study, 28.4% achieved CR/PR and 77.8% had disease control (CR/PR/SD) as their best overall response. PFSR-9 and PFSR-18 weeks were both strongly correlated with OS (HR of 0.35 [80% CI, 0.25-0.49] and 0.46 (0.32-0.67) and C-index of 0.66 and 0.60, respectively).

Conclusion: PFSR-18 was strongly correlated and discriminated patients with better OS from the poorer prognosis patients. An earlier end-point, PFSR-9 was also strongly correlated to OS with better discriminating capacity. The results were independently validated.

Keywords: Malignant Pleural Mesothelioma (Mpm); Overall Survival (Os) Prediction; Progression Free Survival Rates At 9 And 18Weeks (Pfsr-9 And 18); Response Rates.

1059. The Biochemical Value of Urinary Metalloproteinases 3 and 9 in Diagnosis and Prognosis of Bladder Cancer in Egypt

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Journal of Biomedical Science, 21 (72): (2014) IF: 2.736

Background: Matrix metalloproteinases (MMPs) have long been associated with cancer-cell invasion and metastasis. Few studies are available that describe this association with bladder cancer either related or unrelated to schistosoma infection. Evaluating the urinary levels of MMP3 and MMP9 as diagnostic and prognostic biomarkers in different stages of schistosomal and non schistosomal bladder cancer was the aim of the present study. Urine samples were collected from 70 patients with schistosomal and non schistosomal bladder cancer at early and advanced stages and also from12 healthy volunteers as controls. Urinary levels of MMP-3 and MMP-9 was measured by ELISA technique. Sensitivity and specificity of both markers were determined.

Results: Urinary levels of both MMP-3 and MMP-9 were significantly elevated in all bladder cancer patients compared with controls. MMP-3 started to elevate in early stages of schistosomal bladder cancer (0.173 ng/ml) and non-schistosomal bladder cancer patients (0.308 ng/ml) compared to control (0.016 ng/ml) and remained elevated in advanced stages (0.166, 0.235 ng/ml) of both types of bladder cancer patients. In contrast, MMP-9 showed a significant elevation in advanced stages only of both

schistosomal and non schistosomal bladder cancer patients (10.33, 21.22 ng/ml) compared to control (0.409 ng/ml) and this elevation of both markers was much higher in non schistosomal bladder cancer. Both Metalloproteinases were specific for the diagnosis of the disease but MMP-3 was more sensitive and this sensitivity was evident in the early stage (84.85% for MMP3, 27.28% for MMP9).

Conclusions: MMP3 may be the recommended urinary metalloproteinases as early diagnostic biomarker in the early stages of both types of bladder cancer although both MMP9 and MMP3 can be used in the diagnosis of advanced stages. Further studies are required on large number of urine samples to confirm these results.

Keywords: Bladder Cancer; Schistosoma; Mmp3; Mmp9.

1060. Gemcitabine And Cisplatin as Neoadjuvant Chemotherapy for Invasive Transitional and Squamous Cell Carcinoma of The Bladder: Effect on Survival and Bladder Preservation

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Clinical Genitourinary Cancer, 12: 233-240 (2014) IF: 1.693

Background: Despite aggressive local therapy, patients with locally advanced bladder cancer have a significant risk of distant metastases. This study evaluated the role of neoadjuvant combination chemotherapy with gemcitabine/cisplatin (GC) in improving the outcome of this group of patients over radical cystectomy alone.

Patients and Methods: A total of 114 patients with newly diagnosed bladder cancer (T3-4, N0-2, M0) were randomized to radical cystectomy alone or initial 3 cycles of GC, then managed according to response. Patients who achieved complete response completed 6 cycles of GC followed by local radiation therapy (RT) only. If tumors were downstaged to T1, complete transurethral resection was done, followed by 3 cycles of GC and then RT. Patients with partial response underwent radical cystectomy followed by 3 cycles of GC. Patients with stable disease or disease progression underwent radical cystectomy.

Results: The overall response rate to GC was 55.1%, and complete response was achieved in 28.6%. The 3-year overall survival (OS) was 51.9% versus 51.2% in the chemotherapy and surgery arms, respectively (P = .399). The 3-year disease-free survival was 31.8% in the chemotherapy arm and 45.1% in the surgery arm (P = .06). Bladder preservation was achieved in 22.5% of patients in the neoadjuvant arm. OS was 78% in responding patients and 100% in patients with complete response. **Conclusion**: Neoadjuvant GC did not improve survival in locally advanced bladder cancer over radical cystectomy alone. However, bladder preservation was feasible, and OS in responding patients was impressive. Therefore, predictive models to select patients are needed. This is the largest prospective study of squamous cell carcinoma and transitional cell carcinoma using neoadjuvant GC.

Keywords: Bladder Cancer; Bladder Preservation; Bladder Squamous Cell Carcinoma; Muscle Invasive; Neoadjuvant GC.

1061. Plasma Vascular Endothelial Growth Factor 165 in Advanced Non-Small Cell Lung Cancer

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Oncology Letters, 7(6): 2121-2129 (2014) IF: 0.987

Currently, there is no serum marker that is routinely recommended for lung cancer. Therefore, the aim of the present study was to demonstrate that plasma vascular endothelial growth factor 165 (VEGF 165) may be a potential marker for advanced lung cancer. Lung cancer is the leading cause of cancer-related mortality worldwide, therefore, it is important to develop novel diagnostic techniques. The present prospective case control study included two groups of patients; a control group of healthy volunteers and a second group of patients with advanced nonsmall cell lung cancer (NSCLC). The plasma VEGF 165 levels were measured at baseline by ELISA prior to the first-line gemcitabine-cisplatin regimen. The high VEGF 165 expression level cut-off was >703 pg/ml, and the primary endpoint was used to compare the plasma VEGF 165 levels between the NSCLC patients and the control group subjects. The secondary endpoint was used to identify the correlations between high VEGF 165 levels and; clinical response (CR), progression-free survival (PFS) and overall survival (OS) in the advanced NSCLC patients. In total, patients with advanced NSCLC (n=35) were compared with a control group of age- and gender-matched healthy subjects (n=34). The follow-up period was between Oct 2009 and Oct 2012, with a median follow-up time of 10.5 months. The median plasma VEGF 165 level was 707 pg/ml in the NSCLC patients versus 48 pg/ml in the healthy control subjects (P<0.001). However, no significant correlation was found between the plasma VEGF 165 levels and CR (P<0.5), median PFS (P=1.00) or OS (P=0.70). Therefore, it was concluded that plasma VEGF 165 may serve as a potential diagnostic marker for advanced NSCLC.

Keywords: Non-Small Cell Lung Cancer; Vascular Endothelial Growth Factor.

1062. Gastric Carcinoma at Tanta Cancer Center: A Comparative Retrospective Clinico-Pathological Study of The Elderly Versus the Non-Elderly

Zeeneldin AA, Ramadan H, El Gammal MM, Saber MM, Elgamal D and Sherisher MA

Journal of the Egyptian National Cancer Institute, 26: 127-137 (2014)

Aims: To study the clinico-pathological features, treatments and outcomes of gastric carcinoma (GC) in the elderly (≥ 65 years) and the non-elderly Egyptian patients.

Methods: This retrospective cohort study included 168 patients with histologically confirmed GC treated at Tanta Cancer Center between 2003 and 2007.

Results: Compared to the non-elderly, elderly patients had significantly higher proportion of tumors involving the cardia (p=0.034) and of adenocarcinoma NOS histology (p=0.032). Treatments were largely comparable in the two groups. Response to palliative chemotherapy was achieved in 44.4% of the elderly and 25.5% of the non-elderly patients (p=0.417). The median overall survival (OS), disease-free survival (DFS) and progression-free survival (PFS) were 6, 17 and 3 months, respectively. The median OS was 4 months in the elderly compared to 9 months in the non-elderly (p=0.005). The median

DFS was 4 months in the elderly compared to 20 months in the non-elderly (p=0.004). The median PFS was 2 months in the elderly compared to 3 months in the non-elderly (p=0.685). In multivariate analysis, poor performance status was an independent predictor of poor OS, DFS and PFS. Non-curative or no surgery and lack of chemotherapy use were independent predictors of poor OS. Age was an independent predictor of poor DFS.

Conclusions: Compared to the non-elderly, GC in the elderly has similar clinico-pathological characteristics and exhibits comparable outcomes with the same treatment options. Treatments should be tailored to each patient.

Keywords: Egypt; Elderly; Gastric Neoplasms; Gharbiah; Survival; Treatment.

1063. Review of 40-Year Md Theses in Medical Oncology

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Journal of the Egyptian National Cancer Institute, 26: 109-118 (2014)

Background and Objective: It is almost 40 years since the foundation of the Medical Oncology (MO) Department. We aimed to appraise the clinical research to fulfill the Medical Doctorate (MD) degree in MO at the National Cancer Institute, Cairo University (NCI, CU). Methods: This review included 62 MD theses containing 66 studies. They were reviewed regarding aims, type of study, clinical trial phase, design and methodology, statistical tests, results, limitations, consent and IRB approval. Theses were grouped into 3 periods: 1970-1989, 1990-1999 and 2000-2008. Results: Almost 76% of the studies were interventional and 24% were observational. Informed consent and Institutional Review Board approval were mentioned in 18 and 2 studies, respectively. While all studies mentioned the aims, none, clearly mentioned the research question. Outcomes were mainly efficacy followed by safety. Study design was inadequately considered, especially in 70's-80's period (p=0.038). Median sample size and study duration were almost stable through the three periods (p=0.441, 0.354, respectively). Most of the studies used both descriptive and analytical statistical methods. In a descending order, researched cancers were lymphoma, breast, leukemia, liver, urinary bladder, lung and colorectal. The commonest stages researched were IV and III. The number of studies focused on assessing biomarkers, biomarkers plus drugs/procedures, drugs and procedures are 20, 20, 16 and 6, respectively. Conclusion: With time, research within MD theses in MO increased quantitatively and qualitatively. Improvements were noticeable in documentation of study design.

Keywords: Clinical Trials; Md Theses; Medical Oncology Department; National Cancer Institute, Cairo University; Study Design.

1064. Tamoxifen Compared To Best Supportive Care in Advanced Hepatocelluar Carcinoma: A Retrospective Matched-Cohort Study

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Journal of the Egyptian National Cancer Institute, 26: 1-7 (2014)

Background: Hepatocelluar carcinoma (HCC) is a common cancer worldwide as well as in Egypt with hepatitis B and C, alcohol and aflatoxins being the commonest risk factors. Tamoxifen was initially reported to confer a marginal survival benefit in advanced HCC. However, later reports declined any benefit. Objective: To study the impact of tamoxifen on overall survival (OS) compared to best supportive care (BSC) in Egyptian patients with advanced HCC. Methods: This retrospective matched-cohort study was conducted at Tanta Cancer Center (TCC), Egypt where 116 advanced HCC cases treated with tamoxifen were compared to TNM stage and Child-Pugh class matched 116 HCC cases who received BSC. Results: The median OS in the tamoxifen group was 9.3 months (95% confidence interval [CI], 6.7-11.9 months) compared to 8.7 months (95%CI, 6.8-10.6) in the BSC group (p=0.758). With univariate analyses, it was shown that absence of fatigue, Child-Pugh class A, single tumors, less advanced tumors (T2), and absence of metastases (M0), had significantly better OS than their counterparts. Multivariate analysis showed that absence of fatigue, Child-Pugh class A and T2 tumors were independent prognostic factors affecting OS. Tamoxifen produced partial response and clinical stabilization in one% and 16% of cases, respectively. The median PFS with tamoxifen was 7.2 months (95%CI, 5.2-9.5). Conclusions: Tamoxifen did not show any OS advantage in Egyptian patients with advanced HCC. Use of this drug is discouraged.

Keywords: Egypt; Hepatocelluar Carcinoma; Matched Cohort; Tamoxifen; Treatment.

1065. Treatment Outcomes of Female Germ Cell Tumors: The Egyptian National Cancer Institute Experience

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Journal of the Egyptian National Cancer Institute, 26: 103-108 (2014)

Introduction: Female germ cell tumors (GCTS) are rare tumors that carry a good prognosis.

Aim: To report the experience of the Egyptian National Cancer Institute (ENCI) in managing female GCTs.

Methods: This retrospective study included 19 females with ovarian GCTs presenting to the ENCI between 2006 and 2010. **Results:** The median age was 23 years. Ovaries were the primary site in all patients. Dysgerminoma and teratoma were the predominant pathologies followed by mixed GCT in females. Unilateral ovariectomy or ovarian tumorectomy were the classic surgical procedures with R0 resection being feasible in most cases. Surveillance was adopted in six patients with stage I disease. Chemotherapy was administered in 63% of ovarian GCTs with BEP being the commonest regimen with reasonable tolerability and good response rates. The median OS and EFS were not reached. The projected 5-year OS rate was 93.8%. Both OS and EFS were better in patients responding to chemotherapy than non-responders (p<0.002). Stage of disease did not significantly affect OS or EFS.

Conclusions: Female GCTs rarely affect Egyptian females. They have good prognosis.

Keywords: Chemotherapy; Female Germ-Cell Tumors; Side Effects; Survival; Treatment.

Dept. of Radiation Oncology

1066. Tracer Kinetic Model Selection for Dynamic Contrast-Enhanced Magnetic Resonance Imaging of Locally Advanced Cervical Cancer

Kallehauge JF, Tanderup K, Duan C, Haack S, Pedersen EM, Lindegaard JC, Fokdal LU, Mohamed SM and Nielsen T

Acta Oncologica, 53: 1064-1072 (2014) IF: 3.71

Background: Dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) offers a unique capability to probe tumour microvasculature. Different analysis of the acquired data will possibly lead to different conclusions. Therefore, the objective of this study was to investigate under which conditions the Tofts (TM), extended Tofts (ETM), compartmental tissue uptake model (C-TU) and 2-compartment exchange model (2CXM) were the optimal tracer kinetic models (TKMs) for the analysis of DCE-MRI in patients with cervical cancer.

Material and Methods: Ten patients with locally advanced cervical cancer (FIGO: IIA/IIB/IIIB/IVA - 1/5/3/1) underwent DCE-MRI prior to radiotherapy. From the two-parameter TM it was possible to extract the forward volume transfer constant (K(trans)) and the extracellular-extravascular volume fraction (ve). From the three-parameter ETM, additionally the plasma volume fraction (vp) could be extracted. From the three-parameter C-TU it was possible to extract information about the blood flow (Fp), permeability-surface area product (PS) and vp. Finally, the four-parameter 2CXM extended the C-TU to include ve. For each voxel, corrected Akaike information criterion (AICc) values were calculated, taking into account both the goodness-of-fit and the number of model parameters. The optimal model was defined as the model with the lowest AICc.

Results: All four TKMs were the optimal model in different contiguous regions of the cervical tumours. For the 24 999 analysed voxels, the TM was optimal in 17.0%, the ETM was optimal in 2.2%, the C-TU in 23.4% and the 2CXM was optimal in 57.3%. Throughout the tumour, a high correlation was found between K(trans)(TM) and Fp(2CXM), $\rho = 0.91$.

Conclusion: The 2CXM was most often optimal in describing the contrast agent enhancement of pre-treatment cervical cancers, although this model broke down in a subset of the tumour voxels where overfitting resulted in non-physiological parameter estimates. Due to the possible overfitting of the 2CXM, the C-TU was found more robust and when 2CXM was excluded from comparison the C-TU was the preferred model.

Keywords: Cervical Cancer; Dynamic Contrast-Enhanced Mri.

1067. Evaluation of the Frequency and Pattern of Local Recurrence Following Intersphincteric Resection for Ultra-Low Rectal Cancer

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Journal of the Egyptian National Cancer Institute, 26: 87-92 (2014)

Introduction: Abdomino-perineal resection has been the standard treatment for rectal tumors located 65 cm from the anal verge. Recently, intersphincteric resection became a valid option which preserves the bowel continuity with better functional outcome. **Aim:** Is to evaluate the oncological and functional outcome alongside the associated surgical morbidity in patients with T1-3 rectal cancer, who underwent intersphincteric resection (ISR).

Patients & methods: Between the years 2006 and 2011, 55 patients with invasive rectal adenocarcinoma, T1-3 lesions, located 2-5 cm from the anal verge underwent ISR with total mesorectal excision. When inevitable, complete. ISR was performed, otherwise partial ISR was done. All T3 patients underwent total meso-rectal excision (TME) while some had lateral lymph node dissection (LND) with concomitant pelvic autonomic nerve preservation (PANP). Results: Among the 55 patients, 21 (38.1%) patients were T1-2 and 34 (61.9%) patients were T3. The tumor location range was 0-5 cm from the anal verge (median 2.3 cm). Partial or complete ISR was done for 35 (63.6%) and 20 (36.4%), respectively. Patients were followed for a median of 1.5 years (range 1-4.6 years). The 3 year local recurrence and distant metastasis free rates were 85.2% and 85.6%, respectively. All the 3 local recurrences occurred in T3 patients group, and had positive circumferential resection margins. Overall 3-year disease-free survival was 82.6%; while overall 3-year survival was 88.7%. the Conclusion: Intersphincteric resection with TME does not affect the local recurrence or overall survival rate in early rectal cancer T1-2 & 3, with preservation of bowel continuity and better life quality.

Keywords: Intersphincteric Resection; Local Recurrence; Low Rectal Cancer.

1068. Outcome of Different Oncoplastic Surgical (OPS) Techniques for Centrally Located Breast Cancer (CLBC)

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Journal Of The Egyptian National Cancer Institute, 26: 203-209 (2014)

Background: Oncoplastic breast surgery is a standard treatment of early breast cancer, offering a balance between good cosmetic outcome and limited risk of locoregional recurrence, by enabling proper resection margins.

Aim of Study: To present multiple techniques of partial breast reconstruction following the resection of centrally located breast cancer (CLBC) resection.

Patients and Methods: From January 2011 to August 2014, 21 patients underwent central quadrantectomy for carcinoma of the central region of the breast. Excisions included the nipple/areola complex, in most of the cases, down to the pectoralis fascia with a wide safety margin, and proper axillary management. Oncoplastic approaches included latissimus dorsi flap, inferior pedicle flap, Melon slice, Grisotti and round block techniques.

Results: Mean age of patients was 49.5 ± 10.61 years. Tumor size ranged from 1.5 to 4.5 cm. Postoperative pathology revealed a tumor mean safety margin of 2.5 ± 0.83 cm, with positive axillary lymph nodes in 15 (75.0%) patients. Nineteen (95.0%) patients received postoperative breast radiotherapy, while 9/20 (45.0%) and 3/20 (15.0%) received adjuvant chemotherapy or hormonal therapy, respectively, and only 8/20 (40.0%) patients received both therapies. During a median follow-up period of 14.89 months, neither local nor distant metastasis, were detected. The postoperative cosmetic result evaluated by the patients was excellent in 6/20 patients (30.0%), good in 11/20 patients (55.0%), fair in 3/20 (15.0%) with neither poor nor bad results, with an overall mean of 4.0 ± 0.5 equivalent to 80% satisfaction.

Conclusion: Multiple oncoplastic breast surgery techniques can be used for the resection of CLBC with satisfying cosmetic outcomes. **Keywords**: Central Breast Cancer; Oncoplastic Breast Surgery (Obs); Inferior Pedicle Flap; Grisotti Procedure; Melon Slice; Latissimus Dorsi (Ld) Flap; Round Block Technique (Donut Mastopexy Resection).

1069. Pelvic Exenteration and Composite Sacral Resection in the Surgical Treatment of Locally Recurrent Rectal Cancer

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Journal of the Egyptian National Cancer Institute, 26: 167-173 (2014)

Background: The incidence of rectal cancer recurrence after surgery is 5–45%. Extended pelvic resection which entails Enbloc resection of the tumor and adjacent involved organs provides the only true possible curative option for patients with locally recurrent rectal cancer.

Aim: To evaluate the surgical and oncological outcome of such treatment.

Patients and methods: Between 2006 and 2012 a consecutive series of 40 patients with locally recurrent rectal cancer underwent abdominosacral resection (ASR) in 18 patients, total pelvic exenteration with sacral resection in 10 patients and extended pelvic exenteration in 12 patients. Patients with sacral resection were 28, with the level of sacral division at S2–3 interface in 10 patients, at

S3-4 in 15 patients and S4-5 in 3 patients.

Results: Forty patients, male to female ratio 1.7:1, median age 45 years (range 25–65 years) underwent extended pelvic resection in the form of pelvic exenteration and abdominosacral resection. Morbidity, re-admission and mortality rates were 55%, 37.5%, and 5%, respectively. Mortality occurred in 2 patients due to perineal flap sepsis and massive myocardial infarction. A R0 and R1 sacral resection were achieved in 62.5% and 37.5%, respectively. The 5-year overall survival rate was 22.6% and the 4-year recurrence free survival was 31.8%.

Conclusion: Extended pelvic resection as pelvic exenteration and sacral resection for locally recurrent rectal cancer are effective procedures with tolerable mortality rate and acceptable outcome. The associated morbidity remains high and deserves vigilant follow up.

Keywords: Recurrent Rectal Cancer; Abdominosacral Resection; Extended Pelvic Exenteration.

1070. When Would We Advocate A Total Thyroidectomy in Cases of Hypopharyngeal Carcinoma?

Zeiad Gad, Abdelmaksoud Mohamed and Ibrahim Fakhr

Journal of the Egyptian National Cancer Institute, 26: 93-98 (2014)

Background and Aim: The incidence of invasion of the thyroid gland by hypopharyngeal carcinomas is reported to be up to 57%. Our aim was to analyze the frequency of thyroid gland invasion in hypopharyngeal carcinoma treated by thyroidectomy with total laryngopharyngectomy and to identify patients in whom preservation of the thyroid gland is oncologically feasible and hence reduces post-operative hypothyroidism.

Patients and Methods: This retrospective cohort study included 58 patients with hypopharyngeal squamous cell carcinoma treated by thyroidectomy with total laryngopharyngectomy at the National Cancer Institute, Cairo University between May 1996 and October 2005. Thyroid gland involvement was analyzed through review of charts and pathologic reports. Patients were assessed preoperatively by CT. The correlation between the thyroid gland involvement and the clinical and radiologic CT findings was meticulously examined.

Results: Thyroid gland involvement occurred in 37.9% (22/58) of all patients. T4 hypopharyngeal tumors were present in 29.3% (n = 17/58) of patients, paratracheal LN invasion was present in 37.9% (22/58) of patients, thyroid cartilage invasion was obvious in 19% (11/58) of patients, and previous radiotherapy was present in 5.2% (3/58) of patients. All patients with T4 hypopharyngeal tumors (n = 17/58) and with thyroid cartilage involvement (n = 11/58) had thyroid gland invasion as well. T4 hypopharyngeal tumors, paratracheal LN invasion, and thyroid cartilage invasion were statistically significant factors (P < 0.001, P = 0.009 and P < 0.001 respectively) in independent correlation.

Conclusion: We would advocate a total thyroidectomy in cases of advanced stages of hypopharyngeal carcinoma, bilateral tumors, postcricoid carcinoma and in all patients with definite radiological evidence of thyroid gland invasion.

Keywords: Hypopharyngeal Cancers; Thyroid Gland; Total Laryngectomy.

Dept. of Tumor Biology

1071. Estradiol-17 β Upregulates Pyruvate Kinase M2 Expression to Coactivate Estrogen Receptor- α and to Integrate Metabolic Reprogramming With The Mitogenic Response in Endometrial Cells

Salama SA, Mohammad MA, Diaz-Arrastia CR, Kamel MW, Kilic GS, Ndofor BT, Abdel-Baki MS and Theiler SK

J Clin Endocrinol Metab, 99: 3790-3799 (2014) IF: 6.31

Context: Proliferating cells reprogram their cellular glucose metabolism to meet the bioenergetic and biosynthetic demands and to maintain cellular redox homeostasis. Pyruvate kinase M (PKM) is a critical regulator of this metabolic reprogramming. However, whether estradiol-17 β (E2) reprograms cellular metabolism to support proliferation of human primary endometrial stromal cells (hESCs) and the molecular basis of this reprogramming are not well understood.

Objectives: Our objectives were to study whether E2 induces reprogramming of glucose metabolism in hESCs and to investigate the potential roles of PKM2 in E2-induced metabolic reprogramming and proliferation of these cells.

Methods: The oxygen consumption rate and extracellular acidification rate were assessed by a Seahorse XF24 analyzer. PKM2 expression was assessed by real-time RT-PCR and immunoblotting.

Results: E2 induces a Warburg-like glucose metabolism in hESCs by inducing the expression of PKM. E2 also enhanced PKM splicing into the PKM2 isoform by upregulating the c-Myc-hnRNP axis. Furthermore, E2 induces PKM2 oxidation, phosphorylation, and nuclear translocation. In addition to its glycolytic function, PKM2 physically interacted with estrogen receptor- α (ER α) and functioned as an ER α coactivator. Small-molecule PKM2 activators ameliorated ER α transcriptional activity and abrogated the E2-induced hESC proliferation.

Conclusions: We show for the first time that E2-induced hESC proliferation is associated with a shift in glucose metabolism toward aerobic glycolysis, and the molecular basis for this metabolic shift is linked to the effects of E2 on PKM2. In addition, PKM2 acts as a transcriptional coactivator for ER α and small-molecule PKM2 activators inhibit ER α transcriptional activity and reduce E2-induced cell proliferation.

Keywords: Estradiol; Pyruvate Kinase; Estradiol-ALPHA; Pyruvate Kinase; Leiomyoma.

1072. Inhibition of PARP1-Dependent End-Joining Contributes to Olaparib-mediated Radiosensitization in Tumor Cells

Kötter A, Cornils K, Borgmann K, Dahm-Daphi J, Petersen C, Dikomey E and Mansour WY

Molecular Oncology, 8: 1616-1625 (2014) IF: 5.935

Poly-ADP-ribose-polymerase inhibitors (PARPi) are considered to be optimal tools for specifically enhancing radiosensitivity. This effect has been shown to be replication-dependent and more profound in HR-deficient tumors. Here, we present a new mode of PARPi-mediated radiosensitization which was observed in four out of six HR-proficient tumor cell lines (responders) investigated, but not in normal cells. This effect is replicationindependent, as the radiosensitization remained unaffected following the inhibition of replication using aphidicolin. We showed that responders are radiosensitized by Olaparib because their DSB-repair is switched to PARP1-dependent end-joining (PARP1-EJ), as evident by (i) the significant increase in the number of residual yH2AX foci following irradiation with 3Gy and treatment with Olaparib, (ii) the enhanced enrichment of PARP1 at the chromatin after 3Gy and (iii) the inhibition of endjoining activity measured by a specific reporter substrate upon Olaparib treatment. This is the first study which directly demonstrates the switch to PARP1-EJ in tumor cells and its contribution to the response to Olaparib as a radiosensitizer, findings which could widen the scope of application of PARPi in tumor therapy.

Keywords: Dsb Repair, Parp1-Ej, Olaparib, Radiosensitivity.

1073. Peripheral vein infusion of autologous mesenchymal stem cells in Egyptian HCV-positive patients with end-stage liver disease

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Stem Cell Research & Therapy, 5 (3): (2014) *IF*: 4.634

Introduction: We have assessed the utility of autologous mesenchymal stem cell (MSC) peripheral vein infusion as a possible therapeutic modality for patients with end-stage liver diseases.

Methods: Forty patients with post-hepatitis C virus (HCV) endstage liver disease were randomized into two groups: Group 1 (GI): 20 patients who received granulocyte colony-stimulating factor (G-CSF) for 5 days followed by autologous MSCs peripheral-vein infusion and group 2 (GII): 20 patients who received regular liver-supportive treatment only (control group).

Results: In MSC-infused patients (GI), 54% showed near normalization of liver enzymes and improvement in liver synthetic function. Significant changes were reported in albumin

(P=0.000), bilirubin (P=0.002), increased international normalized ratio (INR) (P=0.017), prothrombin concentration (P=0.029) and alanine transaminase (ALT) levels (P=0.029), with stabilization of clinical and biochemical status in 13% of cases. None of the patients in GII showed any significant improvement. Hepatic fibrosis was assessed in GI by detection of procollagen IIIC peptide level (PIIICP) and procollagen III N peptide level (PIIINP). The pretreatment values of s-PIIICP and s-PIIINP were 9.4 ± 4.2 and 440 ± 189 , respectively, with a decrease to 8.1 ± 2.6 and 388 ± 102 , respectively, 3 months after MSC therapy. However, the difference was statistically nonsignificant (P=0.7). A significant correlation coefficient was reported after 3 months between the s-PIIINP and prothrombin concentration (P=-0.5) and between s-PIIICP and ascites (P=0.550).

Conclusions: First, autologous MSC infusion into a peripheral vein is as effective as the previously reported intrahepatic infusion. Second, MSCs have a supportive role in the treatment of end-stage liver disease, with satisfactory tolerability and beneficial effects on liver synthetic functions and hepatic fibrosis. Third, IV infusion of MSCs after G-CSF mobilization improves s-albumin within the first 2 weeks and prothrombin concentration and alanine Taransaminase after 1 month. According to the data from this current study and those previously reported by our group, we recommend further studies on patients' infusion with pure CD133 and CD34 followed by IV infusion of *in vitro*-differentiated MSCs within 1 week and another infusion after 3 months.

1074. Hepatitis C Virus Hypervariable Region 1 Variants Presented on Hepatitis B Virus Capsid-Like Particles Induce Cross-Neutralizing Antibodies

Lange, M; Fiedler, M; Bankwitz, D; Osburn, W; Viazov, S; Brovko, O; Zekri, AR; Khudyakov, Y; Nassal, M; Pumpens, P; Pietschmann, T; Timm, J; Roggendorf, M and Walker, A

PLOS ONE, 9 (7): (2014) IF: 3.534

Hepatitis C virus (HCV) infection is still a serious global health burden. Despite improved therapeutic options, a preventative vaccine would be desirable especially in undeveloped countries. Traditionally, highly conserved epitopes are targets for antibodybased prophylactic vaccines. In HCV-infected patients, however, neutralizing antibodies are primarily directed against hypervariable region I (HVRI) in the envelope protein E2. HVRI is the most variable region of HCV, and this heterogeneity contributes to viral persistence and has thus far prevented the development of an effective HVRI-based vaccine. The primary goal of an antibody-based HCV vaccine should therefore be the induction of cross-reactive HVRI antibodies. In this study we approached this problem by presenting selected cross-reactive HVRI variants in a highly symmetric repeated array on capsidlike particles (CLPs). SplitCore CLPs, a novel particulate antigen presentation system derived from the HBV core protein, were used to deliberately manipulate the orientation of HVRI and therefore enable the presentation of conserved parts of HVRI. These HVRI-CLPs induced high titers of cross-reactive antibodies, including neutralizing antibodies. The combination of only four HVRI CLPs was sufficient to induce antibodies crossreactive with 81 of 326 (24.8%) naturally occurring HVRI peptides. Most importantly, HVRI CLPs with AS03 as an adjuvant induced antibodies with a 10-fold increase in neutralizing capability. These antibodies were able to neutralize

infectious HCVcc isolates and 4 of 19 (21%) patient-derived HCVpp isolates. Taken together, these results demonstrate that the induction of at least partially cross-neutralizing antibodies is possible. This approach might be useful for the development of a prophylactic HCV vaccine and should also be adaptable to other highly variable viruses.

Keywords: Hepadnavirus core proteins; Phase-I trial; Therapeutic vaccines; Cell epitopes; Infection; Display; antigen; Responses; Carrier; Surface.

1075. Methylation of Multiple Genes in Hepatitis C Virus Associated Hepatocellular Carcinoma

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Journal Of Advanced Research, 5 (1): 27-40 (2014) IF: 3

We studied promoter methylation (PM) of 11 genes in Peripheral Blood Lymphocytes (PBLs) and tissues of hepatitis C virus (HCV) associated hepatocellular carcinoma (HCC) and chronic hepatitis (CH) Egyptian patients. The present study included 31 HCC with their ANT, 38 CH and 13 normal hepatic tissue (NHT) samples. In all groups, PM of APC, FHIT, p15, p73, p14, p16, DAPK1, CDH1, RARB, RASSF1A, O6MGMT was assessed by methylation-specific PCR (MSP). APC and O6-MGMT protein expression was assessed by immunohistochemistry (IHC) in the studied HCC and CH (20 samples each) as well as in a different HCC and CH set for confirmation of MSP results. PM was associated with progression from CH to HCC. Most genes showed high methylation frequency (MF) and the methylation index (MI) increased with disease progression. MF of p14, p73, RASSF1A, CDH1 and O⁶MGMT was significantly higher in HCC and their ANT. MF of APC was higher in CH. We reported high concordance between MF in HCC and their ANT, MF in PBL and CH tissues as well as between PM and protein expression of APC and O⁶MGMT. A panel of 4 genes (APC, p73, p14, O⁶MGMT) classifies the cases independently into HCC and CH with high accuracy (89.9%), sensitivity (83.9%) and specificity (94.7%). HCV infection may contribute to hepatocarcinogenesis through enhancing PM of multiple genes. PM of APC occurs early in the cascade while PM of p14, p73, RASSF1A, RARB, CDH1 and O6MGMT are late changes. A panel of APC, p73, p14, O6-MGMT could be used in monitoring CH patients for early detection of HCC. Also, we found that, the methylation status is not significantly affected by whether the tissue was from the liver or PBL, indicating the possibility of use PBL as indicator to genetic profile instead of liver tissue regardless the stage of disease.

Keywords: Hepatitis C virus-genotype 4; Chronic hepatitis; Hepatocellular carcinoma; Promoter methylation.

1076. Chloroquine Synergizes Sunitinib Cytotoxicity Via Modulating Autophagic, Apoptotic and Angiogenic Machineries

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Chemico-Biological Interactions, 217: 28-40 (2014) IF: 2.982

Tyrosine kinases play a pivotal role in oncogenesis. Although tyrosine kinase inhibitors as sunitinib malate are used in cancer therapy, emerging studies report compromised cytotoxicity when used as monotherapy and thus combinations with other anticancer agents is recommended. Chloroquine is a clinically available anti-malarial agent which has been shown to exhibit anti-cancer activity. In the current study, we questioned whether chloroquine can modulate sunitinib cytotoxicity. We found that chloroquine synergistically augmented sunitinib cytotoxicity on human breast (MCF-7 and T-47D), cervical (Hela), colorectal (Caco-2 and HCT116), hepatocellular (HepG2), larvngeal (HEp-2) and prostate (PC3) cancer cell lines as indicated by combination and concentration reduction indices. These results were also consistent with that of Ehrlich ascites carcinoma (EAC) Swiss albino mice models as confirmed by tumor volume, weight, histopathological examination and PCNA expression. Sunitinib induced autophagy via upregulating beclin-1 expression which was blocked by chloroquine as evidenced by accumulated SQTSM1/p62 level. Furthermore, chloroquine augmented sunitinib-induced apoptosis by decreasing survivin level and increasing caspase 3 activity. Chloroquine also enhanced the antiangiogenic capacity of sunitinib as indicated by decreased CD34 expression and peritoneal/skin angiogenesis. Sunitinib when combined with chloroquine also increased reactive nitrogen species production via increasing inducible nitric oxide synthase expression and nitric oxide level whilst reduced reactive oxygen species production by increasing GSH level, activities of glutathione peroxidase and catalase and reducing lipid peroxides compared to sunitinib-only treated group. Taken together, these findings suggest that chloroquine enhanced sunitinib cytotoxicity in a synergistic manner via inducing apoptosis while switching off autophagic and angiogenic machineries. Nevertheless, further studies are required to elucidate the efficacy and safety profile of such combination. (C) 2014 Elsevier Ireland Ltd. All rights reserved.

Keywords: Sunitinib; Chloroquine; Autophagy; Apoptosis; Angiogenesis; Oxidative Stress.

1077. In Vitro Anti-Proliferative and Anti-Angiogenic Activities of Thalidomide Dithiocarbamate Analogs

El-Aarag BY, Kasai T, Zahran MA, Zakhary NI, Shigehiro T, Sekhar SC, Agwa HS, Mizutani A, Murakami H, Kakuta H and Seno M

Int Immunopharmacol., 21(2): 283-292 (2014) IF: 2.711

Inhibition of angiogenesis is currently perceived as a promising strategy in the treatment of cancer. The anti-angiogenicity of thalidomide has inspired a second wave of research on this teratogenic drug. The present study aimed to investigate the antiproliferative and anti-angiogenic activities of two thalidomide dithiocarbamate analogs by studying their anti-proliferative effects on human umbilical vein endothelial cells HUVECs and MDA-MB-231 human breast cancer cell lines. Their action on the expression levels of IL-6, IL-8, TNF-a, VEGF165, and MMP-2 was also assessed. Furthermore, their effect on angiogenesis was evaluated through wound healing, migration, tube formation, and nitric oxide NO assays. Results illustrated that the proliferation of HUVECs and MDA-MB-231 cells was not significantly affected by thalidomide at 6.25-100µM. Thalidomide failed to block angiogenesis at similar concentrations. By contrast, thalidomide dithiocarbamate analogs exhibited significant anti-proliferative action on HUVECs and MDA-MB-231 cells without causing cytotoxicity and also showed powerful anti-angiogenicity in wound healing, migration, tube formation, and NO assays.

Thalidomide analogs 1 and 2 demonstrated more potent activity to suppress expression levels of IL-6, IL-8, TNF-a, VEGF165, and MMP-2 than thalidomide. Analog 1 consistently, showed the highest potency and efficacy in all the assays. Taken together, our results support further development and evaluation of novel thalidomide analogs as anti-tumor and anti-angiogenic agents.

Keywords: Angiogenesis; Migration; No; Thalidomide Dithiocarbamate Analogs; VEGF.

1078. Expression of microRNA-1234 related signal transducer and activator of transcription 3 in patients with diffuse large B-cell lymphoma of activated B-cell like type from high and low infectious disease areas

Hoegfeldt, T; Johnsson, P; Grander, D; Bahnassy, AA; Porwit, A; Eid, S; Osterborg, A; Zekri, ARN; Lundahl, J; Khaled, MH; Mellstedt, H and Moshfegh, A

Leukemia & Lymphoma, 55 (5): 1158-1165 (2014) IF: 2.605

Diffuse large B-cell lymphoma (DLBCL) is a heterogeneous disease, and infectious agents are suspected to be involved in the tumorigenesis of DLBCL. MicroRNAs (miRNAs) are non-coding RNAs modulating protein expression. We compared miRNA expression profi les in lymph node tissues of patients with DLBCL of the activated B-cell like (ABC) type from two geographical areas with different background exposures, Sweden and Egypt. We showed previously that DLBCL tissues of the ABC-type in Swedish patients had a higher expression of signal transducer and activator of transcription 3 (STAT3) compared to Egyptian patients. Here, we analyzed the involvement of miRNAs in STAT3 regulation. miR-1234 was significantly up-regulated in Egyptian patients with DLBCL compared to Swedish patients (p < 0.03). The miR-1234 expression level correlated inversely with the expression of STAT3. The Stat3 protein was down-regulated in cells transfected with miR-1234, suggesting that STAT3 might be a potential target for miR-1234, miR-1234 and STAT3 might be involved in the tumorigenesis of DLBCL of ABC type and possibly associated with environmental background exposure.

Keywords: Non-hodgkins-lymphoma; Gene-expression; Cancer; Survival; Targets; Classification; Pathogenesis; Translation; Biogenesis; Pathways.

1079. Circulating tumor and cancer stem cells in hepatitis C virus-associated liver disease

Bahnassy, AA; Zekri, ARN; El-Bastawisy, A; Fawzy, A; Shetta, M; Hussein, N; Omran, D; Ahmed, AAS and El-Labbody, SS

World Journal of Gastroenterology, 20 (48): 18240-18248 (2014) IF: 2.433

Aim: To assess the role of circulating tumor cells (CTCs) and cancer stem cells (CSCs) in hepatitis C virus (HCV)associated liver disease.

Methods: Blood and/or tissue samples were obtained from HCV (genotype 4)-associated hepatocellular carcinoma patients (HCC; n = 120), chronic hepatitis C patients (CH; n = 30) and 33 normal control subjects (n = 33). Serum levels of alpha-fetoprotein (AFP), alkaline phosphatase, and alanine and aspartate aminotransferases were measured. Cytokeratin 19 (CK19) monoclonal antibody was used to enumerate CTCs, and CD133 and CD90 were used to enumerate CSCs by flow cytometry. The expression levels of the CSCs markers (CD133 and CD90) as

well as telomerase, melanoma antigen encoding gene 1 (MAGE1) and MAGE3 were assessed by RTPCR and quantitative real-time polymerase chain reactions. The number of CTCs and/or the expression levels of CK19, CD133, telomerase, MAGE1 and MAGE3 were correlated to the standard clinicopathologic prognostic factors and disease progression.

Results: Levels of AFP, alkaline phosphatase and aspartate aminotransferase were significantly different among the HCC, CH and control groups (P < 0.001), whereas alanine aminotransferase differed significantly between patient (HCC and CH) and control groups (P < 0.001). At the specified cutoff values determine by flow cytometry, CK19 (49.8), CD90 (400) and CD133 (73) were significantly higher in the blood of HCC patients compared to those in the CH and control groups (P < 0.001). On the other hand, CD133 at a 69.5 cutoff was significantly higher in the CH compared to the control group (P = 0.001). Telomerase, MAGE1 and MAGE3 RNA were expressed in 55.71%, 60.00% and 62.86% of the HCC patients, respectively, but were not detected in patients in the CH or control groups, which were statistically significant (Ps ≤ 0.001). The expression levels of telomerase, CD90, MAGE3, CD133 and CK19 were all significantly associated with high tumor grade and advanced stage in HCC patients (all Ps < 0.05).

Conclusion: CTC counts and AFP, CK19, telomerase, and MAGE1/MAGE3 expression predict disease progression in patients with HCV, whereas telomerase, MAGE3, CD90, CD133 and CK19 are prognostic markers in HCC. (C) 2014 Baishideng Publishing Group Inc. All rights reserved.

Keywords: Cancer stem cells; Circulating tumor cells; Hepatitis C virus genotype-4; Hepatocellular carcinoma.

1080. Differential expression of p53 family proteins in colorectal adenomas and carcinomas: Prognostic and predictive values

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Histology and Histopathology, 29 (2): 207-216 (2014) IF: 2.236

We studied the contribution of p53 family proteins and their isoforms to the development and progression of colorectal carcinoma in relation to VEGF. Methods: p53, p63, p73 and VEGF proteins were assessed in 45 colorectal adenomas (CRAs), 80 carcinomas (CRCs) and 36 normal colonic tissue samples (NCT) by immunohistochemistry. Different p63 and p73 isoforms were assessed by RT-PCR. Aberrant protein and RNA expressions were correlated to patients' characteristics, disease free and overall survival (DFS& OS).

Results: p53, p63, p73 and VEGF proteins were detected in 22.2%, 73.3%, 33.3%, 46.7% CRAs; in 68.8%, 38.8%, 62.5%, 62.5% CRCs and 16.7%, 83.3%; 13.9%, 27.8% NCT (p<0.05 except for VEGF). Commonest isoforms were TAp63 alpha, Delta Np63, TAp73 alpha in CRA and Delta Np63, TAp63 alpha, Delta Np73, TAp73 beta in CRC. Significant correlations were found between aggressive tumor phenotypes and aberrations in p73, p53, p63, VEGF. DFS correlated with advanced stage, p73 and VEGF aberrations. While advanced stage, positive lymph nodes, p73 and p53 correlated with OS. Prognosis was worse in patients with aberrant p63& p73 than in those with normal p63& p73 expression regardless of p53 gene status (p<0.05).

Conclusions: p53 family proteins and VEGF play a pivotal role in colorectal carcinogenesis. p53 prognostic potential is augmented by p73 and p63 aberrations indicating a synergistic effect between the three family members. Nodal status, stage, p73, VEGF and p53 could be used as predictors of DFS and OS. **Keywords**: Colorectal carcinoma; Adenoma; p53; VEGF; Prognosis.

1081. Promotor methylation: Does it affect response to therapy in chronic hepatitis C (G4) or fibrosis?

Zekri, ARN; Raafat, AM; Elmasry, S; Bahnassy, AA; Saad, Y; Dabaon, HA; El-Kassas, M; Shousha, HI; Nassar, AA; EL-Dosouky, MA and Hussein, N

Annals of Hepatology, 13 (5): 518-524 (2014) IF: 2.193

Background and aim. DNA methylation plays a critical role in the control of important cellular processes. The present study assessed the impact of promoter methylation (PM) of some genes on the antiviral response to antiviral therapy and it's relation to the presence of fibrosis in HCV-4 infected patients from Egypt. Material and methods. Clinical, laboratory and histopathological data of 53 HCV-4 infected patients who were subjected to combined antiviral therapy were collected; patients were classified according to their response to treatment and the fibrosis status. The methylation profiles of the studied groups were determined using the following genes: APC, P14ARF, P73, DAPK, RASSF1A, and O6MGMT in patients' plasma. Results. O6MGMT and P73 showed the highest methylation frequencies (64.2 and 50.9%) while P14 showed the lowest frequency (34%). Sustained virological response (SVR) was 54.7% with no significant difference in clinico-pathological or laboratory features between the studied groups. PM of O6MGM was significantly higher in non-responders (p value 0.045) while DAPK showed high methylation levels in responders with no significance (p value: 0.09) and PM of RASSF1A was significantly related to mild fibrosis (p value: 0.019). No significant relations were reported between PM of any of the studied genes and patients' features. Conclusion. PM of some Tumor Suppressor genes increases in chronic active HCV-4. However, only O6MGMT can be used as a predictor of antiviral response and RASSF1A as a marker of marked fibrosis in this small set of patients. An extended study, including more patients is required to validate the results of this preliminary study.

1082. New insight into HCV E1/E2 region of genotype 4a

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Virology Journal, 11: (2014) IF: 2.058

Introduction: Hepatitis C virus (HCV) genome contains two envelope proteins (E1 and E2) responsible for the virus entry into the cell. There is a substantial lack of sequences covering the full length of E1/E2 region for genotype 4. Our study aims at providing new sequences as well as characterizing the genetic divergence of the E1/E2 region of HCV 4a using our new sequences along with all publicly available datasets.

Methods: The genomic segments covering the whole E1/E2 region were isolated from Egyptian HCV patients and sequenced. The resulting 36 sequences 36 were analyzed using sequence analysis techniques to study variability within and among hosts in the same time point. Furthermore, previously published HCV E1/E2 sequence datasets for genotype 4a were retrieved and categorized according to the geographical location and date of

isolation and were used for further analysis of variability among Egyptian over a period of 15 years, also compared with non-Egyptian sequences to figure out region-specific variability. **Results**: Phylogenetic analysis of the new sequences has shown variability within the host and among different individuals in the same time point. Analysis of the 36 sequences along with the Egyptian sequences (254 sequences in E1 in the period from 1997 to 2010 and 8 E2 sequences in the period from 2006 to 2010) has shown temporal change over time. Analysis of the new HCV sequences with the non-Egyptian sequences (182 sequences in E1 and 155 sequences in the E2) has shown region specific variability. The molecular clock rate of E1 was estimated to be 5E-3 per site per year for Egyptian and 5.38E-3 for non-Egyptian. The clock rate of E2 was estimated to be 8.48E per site per year for Egyptian and 6.3E-3 for non-Egyptian.

Conclusion: The results of this study support the high rate of evolution of the Egyptian HCV genotype 4a. It has also revealed significant level of genetic variability among sequences from different regions in the world.

Keywords: HCV; Genotype 4; Variability; Molecular clock.

1083. Low-Dose Versus Standard-Dose Gemcitabine Infusion And Cisplatin For Patients With Advanced Bladder Cancer: A Randomized Phase II Trial-an Update

Haggag R, Farag K, Abu-Taleb F, Shamaa S, Zekri AR, Elbolkainy T, Khaled H.

Med Oncol, 31: 811-815 (2014) IF: 2.058

Prolonged infusion of low-dose gemcitabine and cisplatin (GC) proved to be an effective treatment for patients with advanced bladder cancer. One hundred and twenty untreated patients with stage III/IV bladder cancer were randomized to receive either gemcitabine (250 mg/ m2) 6-h infusion on days 1 and 8, and cisplatin (70 mg/m2) on day 2 every 21-day cycle (arm 1) or gemcitabine (1,250 mg/m2) 30-min infusion on days 1 and 8, with the same dose of cisplatin (arm 2). The 92 males and 28 females included in the study had a median age of 62 years (range 40-85 years). Among the 120 patient, complete response was achieved in 11.7 % (7/60 patients of arm 1) and 5 % (3/60 patients of arm 2). Eighteen patients in arm 1 (30 %) and 17 patients (28.3 %) in arm 2 had partial response on therapy. Thus, the overall response rate of patients in arm 1 and arm 2 was 41.7 % (25/60 patients) and 33.3 % (20/60 patients), respectively (p =0.37). No significant difference in median time to disease progression (26 vs. 24 months, p = 0.4), median survival (12 vs. 16 months, p = 0.8), and 1-year survival (49.9 vs. 54.7 %, p = 0.8) was detected between arms 1 and 2, respectively.

Main toxicities were similar in both arms with no statistically significant differences. Low-dose, prolonged infusion gemcitabine in combination with cisplatin is not inferior to the standard GC regimen with favorable toxicity profile and less financial costs.

Keywords: Bladder Cancer; Prolonged Infusion.

1084. Disease progression from chronic hepatitis C to cirrhosis and hepatocellular carcinoma is associated with increasing DNA promoter methylation

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Asian Pacific journal of cancer prevention : APJCP, 14(11): 6721-6 (2014) IF: 1.5

Background: Changes in DNA methylation patterns are believed to be early events in hepatocarcinogenesis. A better understanding of methylation states and how they correlate with disease progression will aid in finding potential strategies for early detection of HCC. The aim of our study was to analyze the methylation frequency of tumor suppressor genes, P14, P15, and P73, and a mismatch repair gene (O6MGMT) in HCV related chronic liver disease and HCC to identify candidate epigenetic biomarkers for HCC prediction.

Materials and Methods: 516 Egyptian patients with HCVrelated liver disease were recruited from Kasr Alaini multidisciplinary HCC clinic from April 2010 to January 2012. Subjects were divided into 4 different clinically defined groups -HCC group (n=208), liver cirrhosis group (n=108), chronic hepatitis C group (n=100), and control group (n=100) - to analyze the methylation status of the target genes in patient plasma using EpiTect Methyl qPCR Array technology. Methylation was considered to be hypermethylated if >10% and/or intermediately methylated if >60%.

Results: In our series, a significant difference in the hypermethylation status of all studied genes was noted within the different stages of chronic liver disease and ultimately HCC. Hypermethylation of the P14 gene was detected in 100/208 (48.1%), 52/108 (48.1%), 16/100 (16%) and 8/100 (8%) among HCC, liver cirrhosis, chronic hepatitis and control groups, respectively, with a statistically significant difference between the studied groups (p-value 0.008). We also detected P15 hypermethylation in 92/208 (44.2%), 36/108 (33.3%), 20/100 (20%) and 4/100 (4%), respectively (p-value 0.006). In addition, hypermethylation of P73 was detected in 136/208 (65.4%), 72/108 (66.7%), 32/100 (32%) and 4/100 (4%) (p-value <0.001). Also, we detected O6MGMT hypermethylation in 84/208 (40.4%), 60/108 (55.3%), 20/100 (20%) and 4/100 (4%), respectively (p value <0.001.

Conclusions: The epigenetic changes observed in this study indicate that HCC tumors exhibit specific DNA methylation signatures with potential clinical applications in diagnosis and prognosis. In addition, methylation frequency could be used to monitor whether a patient with chronic hepatitis C is likely to progress to liver cirrhosis or even HCC. We can conclude that methylation processes are not just early events in hepatocarcinogenesis but accumulate with progression to cancer.

1085. IL28B rs12979860 Gene Polymorphism in Egyptian Patients with Chronic Liver Disease Infected with HCV

Zekri, ARN; Salama, H; Medhat, E; Bahnassy, AA; Morsy, HM; Lotfy, MM; Ahmed, R; Darwish, T and Marei, MS

Asian Pacific Journal of Cancer Prevention, 15(17): 7213-7218 (2014) IF: 1.5

Background: Egypt has one of the highest prevalences of hepatitis C virus (HCV) infection worldwide. Although the IL28B gene polymorphism has been shown to modify the course of chronic HCV infection, this has not been properly assessed in the Egyptian population.

Materials and Methods: The IL28B rs12979860 single nucleotide polymorphism (SNP) was therefore examined in 256 HCV-infected Egyptian patients (group II) at different stages of disease progression and in 48 healthy volunteers (group I). Group II was subdivided into GII-A (chronic hepatitis patients, n=119), GII-B (post hepatitis cirrhosis, n=66) and GII-C (HCC on top of cirrhosis, n=71).

Results: The C/T genotype was the commonest in all groups. It was more frequent in GI (52%) than in GII (48%). There was no significant difference in the frequency of C/T and C/C or T/T genotypes between groups and subgroups (p=0.82). Within the subgroups; the C/C genotype was more common in GII-B while C/T and T/T genotypes were more common in GII-C, though with no significant difference (p=0.59 and p=0.80). There was no significant association between IL28B rs12979860 SNP and viral load, ALT, AFP level, METAVIR scores for necro-inflammation and fibrosis, and Child-Pugh classification.

Conclusions: 1) IL28Brs12979860 C/T genotype is the commonest genotype in HCV-associated CH and HCC in Egypt. 2) IL28Brs12979860 polymorphisms are not associated with disease progression or aggression (histological staging, severity of fibrosis in CH or the incidence of post-HCV HCC). 3) Differences in IL28Brs12979860 genotypes could be a consequence of environmental or ethnic variation.

Keywords: HCV; IL28B gene (rs12979860) polymorphism; chronic hepatitis; hepatocellular carcinoma.

1086. Assessment of the Prognostic Value of Methylation Status and Expression Levels of FHIT, GSTP1 and P16 in Non-Small Cell Lung Cancer in Egyptian Patients

Haroun RA, Zakhary NI, Mohamed MR, Abdelrahman AM, Kandil EI and Shalaby KA.

Asian Pac J Cancer Prev., 15(10): 4281-4287 (2014) IF: 1.5

Background: Methylation of tumor suppressor genes has been investigated in all kinds of cancer. Tumor specific epigenetic alterations can be used as a molecular markers of malignancy, which can lead to better diagnosis, prognosis and therapy. Therefore, the aim of this study was to evaluate the association between gene hypermethylation and expression of fragile histidine triad (FHIT), glutathione S-transferase P1 (GSTP1) and p16 genes and various clinicopathologic characteristics in primary non-small cell lung carcinomas (NSCLC).

Materials and Methods: The study included 28 primary nonsmall cell lung carcinomas, where an additional 28 tissue samples taken from apparently normal safety margin surrounding the tumors served as controls. Methylation-specific polymerase chain reaction (MSP) was performed to analyze the methylation status of FHIT, GSTP1 and p16 while their mRNA expression levels were measured using a real-time PCR assay with SYBR Green I.

Results: The methylation frequencies of the genes tested in NSCLC specimens were 53.6% for FHIT, 25% for GSTP1, and 0% for p16, and the risk of FHIT hypermethylation increased among patients with NSCLC by 2.88, while the risk of GSTP1 hypermethylation increased by 2.33. Hypermethylation of FHIT

gene showed a highly significant correlation with pathologic stage (p<0.01) and a significant correlation with smoking habit and FHIT mRNA expression level (p<0.05). In contrast, no correlation was observed between the methylation of GSTP1 or p16 and smoking habit or any other parameter investigated (p>0.05).

Conclusions: RESULTS of the present study suggest that methylation of FHIT is a useful biomarker of biologically aggressive disease in patients with NSCLC. FHIT methylation may play a role in lung cancer later metastatic stages while GSTP1 methylation may rather play a role in the early pathogenesis.

1087. Modulatory Effects of L-Carnitine on Tamoxifen Toxicity and Oncolytic Activity: in Vivo Study

Ibrahim AB, Mansour HH, Shouman SA, Eissa AA, Abu El Nour SM

Human and Experimental Toxicology, 33: 968-979 (2014) IF: 1.407

The aim of this study was to investigate the protective effect of Lcarnitine (L-CAR) in tamoxifen (TAM)-induced toxicity and antitumor activity. Adult female rats were randomly divided into four groups. Group I was served as control, groups II and III were treated with TAM (10 mg/kg, periorally) and L-CAR (300 mg/kg, intraperitoneally), respectively, while group IV was treated with both compounds. The treatment continued daily for 28 days. Administration of TAM resulted in significant increase in serum lipid profiles, liver enzymes, and bilirubin level. TAM produced a significant increase in lipid peroxides (LPO) level and nonsignificant change in nitrogen oxide (NO(x)) level accompanied with significant decrease in superoxide dismutase (SOD) activity of hepatic and uterus tissues and significant decrease in glutathione (GSH) content of uterus tissue. Administration of L-CAR for 1 h prior to TAM treatment decreased serum lipids and liver enzymes significantly and significantly increased SOD activity in liver and uterus tissues compared with TAM-treated group. Furthermore, it restored LPO and GSH levels and increased NO(x) level in uterus tissue. DNA fragmentation and the apoptotic marker, caspase-3, were not detected in the liver of all treated groups. Histopathologically, alterations in the liver and uterus structures after TAM treatment, which was attenuated after L-CAR administration. The antitumor effect and survival of the combined treatment of Ehrlich ascites carcinoma (EAC)-bearing mice was less than each one alone. L-CAR interestingly increased survival rate of EAC-bearing mice more than TAM-treated group. In conclusion, L-CAR has beneficial effects regarding TAM toxicity; however, it interferes with its antitumor effect.

Keywords: Tamoxifen; L-Carnitine; Organ Toxicity; Antitumor Activity; Antioxidants.

1088. Pharmacokinetics of Vancomycin in Oncology Egyptian Paediatrics: A Dosage Adjustment Trial

MA Mahmoud, A. H. I. M. Ebid, Samia A Shouman and Emad N Ebid

Indian J Pharm Sci, 76: 82-86 (2014) IF: 0.296

The purpose of this study is to determine the pharmacokinetic parameters of vancomycin in Egyptian paediatric oncology patients and to evaluate the factors that influence the variability of the pharmacokinetic parameters in this population. Vancomycin serum concentration at steady state was determined in 51 paediatric cancer patients who were treated with vancomycin multiple intravenous infusions. Also individual vancomycin pharmacokinetic parameters were calculated assuming one compartment model. The mean vancomycin total body clearance and mean vancomycin volume of distribution were significantly higher among the age range of 2 to <12 years as compared with older age. Obese patients showed significant lower values of peak and trough vancomycin concentrations than those of normal and underweight patients. A significant correlation was found between the estimated creatinine clearance (Schwartz formula) and vancomycin total body clearance in the studied patients. Also, a significant direct correlation between vancomycin volume of distribution and ratio between blood urea nitrogen (mg/dl)/weight (kg) was found. As a conclusion, age and obesity were identified as the most important factors influencing vancomycin total body clearance, volume of distribution and serum concentrations in the studied patients.

Keywords: Oncology; Paediatrics; Pharmacokinetics; Vancomycin.

Dept. of Tumor Pathology

1089. Ki-67 is A Powerful Tool for Grading Neuroendocrine Tumors Neuroendocrine Tumors Among Egyptian Patients: A 10-Year Experience

Salama A, Badawy O and Mokhtar N

Journal Of Cancer Research And Clinical Oncology, 140: 653-661 (2014) IF: 3.009

Background: Neuroendocrine tumors (NETs) arise in most organs of the body and share many common pathologic features. However, a variety of organ-specific systems have been developed for nomenclature, grading and staging of NETs, causing much confusion. In collaboration with WHO, the European Neuroendocrine Tumor Society (ENETS) recommended the use of either mitotic rate or Ki-67 labeling index (LI) for grading and classification. We aim to explore the profile of NETs in Egyptian patients and apply the ENETS system.

Materials And Methods: This retrospective study was carried out on all cases of NETs diagnosed at the Pathology Department, National Cancer Institute, Cairo University, during the period from January 2000 to December 2009. Data about age, sex, anatomic site of tumor, tumor size, tumor stage and presence of nodal metastasis were retrieved. Ki-67 immunostaining and grading according to ENETS were done.

Results: There was a trend toward increased mean age and tumor size and grade according to Ki-67, with significant statistical difference (p < 0.001 and 0.036, respectively). Estimation of mitotic count and Ki-67 LI was strongly associated with NET histopathologic types, but this association was stronger regarding Ki-67 LI than mitotic count (p = 0.002 and 0.035, respectively). On the other hand, there was discordance between grading according to mitotic count and grading according to Ki-67 LI in relation to NET histopathologic subtypes. Concordance between mitotic rate and Ki-67 LI was reported in 18.89% of cases, while discordance occurred in 81.11% of cases and was more prevalent in G3.

Conclusion: Ki-67 is a reliable and reproducible marker for grading of NETs and more superior than mitotic rate. **Keywords**: Neuroendocrine Tumors; Grading; Ki-67.

Faculty of Physical Therapy

Dept. of Physical Therapy for Neuromuscular Disorder

1090. Aerobic Exercises Enhance Cognitive Functions and Brain Derived Neurotrophic Factor in Ischemic Stroke Patients

El-Tamawy MS, Abd-Allah F, Ahmed SM, Darwish MH and Khalifa HA

Neurorehabilitation, 34: 209-213 (2014) IF: 1.736

Background: Stroke is a leading cause of functional impairments. High percentage of these patients will experience some degree of cognitive affection, ranging from mild cognitive impairment to dementia.

Objective: Demonstrate the role of aerobic exercises enhancing cognitive functions and its effect on Brain Derived Neurotrophic factor (BDNF) in post-ischemic stroke patients in the territory of anterior circulation.

Subjects and Methods: We included thirty Egyptian ischemic stroke patients in the territory of anterior circulation. They were divided into 2 groups; group 1 (G1) were subjected to physiotherapy program without aerobic exercises and group 2 (G2) were subjected to the same previous program followed by aerobic exercises. Both groups were subjected to pre- and post-treatment Addenbrookes's Cognitive Examination- Revised (ACER) and serum level of BDNF.

Results: Our results showed a significant improvement in ACER score in G2 compared to G1 post-treatment (p = 0.017). BDNF serum level significantly increased in G2 post-treatment compared to pre-treatment (p = 0.001) and compared to G1 group (p = 0.0458). ACER improvement was positively correlated to increase in serum level of BDNF (r = 0.53, p = 0.044). **Conclusion**: Aerobic exercises improve cognitive functions of ischemic stroke patients. This improvement is related to the increase in serum level of BDNF.

Keywords: Stroke; Aerobic Exercises; Bdnf.

Dept. of Physical Therapy for BioMechanics

1091. Isokinetic Imbalance of Hip Muscles in Soccer Players With Osteitis Pubis

Mohammad WS, Abdelraouf OR, Elhafez SM, Abdel-Aziem AA and Nassif NS.

Journal of Sports Sciences, 32: 934-939 (2014) IF: 2.095

In this study, we compared the isokinetic torques of hip flexors/extensors and abductors/adductors in soccer players suffering from osteitis pubis (OP), with normal soccer players. Twenty soccer male athletes with OP and 20 normal soccer athletes were included in this study. Peak torque/body weight (PT/BW) was recorded from hip flexor/extensor and abductor/adductor muscles during isokinetic concentric contraction modes at angular velocity of 2.1 rad · s-1, for both groups. The results showed a significant difference between the normal and OP groups for hip flexors (P < 0.05). The normal group had significant, lower PT/BW value than the OP group for their hip flexors (P < 0.05). The hip flexor/extensor PT ratio of OP affected and non-affected limbs was significantly different from that of normal dominant and non-dominant limbs. There were no significant differences between the normal and OP groups for hip extensor, adductor and abductor muscles (P >

0.05). Regarding the hip adductor/abductor PT ratio, there was no significant difference between the normal and OP groups of athletes (P > 0.05). The OP group displayed increase in hip flexor strength that disturbed the hip flexor/extensor torque ratio of OP. Therefore, increasing the hip extensor strength should be part of rehabilitation programmes of patients with OP. **Keywords**: Osteitis Pubis; Isokinetic; Hip Muscles.

1092. Chronic Ankle Instability Alters Eccentric Eversion/Inversion and Dorsiflexion/ Plantarflexion Ratio

Abdel-aziem AA and Draz AH

Journal of Back and Musculoskeletal Rehabilitation, 27: 47-53 (2014) IF: 1.041

Objective: To determine if the eccentric evertor/invertor and dorsiflexor/plantar-flexor ratio are altered in subjects with chronic ankle instability.

Methods: Twenty chronic ankle instability (CAI) subjects as an experimental group, and twenty healthy subjects as a control group, were matched in age, gender, and activity level. CAI subjects have a history of at least one ankle sprain and repeated episodes of giving way were included in CAI group. Subjects with no prior history of ankle injury were included in the control group. Ankle evertor/invertor and dorsiflexor/plantar-flexor muscles eccentric torque ratios were measured using the eccentric muscle contraction at angular velocities 60 and 120°/s.

Results: Analysis of variance revealed that the eccentric contraction eversion/inversion ratio of CAI group was significantly lower than normal group ratio at angular velocities 60 and 120°/s (p = 0.041 and 0.012) respectively. The eccentric contraction dorsiflexion/plantarflexion ratio of CAI group was significantly higher than normal group ratio at both angular velocities (p = 0.036 and 0.013) respectively. Moreover, at angular velocities of 60°/s and 120°/s a deficit in inversion and eversion eccentric torques were identified in CAI group (p = 0.000), plantarflexion torque deficit of CAI group (p = 0.034 and 0.028), respectively, and no deficit was identified for dorsiflexion torque of CAI group (p = 0.595 and 0.696) respectively.

Conclusion: Chronic ankle instability increases the dorsiflexion/plantarflexion muscles torque ratio and decreases the eversion/inversion ratio at angular velocities 60 and 120°/s. Therefore, the restoration of a normal eccentric inversion, eversion, and plantarflexion strength may prevent recurrent lateral ankle ligament sprain.

Keywords: Eccentric Contraction, Chronic Ankle Instability, Ankle Muscles.

1093. Concentric and Eccentric Strength of Trunk Muscles in Osteitis Pubis Soccer Players

Sayed Mohammad W, Ragaa Abdelraouf O, Abdel-aziem AA

Journal of Back and Musculoskeletal Rehabilitation, 27: 147-152 (2014) IF: 1.041

Background and Objectives: Osteitis pubis refers to a painful, inflammatory condition involving the pubic bones, pubic symphysis, and adjacent structures. So, the aims of the study were to evaluate the strength of trunk muscles of soccer players suffering from osteitis pubis, and to compare the agonist/antagonist ratio of trunk muscles in osteitis pubis athletes with that of healthy athletes. **Materials and Methods**: Twenty-five soccer male athletes with osteitis pubis, and 25 healthy soccer athletes. Peak torque/body weight (PT/BW) was recorded from trunk muscles during isokinetic concentric and eccentric contraction modes at a speed of 120°/s for healthy and osteitis pubis soccer players.

Results: There was a significant decrease in concentric contraction of back muscles in osteitis pubis group (p=0.01). A significant decrease in eccentric contraction of abdominal muscles was also recorded in osteitis pubis group (p=0.008). Concentric abdominal/back muscles ratio was significantly higher in osteitis pubis group (p=0.016), with no significant difference in eccentric abdominal/back muscles ratio between both groups (p>0.05). **Conclusion**: Osteitis pubis group displayed concentric weakness of back muscle and eccentric weakness of abdominal muscles that lead to disturbance of the normal concentric abdominal/back ratio.

Keywords: Osteitis Pubis; Isokinetic; Trunk Muscles; Ratio.

1094. Effect of Ultrasound Combined With Conventional Therapy on Neck Pain, Function, and Disability in Patients With Cervical Spondylosis: A Randomized Placebo-Controlled Trial

Amr Almaz Abdel-aziem, Amira Hussin Draz, Kadrya Hosny Battecha and Dalia Mohammed Mosaad

Journal of Musculoskeletal Pain, 22: 199-205 (2014) IF: 0.316

Objective: The purpose of this study was to evaluate the effect of continuous ultrasound [US] compared with placebo US combined with conventional physiotherapy program for patients with cervical spondylosis.

Methods: This was a randomized placebo-controlled trial. Patients, diagnosed with cervical spondylosis, were randomly assigned to one of two groups in an orthopedic physical therapy clinic: a group that received electrotherapy, exercise, hot packs, and therapeutic US [True US group] and a group that received electrotherapy, exercise, hot packs, and sham US [Sham US group]. Patients were treated, on average, three times per week for 4 weeks. Outcome measurements were collected at baseline and after 4 weeks using the Numeric Pain Rating Scale, Patient-Specific Functional Scale, and Neck Disability Index.

Results: Analysis of variance showed that both groups had improved regarding Numeric Pain Rating Scale, Patient-Specific Functional Scale, and Neck Disability Index [p50.05]. There was no significant difference between both groups for pretest and post-test values [p40.05] for all measures.

Conclusions: The addition of US to conventional physiotherapy program of electrotherapy, exercise, and hot packs yields no additional benefit to neck pain, function, or disability in patients with cervical spondylosis.

Keywords: Physical therapy; Cervical spondylosis; Ultrasound.

Dept. of Physical Therapy of Gynecology and Obstetrics

1095. Three-dimensional analysis of gait in postmenopausal women with low bone mineral density

Abeer M ElDeeb and Amr S Khodair

Journal of Neuroengineering and Rehabilitation, 11 (55): (2014) IF: 2.622 **Background**: There's lack in the literature respecting changes in the trunk and hip angles, and power profile of the lower extremities in postmenopausal women with low bone mineral density (BMD). Therefore, this study aimed to examine gait characteristics of that population, and find out which characteristics may be predictors to BMD. This may provide suitable interventions for subjects with osteoporosis.

Methods: Seventeen healthy postmenopausal women and seventeen with low BMD engaged in this study. Dual X-ray Absorbiometry measured BMD at lumber (L2–4) and femoral neck. Qualysis gait analysis system assessed the gait pattern of each subject.

Results: Compared to healthy peers, women with low BMD showed less trunk rotation (p = 0.02), hip adduction (p = 0.005) and extension moments (p = 0.008). They showed less hip power generation during early stance (H1S) (p = 0.000), and swing phase (H3S) (p = 0.005), and less hip power absorption (H2S) (p = 0.005). They also, showed less knee power absorption during terminal swing (K4S) (p = 0.002), and ankle power generation at push off (A2S) (p = 0.000). The ability of the gait variables to discriminate between subjects with or without osteopenia was (0.72%, p = 0.016) for trunk rotation, (78%, p = 0.0004) for hip adductor moment, (76%, p = 0.0013) for hip extensor moment, (87%, p < 0.0001) for H1S, (79%, p = 0.0001) for H2S, (77%, p = 0.0008) H3S, (81%, p = 0.0001) for K4S, and (93%, p < 0.0001) for A2S.

Conclusion: Less power generation at the hip and ankle as well as, less power absorption at the hip and knee, may suggest that postmenopausal women with low BMD showed less propulsion, and stability during walking.

Trunk rotation, hip adduction and extension moments, H1S, H2S, H3S, K4S, and A2S are significant predictors for low bone mass in the postmenopausal women.

Keywords: Gait; Moment; Power; Bone mineral density; Menopause.

Dept. of Physical Therapy of Surgery

1096. Efficacy of Shock Wave Therapy on Chronic Diabetic Foot Ulcer: A Single-Blinded Randomized Controlled Clinical Trial

Omar MT, Alghadir A, Al-Wahhabi KK and Al-Askar AB

Diabetes Research and Clinical Practice, 106: 548-554 (2014) IF: 2.536

Objective: This study was conducted to evaluate the efficacy of extracorporeal shock wave therapy (ESWT) on the healing rate, wound surface area and wound bed preparation in chronic diabetic foot ulcers (DFU).

Methods: Thirty eight patients with 45 chronic DFU were randomly assigned into; the ESWT-group (19 patients/24 ulcers) and the control-group (19 patients/21 ulcers). Blinded therapist measured wound surface area (WSA), the percentage of reduction in the WSA, rate of healing and wound bed preparation at baseline, after the end of the interventions (W8), and at 20-week follow-up (W20). The ESWT group received shock wave therapy twice per week for a total of eight treatments. Each ulcer was received ESWT at a frequency of 100 pulse/ cm2, and energy flux density of 0.11 mJ/cm2. All patients received standardized wound care consisting of debridement, blood-glucose control agents, and footwear modification for pressure reduction.

Results: The overall clinical results showed completely healed ulcers in 33.3% and 54% in ESWT-groups and 14.28% and 28.5% in the control group after intervention (W8), and at follow-up (W20) respectively. The average healing time was significantly lower (64.5 ± 8.06 days vs 81.17 ± 4.35 days, p < 0.05) in the ESWT-group compared with the control group. **Conclusion**: ESWT-treated ulcers had a significant reduction in wound size and median time required for ulcer healing, with no adverse reactions. So, the ESWT is advocated as an adjunctive therapy in chronic diabetic wound.

Keywords: Shock Wave Therapy; Diabetic Foot Ulcers; Wound Bed Preparation.

1097. Effect of Low-Level Laser Therapy in Patients With Chronic Knee Osteoarthritis: A Single-Blinded Randomized Clinical Study

Alghadir A, Omar MT, Al-Askar AB and Al-Muteri NK.

Lasers In Medical Science, 29: 749-755 (2014) IF: 2.419

The aim of this study was to investigate the effect of low-level laser therapy (LLLT) on pain relief and functional performance in patients with chronic knee osteoarthritis (OA). Forty patients with knee OA were randomly assigned into active laser group (n = 20)and placebo laser group (n=20). The LLLT device used was a Ga-As diode laser with a power output of 50 mW, a wavelength of 850 nm, and a diameter beam of 1 mm. Eight points were irradiated and received dosage of 6 J/point for 60 s, with a total dosage of 48 J/cm(2) in each session. The placebo group was identical but treated without emission of energy. LLLT was applied two times per week over the period of 4 weeks. Outcome measurements included pain intensity at rest and at movement on visual analog scale, knee function using Western Ontario McMaster Universities Osteoarthritis Index scale, and ambulation duration. These measurements were collected at baseline and post-intervention. The results showed significant improvements in all assessment parameters in both groups compared to baseline. Active laser group showed significant differences in pain intensity at rest and movement, knee function, and ambulation duration when compared with the placebo group. Therefore, LLLT seemed to be an effective modality for short-term pain relief and function improvement in patients with chronic knee OA.

Keywords: Low-level laser therapy; Knee; Osteoarthritis; Pain.

1098. Effect of Isokinetic Training on Muscle Strength, Size and Gait After Healed Pediatric Burn: A Randomized Controlled Study

Ebid AA, El-Shamy SM and Draz AH

Burns, 40: 97-105 (2014) IF: 1.836

Objective: The aim of this study is to investigate the effects of isokinetic training program on muscle strength, muscle size and gait parameters after healed pediatric burn. Design: Randomized controlled trial.

Subjects: Thirty three pediatric burned patients with circumferential lower extremity burn with total body surface area (TBSA) ranged from 36-45%, their age ranged from 10-15 years participated in the study and were randomized into isokinetic group and a control group. Non-burned healthy pediatric subjects were assessed similarly to burned subjects and served as matched healthy controls.

Methods: Patients in isokinetic group (n=16) participated in the isokinetic training program for 12 weeks for quadriceps dominant limb, 3 times per week, at angular velocity 150 o/sec, concentric mode of contraction, time rest between each set for 3 minutes, 3 sets/day and control group (n=17) participated in home based physical therapy exercise program without isokinetic.

Main Measures: Assessment of quadriceps strength by isokinetic dynamometer, quadriceps size and gait parameters were performed at baseline and at the end of the training period for both groups.

Results: Patients in isokinetic group showed a significant improvement in quadriceps strength, quadriceps size and gait parameters as compared with those in the control group. Quadriceps strength and percentage of improvement was 79.25 ± 0.93 Nm (68.40%) for isokinetic group and 51.88 ± 1.31 Nm (9.84%) for the control group. Quadriceps size and percentage of improvement was 31.50 ± 0.89 cm (7.47%) for isokinetic group and 29.26 ± 1.02 cm (1.02%) for the control group. Stride length, step length, velocity and cadence and percentage of improvement for isokinetic group was 135.50 ± 2.82 (53.97%), 63.25 ± 2.97 (63.77%), 135.94 ± 1.65 (81.42%), 137.63 ± 1.36 (66.96%) and for the control group was 94.00 ± 2.69 (6.68%), 43.76 ± 1.34 (15.15%), 81.11 ± 1.91 (8.6%), 90.35 ± 1.32 (9.01%) respectively.

Conclusions: Participation in the isokinetic training program resulted in a greater improvement in quadriceps muscle strength, size and gait parameters in pediatric burn.

Keywords: Pediatric Burn; Isokinetic Strength; Gait; Rehabilitation.

Faculty of Nursing

Dept. of Medical-Surgical Nursing

1099. Effectiveness of Acupressure Versus Isometric Exercise on Pain, Stiffness, and Physical Function in Knee Osteoarthritis Female Patients

Amany S. Sorour, Amany S. Ayoub and Eman M. Abd El Aziz

Journal of Advanced Research, 5 (2) : 193-200 (2014) IF: 3

Osteoarthritis (OA) is the most common form of arthritis and a leading cause of disability in older adults. Conservative nonstrategies, particularly pharmacological exercise. are recommended by clinical guidelines for its management. The aim of this study was to assess the effectiveness of acupressure versus isometric exercise on pain, stiffness, and physical function in knee OA female patients. This quasi experimental study was conducted at the inpatient and outpatient sections at Al-kasr Al-Aini hospital, Cairo University. It involved three groups of 30 patients each: isometric exercise, acupressure, and control. Data were collected by an interview form and the Western Ontario and McMaster Universities Osteoarthritis index (WOMAC) scale. The study revealed high initial scores of pain, stiffness, and impaired physical functioning. After the intervention, pain decreased in the two intervention groups compared to the control group (p < 0.001), while the scores of stiffness and impaired physical function were significantly lower in the isometric group (p < p0.001) compared to the other two groups. The decrease in the total WOMAC score was sharper in the two study groups compared to the control group. In multiple linear regression, the duration of illness was a positive predictor of WOMAC score, whereas the intervention is associated with a reduction in the score. In conclusion, isometric exercise and acupressure provide an improvement of pain, stiffness, and physical function in patients with knee OA. Since isometric exercise leads to more improvement of stiffness and physical function, while acupressure acts better on pain, a combination of both is recommended. The findings need further confirmation through a randomized clinical trial.

Keywords: Knee osteoarthritis; Acupressure; Isometric exercise; Pain; Stiffness; Physical eunction.



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1100. An Empirical Assessment of the Trade Facilitation Initiative: Econometric Evidence and Global Economic Effects

Chahir Zaki

World Trade Review, 13 (1): 103-130 (2014) IF: 0.683

This paper attempts to model trade facilitation in a multi-regional and multi-sectoral computable general equilibrium (CGE) model, MIRAGE. It follows Decreux and Fontagné (2009) in modeling trade facilitation and in assuming that administrative barriers are an iceberg cost. I extend their model using more comprehensive measures of ad-valorem equivalents (AVEs) of red tape costs, which are computed from a gravity model, and are introduced in the CGE model. The novelty in using those AVEs is that they take into account the effects of bureaucracy, internet coverage, corruption, and geographical barriers on the time to trade. The paper has four major findings. Gains derived from trade facilitation are more significant for developing economies (especially for the Middle East and North Africa region and Sub-Saharan countries) than for developed ones, whether in terms of welfare gain (either in the short or long run) or increase in trade. Second, long-run welfare effects of trade facilitation are much higher than in the short run. Third, trade facilitation helps boost both intra-regional trade and inter-regional trade. Fourth and most interestingly, it also helps improve export diversification, leading to an expansion in those sectors that are more sensitive to time, such as food, textiles, and electronics.

1101. Good Governance: The Impact on Economic Development

Marwa Mohamed Shibl Biltagy

Bothalia, 44: 17-38 (2014) IF: 0.412

This paper focuses on the issue of good governance because improving the quality of governance is essential for economic development and growth. The issue of good governance has gained a lot of importance, since big organizations, donors, and lenders are basing their aid and loans on the condition of adopting policies that ensure good governance. What is especially significant about this paper is the emphasis on the issue of the impact of good governance on economic development. It is known that, democracy and good governance influence economic development. For example, secure private property rights that give incentives to individuals to be productive, rule of law, political stability and lack of violence and control of corruption are essential in promoting economic development. The main objectives of this paper are to provide decision-makers with tools to understand the importance of good governance in supporting other policy goals and to propose recommendations for governments on how to improve quality of governance. The main questions that this paper aims to answer are: How to improve the quality of governance by adopting different kinds of policies and institutional arrangements? What is the relation between good governance and economic development? The methodology of this paper is based on studying and analyzing the topic of good governance by clarifying the concept and identifying the relation between good

governance and economic development. It can be said that, there is a strong relationship between good governance- the main social infrastructure that provide the incentives for individuals and firms in an economy to be productive- and economic development i.e. good governance encourages development. In other words, poor governance, weak institutions and corruption have bad effects on economic development. The learning outcomes of this paper are the recommendations that lead to increased level of good governance by changing the attitudes and behavior of institutions to promote and sustain good governance.

1102. Is ICT Empowering Women in Egypt? an Empirical Study

Mona F. Badran

Pertanika Journal of Social Sciences & Humanities, (2014)

In this study we will focus on the impact of ICT ownership on the gender divide and whether is ICT really empowering women in Egypt. Furthermore, we will explore the effect of ICT on women's lives in relation to other factors like education and income. Finally, recommendations are given to the policy maker in order to increase ICT's role in empowering women in Egypt and enhance the gender equality. The contribution of this paper is the creation of ICT ownership index from the sample data ELMPS and then creating a women empowerment index as well. Results reveal that ICT ownership index is largely influenced by education and gender, while ICT ownership index has a significant impact on women empowerment in Egypt. However, controlling for other individual characteristics like women's occupation and economic activity, ICT ownership index becomes statistically insignificant.

Keywords: ICT; Gender inequality; Women empowerment; ICT ownership.

1103. On Trade Policies and Wage Disparity: Evidence from Egyptian Microeconomic Data

Chahir Zaki

International Economic Journal, 28 (1) 37-69 (2014)

This paper proposes an empirical investigation of the effect of different trade barriers on wages in Egypt. The effect of trade barriers on wage disparity has been widely discussed at both empirical and public policy levels. This debate has mainly dealt with traditional tariff barriers. Less attention has been attributed to other barriers, such as non-tariff measures and red tape costs. However, these barriers – and in particular red tape costs –impede more than tariffs in developing countries. Thus, using a microeconomic dataset, this paper assesses to what extent different trade barriers affected wage disparities and employment in Egypt. These disparities are studied in three dimensions: on gender (males versus females), qualification (skilled versus unskilled), and regional (urban versus rural workers). The main findings show that red tape barriers have a higher impact than traditional tariffs on wage disparity. Female and blue-collar workers are more affected by such barriers. The effect of trade barriers on regional wage disparity seems to be less important then gender and qualification. Finally, when the effects of observable worker characteristics are filtered out, it turns out that wage premia are negatively affected by all trade barriers.

Keywords: Trade policies; Wage inequality; Tariffs; Non-tariff barriers; Gender; Egypt.

1104. Criminal Activities and Rule of Law before and after the 25 of January Egyptian Revolution

Marwa Biltagy

International Research Journal of Finance and Economics, 128 85–97 (2014)

The weakness of rule of law was a fundamental reason for the Egyptian revolution in 2011. The main objectives of this paper are to analyze the aspects of absence of rule of law before the January 25 revolution and the situation of rule of law after the Egyptian revolution and to provide an economic analysis of the concept of criminal activities. The methodology of this paper is based on studying and analyzing the topic of criminal acts and rule of law before and after the Egyptian revolution by clarifying the concepts, identifying the indicators of the rule of law in Egypt, explaining the incidence of criminal acts and its different types and shedding light on the framework of the decisionmaking process of committing any criminal activity. The results ascertain that, a committee of constitutional and legal specialists and independent human rights experts should be tasked with conducting a review of existing legislation, particularly laws governing the judiciary, trade unions, civic work, media and press freedoms, and electoral laws. When drafting penalizing laws, the legislative authority is responsible for balancing the harm resulting from the crime with the penalty.

Keywords: Rule of Law; Legislation; Penalizing laws; Crime; Egyptian revolutions; Egypt.

Dept. of Political Science

1105. Explaining the Patterns of the Gulf Monarchies' Assistance after the Arab Uprisings

Sally Khalifa Isaac

Mediterranean Politics, 19 (3): 413–430 (2014) IF: 1.179

This paper aims at empirically highlighting the centrality of the Gulf States' role in Arab transitions, continuities and changes in trends of Arab Gulf aid to Arab MENA countries after 2011, and analytically explaining what seems to be contradicting Gulf roles in supporting or undermining certain transitions.

It concludes that the Gulf monarchies have played a central role in MENA post-2011, showing a clarity and promptness in strategies and action.

The various forms of support provided in several cases as well as the counterrevolutionary actions adopted in other cases boost the Gulf States as a main driver for political stability in the region. What further reinforces the motive of stabilization is the fact that Gulf assistance funds were not merely extended to the *Arab spring countries*.

Rather, a significant share of their generosity went to 'non-Arab spring countries'.

Finally, the paper sheds light on two important dynamics in the flow of Gulf Aid: (1) funds channelled to non-state actors, which appears as an ordinary feature of Gulf aid flow to Arab MENA, and (2) the degree of divergence as regards the roles and motives of Qatar and Saudi Arabia in approaching various cases of Arab transition.

1106. The Egyptian Transition, 2011–13: How Strategic to Europe?

Sally Khalifa Isaac

Middle East Polic, 21 (1) 154-165 (2014) IF: 0.500

This paper tackles the political and security complications of the Egyptian transition from its inception in January 2011 until the fall of the Muslim Brotherhood president, Mohamed Morsi, in July 2013, with a pri-mary focus on how these complications are of strategic importance to Europe.

It starts with inferring Egypt's role in European Union (EU) approaches to security in the Mediterranean, which were acknowledged in the 2003 European Security Strategy and then largely interpreted in the 2004 Euro- pean Neighborhood Policy. It argues that the old EU democracy stability dilemma persisted in Europe's approach to the Egyp- tian transition, especially during Morsi's one-year presidency.

In discussing the current political and security complications of the Egyptian transition and how they constitute strategic concerns to Europe, the analysis tackles undermined social cohe-sion in Egypt due to processes of repolar-ization in Egyptian society after July 2013; the question of Egypt's porous borders with the Hamas-controlled Gaza Strip; the emergence of the Sinai Peninsula as a jihadist center; and the rising importance of economics in the EU-Egyptian relationship.

Since the outbreak of the January 25, 2011, uprising in Egypt, many analysts have worked to highlight the strategic and political weight of this pivotal Middle Eastern country to many international and regional actors, particularly the United States and the Gulf monarchies.

Prominent issues related to the peace treaty with Israel, the security of the Sinai Peninsula and its implica-tions for Israeli security, the potential role of Iran in the aftermath of the 2011 Arab uprisings, and the changing regional power equilibrium. The stance of the EU, through its multilateral institutions, or even the stances of some of its individual members in the Egyptian transition, were analyzed primarily from a democracy-promotion perspective, with marginal attention to how the many political and security facets of the Egyptian transition are significantly strategic to Europe.

Dept. of Statictics

1107. Unmet Need and Fertility Decline: A Comparative Perspective on Prospects in Sub-Saharan Africa

John B. Casterline and Laila O. El-Zeini

Studies in Family Planning, 45: 227-245 (2014) IF: 1.638

This study assesses how changes in unmet need for family planning have contributed to contemporary fertility declines, and the implications of this historical record for further fertility decline, especially in sub-Saharan Africa.

We examine joint trends at the national level in fertility, unintended fertility, and unmet need. We bring unintended fertility into the analysis because the underlying rationale for reducing unmet need is to avert unintended pregnancies and births. The association over time between unmet need and fertility is investigated using survey data from 45 countries in Africa, Asia, and Latin America and the Caribbean from the mid-1970s to the present. The empirical analysis finds that reduction in unmet need, especially unmet need for limiting, is strongly associated with fertility decline in Latin America and the Caribbean and in Asia and North Africa. Fertility decline in sub-Saharan Africa is weakly associated with trends in unmet need (and satisfaction of demand). We propose that the stark regional difference is due to measurement problems and to the fundamentally different character of fertility decline in sub-Saharan Africa, itself reflective of basic differences in pretransition reproductive regimes.

Keywords: Fertility transition; Unmet need for family planning; African fertility.

1108. Inference for a Step-Stress Partially Accelerated Life Test Model with an Adaptive Type-II Progressively Hybrid Censored Data from Weibull Distribution

Ali A. Ismail

Journal of Computational and Applied Mathematics, 260 533– 542 (2014) IF: 1.077

In this paper, the maximum likelihood estimators of Weibull distribution parameters and the acceleration factor are discussed based on two different types of progressively hybrid censoring schemes under step-stress partially accelerated life test model. The performances of the estimators of the model parameters using the two progressively hybrid censoring schemes are evaluated and compared in terms of biases and mean squared errors through a Monte Carlo simulation study.

Keywords: Step-stress partially accelerated life testing; Weibull distribution; Maximum likelihood estimator; Type-II progressively hybrid censored data; Monte carlo simulation.

1109. Phase I Analysis of Individual Observations with Missing Data

Mahmoud A. Mahmoud, Nesma A. Saleh and Doaa F. Madbuly

Quality and Reliability Engineering International, 30 (4) 559–569 (2014) IF: 0.994

The effect of the methods for handling missing values on the performance of Phase I multivariate control charts has not been investigated.

In this paper, we discuss the effect of four imputation methods: mean substitution, regression, stochastic regression and the expectation maximization algorithm. Estimates of mean vector and variance covariance matrix from the treated data set are used to estimate the unknown parameters in the Hotelling's T^2 chart statistic.

Based on a Monte Carlo simulation study, the performance of each of the four methods is investigated in terms of its ability to obtain the nominal in-control and out-of-control overall probability of a signal. We consider three sample sizes, five levels of the percentage of missing values and three types of variable numbers. Our simulation results show that the stochastic regression method has the best overall performance among all the competing methods.

Keywords: T^2 control chart; missing data; overall probability of a signal; phase I analysis; statistical process control.

1110. Statistical Inference of Weibull Distribution under a Progressive Stress Partially Accelerated Life Testing Model

Ali A. Ismail

Journal of Testing and Evaluation, 42 (2) (2014) IF: 0.295

This paper considers a progressive stress partially accelerated life test model when the lifetime of a product under the use condition follows a Weibull distribution. It is assumed that the progressive stress is directly proportional to time. The maximum likelihood method is used to obtain the estimates of the model parameters. In addition, approximate confidence intervals for the parameters are constructed. A Monte Carlo simulation study is conducted to illustrate the theoretical results of the proposed model.

1111. Bayesian and Non-Bayesian Estimations under Failure-Censored Partially Accelerated Life Tests

Ali Ahmed Mohamed Ismail

Journal of Testing and Evaluation, 42: 428-436 (2014) IF: 0.295

This article considers the Bayesian and non-Bayesian approaches for estimating the Gompertz distribution parameters and the acceleration factor when the data are obtained under the Type II censoring scheme from a step-stress partially accelerated life test. Both the maximum likelihood and Bayesian estimators of the model parameters are derived. The posterior means and posterior variances are derived under the squared error (SE) loss function using Lindley's approximation procedure. The advantage of this proposed procedure is shown. Monte Carlo simulations are performed under different samples sizes and different parameter values for investigating and comparing the proposed methods of estimation. A non-informative prior on the model parameters is used to make the comparison more meaningful.

Keywords: Reliability; Partial acceleration; Step-atress testing; Gompertz distribution; Maximum likelihood estimation; Bayesian estimation; Failure-censoring.

1112. Two-Term Edgeworth Expansions for the Classes of U- and V-Statistics

Fadlalla G. Elfadaly and Sanaa Moustafa El Gayar

Communications in Statistics, Theory and Methods, 43: 4679-4706 (2014) IF: 0.289

Much effort has been devoted to deriving Edgeworth expansions for various classes of statistics that are asymptotically normally distributed, with derivations tailored to the individual structure of each class. Expansions with smaller error rates are needed for more accurate statistical inference. Two such Edgeworth expansions are derived analytically in this paper. One is a twoterm expansion for the standardized U-statistic of order m, m = 3, with an error rate o(n-1). The other is an expansion with the same error rate for the distribution of the standardized V-statistic of the same order. In deriving the Edgeworth expansion, we made use of the close connection between the V- and U-statistics, which permits to first derive the needed expansion for the related Ustatistic, then extend it to the V-statistic, taking into consideration the estimation of all difference terms between the two statistics. Keywords: Decomposition; Edgeworth expansion; Hoeffding; U-Statistic; V-statistic; Von mises polynomial functional.

1113. A Combined Nonlinear Programming Model and Kibria Method for Choosing Ridge Parameter Regression

Ali El Hefnawy a and Aya Farag

Communications in Statistics-Simulation and Computation, 43: 14420-1470 (2014) IF: 0.288

Ridge Regression solves multicollinearity problems by introducing a biasing parameter that is called ridge parameter; it shrinks the estimates as well as their standard errors in order to reach acceptable results. Many methods are available for estimating a ridge parameter. This article has considered some of these methods and also proposed a combined nonlinear programming model and Kibria method. A simulation study has been made to evaluate the performance of the proposed estimators based on the minimum mean square error criterion. The simulation study indicates that under certain conditions the proposed estimators outperform the least squares (LS) estimators and other popular existing estimators. Moreover, the new proposed model is applied on dataset that suffers from the presence of heteroscedastic errors

Keywords: Kibria method; Mean square error; Nonlinear programming approach; Ridge regression.

1114. On Designing Constant-Stress Partially Accelerated Life Tests Under Time-Censoring

Ali Ahmed Mohamed Ismail

Strength of Materials, 46: 132-139 (2014) IF: 0.229

It is not easy to obtain more failure data from products with high quality and long life at normal (use) condition. Thus, accelerated tests are needed in this respect. This paper considers the constant stress partially accelerated life tests with type-I censoring under Weibull distribution. The maximum likelihood estimators of the model parameters are derived. Partially accelerated life tests plans are developed such that the generalized asymptotic variance of the maximum likelihood estimators of the model parameters is minimized. The plan is to specify the proportion of test units that should be allocated to run under use condition. Simulation studies are made for illustrative purposes.

Keywords: Partially accelerated life tests; Constant stress; Weibull distribution ; Generalized asymptotic variance; Test plan.

1115. Improved Randomized Response Models using Three Decks of Cards

Sally Abdelfatah and Reda Mazloum

Model Assisted Statistics and Applications, 9 63–72 (2014)

Odumade and Singh [10] have extended the Warner randomized response model [15] by the use of two decks of cards.

In this paper, a new randomized response model based on the use of three decks of cards is proposed as an extension to the Odumade and Singh model [10]. The Cramer-Rao lower bound of the variance of the proposed estimator has been obtained. An empirical study has also been performed to compare the lower bound of the variance of the new estimator with that developed by Singh and Sedory [14]. The new estimator turned out to be more efficient than the Singh and Sedory estimator [14] but the problem of low level of respondents' cooperation can be accompanied with the new model. In an attempt to maintain the respondents' privacy and thereby increase the level of their cooperation, another model using three decks of cards was suggested.

When comparing the two proposed models, it was found that the second model can be easily adjusted to be more efficient than the first model; moreover it can largely increase the respondents' cooperation as there is a chance that the respondent will answer the sensitive question only once or twice.

Keywords: Simple random sampling; Estimation of proportion; Randomized response technique; Three decks of cards; Maximum likelihood estimation.

Faculty of Commerce

Dept. of Accounting

1116. Corporate Internet Disclosure in the Arabian Gulf: An Empirical Examination of Determinants and Attributes

Mohamed A. K. Basuony, Ehab K. A. Mohamed and Ahmed F. Elbayoumi

Journal of Modern Accounting and Auditing, (2014)

This paper investigates and reports on the extent and nature of corporate internet disclosure and the determinants of internet financial disclosure (IFD) by companies listed in three Gulf Corporation Council (GCC) countries. This paper uses data from 207 listed companies in Muscat Securities Market (MSM), Dubai Financial Market (DFM), and Qatar Exchange (QE). Binary logistic regression analysis is used to examine the determinants of IFD. Kruskal-Wallis test is used to examine the differences in disclosure characteristics among the three countries. The results of this study reveal that firm size is the major factor influencing internet financial reporting in the GCC. The results reveal that the three countries differ significantly in all the disclosure attributes with the exception of the existence of email link. This paper extends the stream of research that confirms the widespread use of internet in disclosing financial information. The results are consistent with previous literature that corporate size is a major determinant of internet financial reporting. This paper provides insights into corporate internet disclosure in the GCC that will benefit all stakeholders with an interest in corporate reporting in this important region of the world.

Keywords: Internet; Financial reporting; Disclosure; Oman; United arab emirates (UAE); Qatar; Middle east; Gulf corporation council (GCC).

1117. Measuring Audit Firms' Intellectual Capital as a Determinant of Audit Quality: A Suggested Model

Amr N. Abdelrhman, Khaled Z. Labib and Ahmed F. Elbayoumi

Journal of Business and Industrial Marketing, 29 (6) 525–545 (2014)

The intellectual capital is a main source of competing advantage. Many studies developed measure(s) of intellectual capital of industrial and service firms. Few studies have tried to develop a reliable measure of intellectual capital in audit firms. This study extends the current models to provide more insight into the role of intellectual capital in audit firms. The aim of this study is to develop a quantitative model to measure audit firms' intellectual capital. The suggested model can be used to explore the relationship between the intellectual capital in audit firms and audit quality. The model combines the main components of intellectual capital). The suggested model provides a tool that may help to better manage the intellectual capital in audit firms. As this is a theoretical study, a number of hypotheses are presented for testing in the future.

Keywords: Intellectual capital; Human capital; Structural capital; Relational capital; Audit quality; Audit firms.

Dept. of Business Administration

1118. The adoption of Technological Innovations in A B2B Context: an empirical Study on the Higher Education Industry in Egypt

Rania Mohamed Samir Hussein and Maha Mourad

J. of Business and Industrial Marketing, 29 (6) 525-545 (2014)

Purpose – This paper aims to examine the factors that affect the adoption of technological innovations in a service industry, like the higher education industry. Specifically, the use of Web-based technology (WEBCT/blackboard) by faculty and administrators in universities in Egypt in the delivery of educational material and communication with students and peers is the focus of this study. Design/methodology /approach - A distinctive business-tobusiness (B2B) model is developed drawing on Rogers' innovation adoption model, the resource-based view of the firm, as well as theoretical and empirical foundations in previous innovation adoption literature. The model is testified drawing on the results of empirical work in the form of a large survey conducted on 200 faculty and administrators in two different universities in Egypt. Structural equation modeling is used to test the research model. Findings - In addition to the attributes of the innovation, all university-based factors as well as one service provider factor, namely, need for interaction, were identified to have a significant influence on the adoption of technological innovations in the higher education industry. Originality/value -This paper attempts to enhance current understanding of the adoption of innovations in an important industry like the higher education industry. Empirical results shed light on influential factors when adopting technological innovations by faculty and administrators in the higher education industry. This is the first empirical study of this type to be conducted in the Middle East. Keywords: Higher education; Innovation; Adoption; B2B; Service; Web.

1119. Testing and Validating Customer Relationship Management Implementation Constructs in Egyptian Tourism Organizations

Riyad Eid and Hatem El-Gohary

Journal of Travel and Tourism Marketing, 31 (3) 344-365 (2014)

To date, Critical Success Factors (CSFs) for implementing Customer Relationship Management (CRM) have not been systematically investigated. Existing studies have derived their CSFs from different perspectives. However, it lacks scientifically developed and tested constructs that represent an integrative CRM philosophy. Through a detailed analysis of the literature, as well as adding new factors, this research identifies eight constructs for integrated CRM implementation in developing economies. The proposed CSFs are tested and validated through a sample of 162 Egyptian tourism organizations that utilize CRM systems, using Amos 19. The overall results from the empirical assessment were positive, reflecting the appropriateness of the proposed CSFs. This study is one of very few studies to provide an integrative perspective of CSFs for implementing CRM in the tourism sector and developing economies; it adds to the extremely limited number of empirical studies that have been conducted to investigate CRM implementation in developing countries.

Keywords: Customer relationship management; CRM; Critical success factors; Empirical study; Questionnaire; Egypt; Services marketing; SEM; Developing economies.



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5-1 Faculity of Arts5-2 Faculty of Archaeology5-3 Institute of Educational Research Studies5-4 Faculty of Kindergarten

Publicatin in Journals

Faculty of Arts

Dept. of German Language and its Literature 1120. Formen und Funktionen orientalischer Körper im "Parzival" Wolframs von Eschenbach

Dina Aboul Fotouh Salama

Archiv Für Das Studium Der Neueren Sprachen Und Literaturen, (2014)

Diese Studie analysiert die in ihrer spezifischen Körpergestaltung als 'orientalisch' konstruierten Figuren im 'Parzival' Wolframs von Eschenbach (um 1200-1210) und erforscht, wie diese Körper - Bilder funktionalisiert warden . Dabei geht es um folgende Körper - Figuren bzw. Figuren-Körper: Belacâne, Feirefiz und Cundrîe. Diese Fragen werden mittels moderner literaturtheoretischer Ansätze und kulturwissenschaftlicher Untersuchungskategorien, die mit dem Paradigma der Körperkulturen, der Körperästhetik, der Subjekt und Identitätsbildung u.a. zusammenhängen, diskutiert .

Die als orientalisch inszenierten Körper werden anhand folgender ausgewählter Untersuchungskategorien: 'Körperimago', 'Gender' und 'Identität' analysiert und von einer interkulturellen Perspektivierung umrahmt.

This study analyzes the specific physical features of three orientally 'constructed characters' in 'Parzival' (approx. 1200–1210), one of the most popular medieval epic novels written by Wolfram von Eschenbach. The paper explores the various forms and functions of the physical and bodily representation of the 'oriental' stereotype as embodied by the fictional characters of 'Belacâne', 'Feirefiz' and 'Cundrîe'. These research questions are discussed from an intercultural perspective and are guided by the application of contemporary literary theories related to the construction of the self and the politics of identity as exemplified by cultural studies' concepts such as 'body-imago', 'gender' and 'identity'. The study also takes into consideration the historical background of confrontations between the orient and the occident in medieval history.

Faculty of Archaeology

Dept. of Conservation

1121. Is Atherosclerosis Fundamental to Human Aging? Lessons from Ancient Mummies

Clarke EM, Thompson RC, Allam AH, Wann LS, Lombardi GP, Sutherland ML, Sutherland JD, Cox SL, Soliman MA, Abd el-Maksoud G, Badr I, Miyamoto MI, Frohlich B, Nur el-din AH, Stewart AF, Narula J, Zink AR, Finch CE, Michalik DE and Thomas GS

Journal of Cardiology, 63: 329-334 (2014) IF: 2.566

Case reports from Johan Czermak, Marc Ruffer, and others a century or more ago demonstrated ancient Egyptians had atherosclerosis three millennia ago. The Horus study team extended their findings, demonstrating that atherosclerosis was prevalent among 76 ancient Egyptian mummies and among 61 mummies from each of the ancient cultures of Peru, the American Southwest, and the Aleutian Islands. These findings challenge the assumption that atherosclerosis is a modern disease caused by present day risk factors. An extensive autopsy of an ancient Egyptian teenage male weaver named Nakht found that he was infected with four parasites: Schistosoma haematobium, Taenia species, Trichinella spiralis, and Plasmodium falciparum. Modern day patients with chronic inflammatory disease such as rheumatoid arthritis, systemic lupus erythematosus, and human immunodeficiency virus experience premature atherosclerosis. Could the burden of chronic inflammatory disease have been a risk factor for atherosclerosis in these ancient cultures. The prevalence of atherosclerosis in four diverse ancient cultures is consistent with atherosclerosis being fundamental to aging.

The impact of risk factors in modern times, and potentially in ancient times, suggests a strong gene-environmental interplay: human genes provide a vulnerability to atherosclerosis, the environment determines when and if atherosclerosis becomes manifest clinically.

Keywords: Aging; Atherosclerosis; Coronary artery disease; Mummies; Paleopathology.

1122. Novel Comparative Efficiency of Ozone and Gamma Sterilization on Fungal Deterioration of Archeological Painted Coffin, Saqqara Excavation, Egypt

Neveen S. Geweely, Hala A. M. Afifi, Shehata A. Abdelrahim and Saleha Y. M. Alakilli

Geomicrobiology Journal, 13: 529-539 (2014) IF: 1.8

An archeological wooden painted coffin was excavated in Tety tomb from Saqqara excavation. It belonged to the Ministry of Antiquities. This coffin was discovered in a bad state of conservation with many destroyed big and small pieces in Saqqara stores. Analyses and investigation study were performed on the ground layer of the coffin by X-ray diffraction (XRD), Energy dispersive X ray analysis (EDX) equipped with environmental scanning electron microscopy (ESEM) and Fourier transform infrared spectroscopy (FTIR). Results confirmed that the degradation factors affecting the wooden painted coffin are essentially attributed to direct effects of microbial phenomena, which have lead to many deterioration forms as: macro- and microcracks, hydrated salts, flaking, coloration, scaling and defoliation microbiological spots. Nine deteriorating fungal species were isolated from the painted and ground layers of the tested coffin. *Fusarium moniliforme* followed by *Aspergillus flavus* able to significantly solublize calcium salts as major components of the ground layer of archeological wooden coffin. Effect of ozone and Gamma sterilization on growth; lipid, tryptophan oxidation and protein, nucleic acid leakage in the most dominant toxigenic deteriorated fungal species were detected. No mycelial growth was observed at 4 ppm of ozone at all exposure times. As Gamma radiation dose increased over 250 Gy, the growth parameter gradually decreased to reach the lethal dose at 2000 Gy. The production of mycotoxins by the tested toxigenic fungi was completely disappeared under the exposure to 3 ppm and 90 min to ozone.

Keywords: Gamma radiation; Microbial deterioration; Ozone; Saqqara excavation; Wooden coffin.

1123. Fatty Acid Methyl Esters from Air-Dried Wood, Bark, and Leaves of Brachychiton diversifolius R. Br: Antibacterial, Antifungal, and Antioxidant Activities

Mohamed Z.M. Salem, Hayssam M. Ali and Maisa M. Mansour

BioResources, 9 (3) 3835-3845 (2014) IF: 1.549

The composition of methylated fatty acids from wood, bark, and leaves of Brachychiton diversifolius was analyzed for the first time using gas chromatography (GC). The results indicated that the major methyl ester of fatty acids found in wood, bark, and leaves were: myristic acid (8.32%), palmitic acid (15.66%), and palmitic acid (9.95%), respectively. In accordance to the biological effects of fatty acid fraction, they were moderately effective against Bacillus subtilis and Sarcina lutea, but they did not show any effect against the growth of Staphylococcus aureus and Pectobacterium carotovorum at a concentration of 2000 µg/mL. The maximum percentages of inhibition of fungal mycelial growth against Penicillium selerotigenum (60.35%), Paecilomyces variotii (70.80%), and Aspergillus niger (70.50%) were shown by the fatty acids from leaves, bark, and bark, respectively. The total antioxidant activity (TAA %) of fatty acids from wood, bark, and leaves, were 40±3.13%, 80±5.14%, and 60±4.50%, respectively. In accordance to the results, the different parts of B. diversifolius could provide important components, such as fatty acids with antimicrobial and antioxidant activities for future studies or uses.

Keywords: Brachychiton diversifolius; Wood; Bark; Leaves; Methylated fatty acids; GC; Antibacterial; Antioxidant; Antifungal.

1124. Use of ZnO nanoparticles for protecting oil paintings on paper support against dirt, fungal attack, and UV aging

Osama M. El-Feky, Enas A. Hassan, Shaimaa M. Fadel and Mohammad L. Hassan

Journal of Cultural Heritage, 15 (2) 165–172 (2014) IF: 1.111

Zinc oxide nanoparticles were prepared and used for surface treatment of oil paintings painted on paper supports. The prepared coating mixture containing 2% of ZnO nanoparticles showed excellent transparency. The effect of coating on protecting the paper support and paintings against microbial attack by Trichoderma reesei and Aspergillus niger, dirt accumulation, and UV aging was studied. Coatings containing ZnO nanoparticles enhanced the durability of linseed oil-based paintings toward UV aging regarding the change in color. Coatings containing ZnO nanoparticles improved resistance to microbial attack when subjected to inoculums containing *T. reesei* or *A. niger* fungi. In addition, coatings containing ZnO nanoparticles reduced accumulation of dirt on oil paintings when left in open air for 6 months; cleaning of paintings was quite easy compared to the non-coated paintings or those coated with the varnish without ZnO nanoparticles.

Keywords: Aging; paper; ZnO nanoparticles; Color; Trichoderma reesei; Aspergillus niger.

1125. Chemical and physical characterization of the stucco mihrab of the mausoleum of Muhammad Al-Hasawati, Fatimid period, Cairo, Egypt

Abdullah Mahmoud Ahmed Kamel, Hassan Abbass Hassan Marie, Mona Fouad Ali, Hala Afifi Mahmoud

Periodico di Mineralogia, 83 (3) (2014) IF: 0.804

Stucco mihrabs in Islamic buildings in Egypt are suffering from many causes of deterioration, mainly groundwater and salt weathering, which have caused the complete loss of the decorations of some of these mihrabs. Some other mihrabs need restoration and conservation, so a solution for this problem has become urgent. A physiochemical study using analytical techniques such as X-ray diffraction, X-ray fluorescence, Fourier transform infrared and scanning electron microscopy was done. This characterization study, on one hand made reproduction of the original material possible; on the other hand, the deterioration factors of the stucco were determined. All analytical methods indicated that the Al-Hasawaty stucco mihrab contains lime, gypsum, dolomite, quartz, anhydrite and bassanite; they also proved that sodium chloride (halite) is the principal salt causing deterioration.

Keywords: Stucco; Mihrab; Gypsum; Lime; Deterioration; Conservation.

1126. Structural Deficiency and Intervention Retrofitting Measures of Rubble Filled Masonry Walls in Islamic Historical Buildings in Cairo, Egypt

Sayed Hemeda and El-Sayed El-Banna

Mediterranean Archaeology and Archaeometry, 14, (1): 235-246 (2014)

Multiple leaf- masonry -walls are one of the most important, immediate and characteristic features of Islamic architecture. In Cairo much of masonry monuments have been constructed along different periods on this unique style. Many years ago, where it has been built from two external stone block leaves and another one internal core leaf in a variety of materials and forms.

Damage analysis and assessment of multiple leaf-masonry-walls have to bear in mind the conservation rationale, which is essentially leaving the structure as found, with minimal intervention whenever possible. The intervention should be sympathetic to the original character of the building and carrying out to maintain its structural stability.

A detailed investigation relies on the previous experience of engineering, restoration as well as understanding of the short comings of theoretical calculations and assumed loads versus actual behavior and loading structural monitoring of critical elements to check movements as well as crack growth is important in reaching a final conclusion.

Core samples and non- destructive load testing results are also obtained and used to verify analysis and observations.

Predicting the behaviour of multiple-leaf masonry walls is a challenging issue, given the influence of a wide range of factors as the mechanical properties of the two external leaves and internal core materials, their dimensions and the way they are connected to each other. In the present paper, experimental results in specimens are carefully analyzed and reviewed. Simplified calculations for practical assessment of existing walls are also addressed.

Two main case studies in respect of multiple leaf- masonry -walls are studied. The first one as an example for the bearing walls in historical buildings is Wkallah Radwan Bik AlFakari. The second one as an example for the retaining wall is Sultan El-Ghouri palace wall remains.

Keywords: Islamic monuments; Multiple leaf-masonry; Cracking; Deterioration; Monitoring; Restoration; Grouting; Structure.

Dept. of Egyptian Archaeology

1127. Seven Demotic Votive Inscriptions on Various Objects from the Tuna Al-Gebel Necropolis

Mahmoud Ebeid Shahat

Zeitschrift Fur Agyptische Sprache Und Altertumskunde., 141(1): 41-55 (2014)

Publication of seven Demotic votive inscriptions written on various materials, from the Tuna alGebel necropolis, now kept in the Tuna al-Gebel magazine, the Mallawi Museum, and al-Ashmunein magazine.

Keywords: Al-Ashmunein magazine; Ibiotapheion; Mallawi museum; Tuna Al-Gebel; Votive inscriptions.

1128. Quatre Pièces Votives Conservées Au Musée De Mallawi

Hassan Nasrel-din Hassan

Bulletin De L'institut Français D'archéologie Orientale, 114: 1-12 (2014)

Le présent article est consacré à la publication de quatre statuettes votives d'ibis actuellement conservées au musée de Mallawi1. Elles ont été découvertes par S. Gabra dans les catacombs d'Hermopolis (Touna el-Gebel). Leur étude vient élargir le dossier ouvert il y a quelque temps sur ce type d'objet2. Elle permet également de préciser certains détails sur ces figurines, bien que plusieurs

Keywords: Touna El-Gebel; Ibis; Thoth; Musee De Mallawi.

Institute of Educational Research Studies and Research

Dept. of Curriculum and Instruction **1129. Academic Freedom: Problems in** Conceptualization and Research

Muhammad M. M. Abdel Latif

Higher Education Research and Development, 33 (2): 399-401 (2014) IF: 0.791

Academic freedom is of central importance to higher education and it affects all aspects of work at universities. It symbolizes academics' acceptance of the need for openness and flexibility (Balyer, 2011) and it protects the conditions leading to the creation of good teaching and learning, sound research, and scholarship (Atkinson, 2004). Since academic freedom is a defining characteristic of the health of universities (Karran, 2009), Henkel (2005) points out that it is the most frequently discussed value in higher education reform research. Despite the crucial importance of academic freedom, there remain significant problems in how to research it. This piece focuses on three issues: first, the lack of an agreed-upon definition of academic freedom; second, research on academics' versus students' academic freedom; and third, the little information available about academic freedom predictors. These three issues have generally contributed to the vagueness in conceptualizing and researching academic freedom practices at universities.
Faculty of Kindergarten

Dept. of Essential Sciences

1130. Three Dimensional Model of Transport and Chemical Late Phenomena on a MSW Incinerator

T.M. Ismail, M. Abd El-Salam, M.A. El-Kady and S.M. El-Haggar

International Journal of Thermal Sciences, 77, 139–157 (2014) IF: 2.563

A mathematical model was developed of the drying, volatilization, and combustion phenomena on the packed bed of solid wastes on a moving grate. Gas-solid flow and the heterogeneous chemical reactions were considered. Since experimental work in this area of study is very difficult and costly, the development of such a model is very important. The gas phase turbulence was modeled using $k-\varepsilon$ turbulent model and the particle phase was modeled using kinetic theory of granular flow. The reaction rates of heterogeneous reaction were determined by Arrhenius-eddy dissipation reaction rates and the Arrhenius-diffusion reaction rate. Flow patterns, gas velocities, particle velocities, composition profiles of gas product and distributions of reaction rates were obtained. Predicted values using the present code were compared with experimental data for validation. The results showed that the predicted exit gas compositions were in good agreement with the experiments. This indicates that the numerical model presented is valid and provides a promising way to simulate the combustion of solid waste on a moving grate, which is the dominant technology for waste incineration.

Keywords: Waste incineration; CFD; Kinetics theory of granular flow (KTGF); Turbulent combustion; Mathematical modeling.

Institute of African Research and Studies

Dept. of Natural Resources

1131. Drought Resistance Strategies of Seashore Paspalum Cultivars at Different Mowing Heights

Mohamed A. Shahba and Mohamed S. Abbas

Hortscience, 49 (2): 221-229 (2014) IF: 0.885

Understanding how mowing height and soil moisture influence drought resistance mechanisms may lead to better management of seashore paspalum. This research was conducted to evaluate the effect of mowing height and soil moisture replacement on drought tolerance strategies in three seashore paspalum cultivars. In a greenhouse, clear polyvinyl chloride (PVC) root tubes were placed in a black PVC sleeve with a bottom cap drilled with holes for drainage. Sod pieces (10 cm in diameter) of seashore paspalum (Paspalum vaginatum Swartz) cultivars Salam, Excalibur, and Adalayd were planted into these tubes after roots were trimmed. In a split-split experimental design, water regimes applied included control [100% of the total evapotranspiration (ET)] as well as 75%, 50%, and 25% of the total ET. Mowing heights were 45.0, 35, and 25 mm. Visual turf quality, maximum root extension (MRE), root length densities (RLD), total nonstructural carbohydrate content (TNC), shoot reducing sugar content (RSC), and proline content were determined. Turf quality decreased linearly with the decrease in irrigation water applied under the three mowing heights with higher slope at 25.0 mm than at either 35.0 or 45.0 mm. 'Salam' turf quality declined only to the unacceptable rating of 5.5 and 4.5 when mowed to 35 and 25 mm, respectively, whereas quality was 6.5 at the mowing height of 45 mm under the water regime of 25% of total ET. 'Excalibur' did not show acceptable turf quality at the 25% treatment, whereas 'Adalayd' did not show such quality at both 50% and 25% water regimes under all mowing heights. Regression analysis indicated a significant negative association between RLD and drought levels at all mowing heights and soil depths. In 'Salam', as drought levels increased from control to 25%, average RLD decreased by 76%, 75%, and 76% at 25-, 35-, and 45-mm mowing heights, respectively, at the top 30 cm of soil in the column. The change was 93%, 85%, and 83% at 25-, 35-, and 45-mm mowing heights, respectively, at the deeper soil (90 to 120 cm). In 'Salam', on average overall water regimes, MRE at 45 mm was $\approx 10\%$ to 17% greater than that of 35-mm mowing height and 28% to 36% greater than that of 25-mm mowing height. The highest root mass (810 mg) was obtained when 'Salam' was mowed to 45 mm and subjected to the drought level of 50% of the total ET. The lowest root mass (320 mg) was obtained when 'Salam' was mowed to 25 mm and the water regime was not limiting. In 'Salam', as drought increased from control to 25% of the total ET, average TNC decreased by 43.5%, 26.0%, and 29.0% and the average TNC decrease in 'Excalibur' shoots was 48.0%, 30.0%, and 32.0%, whereas the decrease in 'Adalayd' was 51.3%, 42.3%, and 35.4% at 25-, 35-, and 45-mm mowing heights, respectively. As drought levels increased from control to 25% of the total ET, average RSC increased by 57.3%, 57.1%, and 53.0% in 'Salam' and by 59.4%, 57.0%, and 51.5% in 'Excalibur' and 61.2%, 58.1%, and 61.0% in 'Adalayd' at 25-, 35-, and 45-mm mowing height, respectively. When drought increased to 25%, average proline content in shoots increased by 435%, 432%, and 431% in 'Salam'; 404%, 376%, and 324% in 'Excalibur'; and 257%, 278%, and 302% in 'Adalayd', at 25-, 35, and 45-mm mowing heights. The resistance of paspalum cultivars

to moderate to high drought stress can be enhanced by increasing the mowing height that may be related to increased carbon fixation, which favors increased root production. Proline accumulation could add to the drought tolerance through osmoregulation or by acting as a carbon and nitrogen sink for stress recovery.

Keywords: 'Adalayd'; Drought Tolerance; 'Excalibur'; Mowing Height; 'Salam'.

Publicatin in Book & Chapters

Faculty of Science

Dept. of Chemistry 1132. Synthesis and Phase Behavior of Supramolecular Liquid Crystals

Mohamed Ahmed Alsayed Alaasar

Book Published by Lap Lambert Academic Publishing, (2014)

This book consists of two parts: the first part is the synthesis and characterization of model, three-ring compounds, one of the rings is a pyridine, joined together with an ester and azo groups with a terminal alkoxy group of varying chain length or a small compact polar group covering a wide range of polarity. The second part is the preparation and characterization of all possible supramolecular hydrogen-bonded complexes made from any member of the above mentioned pyridine-based compounds with two series of similarly substituted benzoic acids. In this manner, four differently substituted series of hydrogen-bonded supramolecular complexes have been prepared and investigated for their liquid crystalline behavior using different techniques.

1133. Sensors

Sabrein Harbi Mohamed Ibrahim

Book Published by Lap Lambert Academic Publishing, (2014)

This work has been carried out to present and characterize new plastic membrane, coated wire and chemically modified carbon paste electrodes for the determination of the antihistaminic drug, Ketotifen fumarate. The electrodes are based on individual and/or mixed ion-associates were formed from the ion-associations of the drug cation with anions of phosphotungstate and tetraphenylborate. The electrodes were constructed and fully characterized in terms of composition, life span, response time, usable pH range, working concentration range and temperature. Each electrode was applied to the potentiometric determination of the drug cation in the pure solutions and pharmaceutical preparations by batch or in flow injection (FI) conditions.

Keywords: Antihistaminic drug; Ketotifen fumarate;

Potentiometry; Pvc-Electrode; Chemically modified carbon paste electrode; Coated wire electrode; Flow injection analysis (FIA).

1134. Analysis of Sertraline Hydrochloride

Sabrein Harbi Mohamed Ibrahim

Book Published by Lap Lambert Academic Publishing, (2014)

This work has been carried out to present and characterize new electrometric methods for the determination of the antidepressant drug, sertraline hydrochloride. Plastic membrane, coated wire and chemically modified carbon paste sensors sensitive for sertraline hydrochloride were constructed. The sensors are based on ionassociates formed from the ion-associations of the drug cation with anions of phosphotungestate, tetraphenylborate, silicomolybdate, and silicotungestate. They were constructed and fully characterized in terms of composition, life span, response time, usable pH range, working concentration range and temperature. Improvement of the sensors behavior was carried out by using different additives. Each sensor was applied to the potentiometric determination of the drug cation in the pure form and pharmaceutical preparations.

Conductimetric measurement for the solubility product, entropy, enthalpy and free energy change of the formed ion-associates were carried out. The drug concentration was also determined by conductimetric titration.

Surface analysis of PVC membranes were carried out using scanning electron microscope (SEM) and atomic force microscope (AFM).

Keywords: Sertraline hydrochloride; Membrane sensor; Chemically modified carbon paste sensor; Coated wire sensor; Scanning electron microscope (SEM); Atomic force microscope (AFM).

1135. Electrochemical Study of Corrosion Inhibition of Mild Steel

Awad sadek Mogoda

Electrochemical Study of Corrosion Inhibition of Mild Steel, Lambert Acdemic Publishing, (2014)

The corrosion inhibition of steel in 1.0 M sulfuric acid by some triazole derivatives namely, 4-amino-1,2,4-triazole-3-thiol (ATT), 4-amino-5-methyl-1,2,4-triazole-3-thiol (AMTT) and 4-amino-5ethyl-1,2,4-triazole-3-thiol (AETT) has been studied using potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) and Scanning electron microscopy (SEM). The results revealed that the inhibition efficiency increases as the inhibitor concentration increases and follows the order (ATT<AMTT< AETT). The adsorption of the triazole derivatives onto the steel surface obeys Langmuir adsorption isotherm with small negative values of the standard free energy of adsorption (less than 20 kJ) which ensures the Spontaneous physical adsorption process. The surface examination using scanning electron microscope confirms the extra ordinary efficiency of the used inhibitors in protection of steel from corrosion as indicated by electrochemical measurements. Keywords: Corrosion inhibition; Steel.

1136. Polysaccharides

Maher Zaki Diemetry Elsabee

Chitosan -Based Edible Films, Springer International Publishing Switzerland, (2014)

What is an edible packaging? An edible film or coating is simply defined as a thin film of edible material formed and sprayed on foods or food components. This package can be eaten as a part of the whole food product; it is also biodegradable, so if dumped it will disintegrate in reasonable short time.

Edible films and coatings offer extra advantages such as edibility, biocompatibility, esthetic appearance, barrier to gas properties, nontoxicity, nonpolluting, and having low cost (No et al. J Food Sci 72(5):87–100, 2007). In addition, biofilms and coatings by themselves are acting as carriers of food additives (i.e., antioxidants, antimicrobials) and have been particularly considered in food preservation due to their ability to extend the shelf life.

This chapter will focus mainly on edible films based on chitosan – a wonderful amazing material which is derived from the naturally occurring polymer chitin.

Keywords: Chitosan; Chitosan blends; Starch; Essential oils; Antibacterial; Shelf life.

1137. Chitosan: Amazing Controlled Delivery System in Chitin and Chitosan Derivatives

Maher Zaki Diemetry Elsabee

Chitin and Chitosan Derivatives: Advances in Drug Discovery and Developments, Crc Press Talyor &Francis Group, (2014)

The utilization of marine resources is commonly considered inexpensive and abundant, with great interest to develop biological and biomedical applications. Chitosan is produced from chitin, which is a natural polysaccharide composed of randomly distributed β -(1–4)-linked d-glucosamine (deacetylated unit) and N-acetyl-d-glucosamine (acetylated unit).

Chitin is a long-chain polymer comprising N-acetylglucosamine, a derivative of glucose, and is found ubiquitously. It is the main component of the cell walls of fungi, the exoskeletons of arthropods, such as crustaceans (e.g., crabs, lobsters, and shrimps) and insects, the radulas of mollusks, and the beaks and internal shells of cephalopods, including squid and octopuses. However, marine crustacean shells are widely used as primary sources for the production of chitosan.

Crab and shrimp are important marine species of great commercial importance in the tropical and subtropical waters of the Pacific, Atlantic, and Indian oceans. Chitin and chitosan have been widely used for various biological and biomedical applications during the last two decades, owing to their unique properties. However, extensive research on the applicability of chitin and chitosan was limited due to their poor solubility. The current research trends focus mainly on the increase in solubility of chitin and chitosan through the addition of chemical groups at the molecular level. Modified chitin and chitosan derivatives have several applications including biological and biomedical.

Keywords: Chitosan; Drug delivery.

1138. Corrosion Protection of Magnesium Alloys in Industrial Solutions

Amany Mohamed Fekry

Chapter 4, inTech Journals, 1-180 (2014)

The main problem in our life is the corrosion of many types of alloys either industrialy or biologicaly. This work reviews the corrosion protection of magnesium based alloys in industrial solutions. Corrosion behavior had been studied using electrochemical impedance spectroscopy (EIS), Potentiondynamic polarization and scanning electron microscope (SEM) techniques. Magnesium is the lightest of all metals in practical use with density of 1.74 g cm-3. Pure magnesium metal has useful properties such as shielding against electromagnetic waves, vibration damping, dent resistance and machinability, in addition to its recyclability as it has a lower specific heat and a lower melting point than other metals.

On the other hand, magnesium has shortcomings such as insufficient strength, elongation and heat resistance as well as being subject to corrosion. It is necessary to deal with its shortcomings and improve its performance through alloying with various elements. Alloying magnesium improves its strength, heat resistance and creep resistance [1].

1139. From Lake to Sand the Archaeology of Farafra Oasis Western Desert, Egypt

Mohamed Abdel Rahman Mahmoud Ali Hamdan

Edizioni All'Insegna del Giglio s.a.s via del Termine, 36; 50019 Sesto Fiorentino (FI), (2014)

This volume presents all the data collected during the cycle of research conducted by the Archaeological Mission in the Farafra Oasis between 1990 and 2005, only in part already published in preliminary form in separate articles. The book offers a comprehensive and complete edition of the data illustrated with an ample selection of images, essential for a full understanding. This monograph has been a long time in the making, due not only to the quantity of information and the number of essays that it contains, but also to the need to ensure the conformity of the documentation from our early years of research. The documents accompanying the text consist of a substantial graphic and photographic repertoire (geographical and geological maps, contour maps, stratigraphic sections, plans and distribution maps of artefacts), photographs of the environment, photomosaics of the main settlement, microphotographs of archaeological artefacts (lithic industry, bone and ostrich eggshell tools). Considerable space has been given to the illustration of the archaeological materials, documented almost exclusively using scale drawings.

Keywords: Prehistory; Archaeology; Holocene; Paaleoclimate; Farafra; Egypt.

1140. Exact Solutions of Evolution Equations with Variable Coefficients

Mohamed Safaa Osman and H. I. Abdel-Gawad

LAP Lambert Academic Publishing, 1-116 (2014)

In this book, we make an extension to the unified method that unifies all the known methods in the literature for finding the exact solutions of scalar or vector nonlinear PDE's with constant coefficients in the nonlinear sciences. The extended unified method unable us to investigate the effects of the inhomogeneity of the diffusion, diffraction dispersion super-diffusion of the medium trough considering the coefficients space-dependent. On the other hand, some problems have been studied when these coefficients are taken as time-dependent. The main objectives of the extended unified method are; (a) Constructing the necessary conditions for the existence of solutions to evolution equations. (b) Whenever the solutions exist, this method suggests a new classification to the solution structures namely; the polynomial solutions, the rational solutions and the polynomial-rational solutions. In each type, we mean that the obtained equations are accomplished by a set of auxiliary equation whose solution gives rise to an auxiliary function.

1141. A Global Approach to Finsler Geometry

Nabil Labib Youssef

Book Published by Scholars' Press, (2014)

In this work, we first introduce the notions of semispray and nonlinear connection associated with a given regular connection, in the pullback bundle. New intrinsic (coordinate-free) proofs of intrinsic versions of the existence and uniqueness theorems for the fundamental regular connections on the pullback bundle of a Finsler manifold (M,L), namely the Cartan, Berwald, Chern

and Hashiguchi connections are given. It is shown that for these connections, the associated semispray coincides with the canonical spray and the associated nonlinear connection coincides with the Barthel connection. Explicit intrinsic expressions relating these connections are deduced. Many of the most important and most commonly used special Finsler manifolds is introduced. Various relationships between the different types of the considered special Finsler manifolds are found. The infinitesimal transformations (changes) in Finsler geometry are important, not only in differential geometry, but also in application to other branches of science, especially in the process of geometrization of physical theories. For infinitesimal changes, firstly, the conformal change of fundamental linear connections, as well as their curvature tensors, are investigated. Various known local results are generalized and other new intrinsic results are obtained. Among the results obtained are: a characterization of conformal change, a characterization of homotheties, some conformal invariants and conformal \$\sigma\$-invariants. Necessary and sufficient conditions for the most important special Finsler Manifolds to be invariant under this change are obtained. Secondly, an intrinsic investigation of a particular \$\beta\$change, namely the energy \$\beta\$-change, is established. The relation between the two Barthel connections \$\Gamma\$ and \$\widetilde{\Gamma}\$, corresponding to this change, is found. This relation enable us to study the energy \$\beta\$-change of the fundamental linear connection in Finsler geometry, as well as their curvature tensors. Finally, we investigate the projective changes in Finlser geometry, following the Pullback formalism. Nontrivial characterizations of projective changes are given. The fundamental projectively invariant tensors, namely, the projective deviation tensor, the Weyl torsion tensor, the Weyl curvature tensor and the Douglas tensor are investigated.

Keywords: Finsler geometry; Cartan connection; Berwald connection; Chern connection; Hashiguchi connection; Projective change; Conformal change; Special finsler spaces.

1142. Coupled Thermoelectroelasticity in Extended Thermodynamics

A. F. Ghaleb

Encyclopedia of Thermal Stresses, 767-774 (2014)

The experimental evidence of heat propagating as thermal wave at low temperature, a phenomenon commonly called "second sound," has fueled scientific research in the past few decades. The aim was to remove the paradox of infinite speed of propagation of waves in classical thermodynamics, in which Fourier law for heat conduction plays a central role, leading to a partial differential equation of parabolic type for temperature. It was recognized at an early stage that the cause of this paradox was an insufficient description of the nonequilibrium thermodynamical state in the existing model.

1143. Interval Mathematics as A Potential Weapon Against Uncertainty

Hend Dawood Mohamed Mohamed

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems, Igi Global, (2014)

This chapter is devoted to introducing the theories of interval algebra to people who are interested in applying the interval methods to uncertainty analysis in science and engineering. In view of this purpose, we shall introduce the key concepts of the algebraic theories of intervals that form the foundations of the interval techniques as they are now practised, provide a historical and epistemological background of interval mathematics and uncertainty in science and technology, and finally describe some typical applications that clarify the need for interval computations to cope with uncertainty in a wide variety of scientific disciplines. **Keywords**: Interval mathematics; Uncertainty; Quantitative knowledge; Reliability; Complex interval arithmetic; Machine interval arithmetic; Interval automatic differentiation; Computer graphics; Ray tracing; Interval root isolation.

1144. Proof-Carrying Model for Parsing Techniques

Mohamed Abdel-Moneim Mahmoud Mohamed El-Zawawy

Computational Science and its Applications – Iccsa, Springer, (2014)

This paper presents new approaches to common parsing algorithms. The new approach utilizes the concept of inference rule. Therefore the new approach is simple, yet powerful enough to overcome the performance of traditional techniques. The new approach is basically composed of systems of inference rules.

Mathematical proofs of the equivalence between proposed systems and classical algorithms are outlined in the paper. The proposed technique provides correctness verification (a derivation of inference rules) for each parsing process.

These verifications are required in modern applications such as mobile computing. Results of experimental proving the efficiency of the proposed systems and their produced verifications are shown in the paper.

Keywords: Proof-carrying model; Parsing techniques.

1145. Solitons, Introduction to

Mohamed A. Helal

Encyclopedia of Complexity and Systems Science, 1-3 (2014)

The concept of solitons reflects one of the most important developments in science in the second half of the twentieth century: the nonlinear description of the world. It is not easy to give a comprehensive and precise definition of a soliton. Frequently, a soliton is explained as a spatially localized wave in a medium that can interact strongly with other solitons but will afterwards regain its original form.

It is a nonlinear pulse-like wave that can exist in some nonlinear systems. The soliton wave can propagate without dispersing its energy over a large region of space; collision of two solitons leads to unchanged forms, and solitons also exhibit particle-like properties. The most remarkable property of solitons is that they do not disperse and thus conserve their form during propagation and collision Solitons Interactions. The nonlinear science has been growing for approximately 50 years. However, numerous nonlinear processes had been previously identified, but the nonlinear mathema.

1146. Low-cost system for measuring dielectric and piezoelectric constants

A. S. Abdel-Rahman and S. K. Abdel-Aal

LAP LAMBERT Academic Publishing, 1-108 (2014)

Instrumentation Physics today holds high position in technology, improve the measurements to get more focus on areas which is out of reach ago, low-cost and computerized systems are more required than ever due to current expensive technology. Computer saves time and reduces errors, suitable for long-time experiments, the track of computerization systems beside keeps it low-cost with good quality grows up everyday. This work aims to present low-cost computerized measurement system for two of famous physical properties in Condensed Matter.

1147. Low-cost computerized crystallizer unit

Seham Kamal Mohamed Abdel-Aal

LAP Lambert Academic Publishing, (2014)

Single crystal is a very essential for researchers and laboratories; we grow a large single crystal of TGS ferroelectric material, by using a low-cost automatic crystallizer unit controlled by a computer. The program used enables user to modify growth conditions such as decrement rate of temperature and motor speed. The study of the produced sample is important to judge the performance of the constructed unit. A well-known TGS sample was grown. Some physical properties were measured and they are all in a fair agreement with published data.

Keywords: Computerized crystallizer; Tgs; Ferroelectricity.

1148. Novel antiosteoporotic supplements against estrogen deprived rats: Antiosteoporotic activities of Cicer arietinum seed and Coelatura aegyptiaca shell

Amany Sayed, Mohamed Marzouk and Amel Mahmoud Soliman

LAP LAMBERT Academic Publishing, 1-316 (2014)

Osteoporosis is a socio-economic problem that requiring appropriate management strategies to modulate the bone turnover disorder. Estrogen replacement therapy and bisphosphonate drugs are effective for both prevention and therapy of osteoporosis, but recent findings have shown that their long term administration are not safe. Thereby natural alternative treatments are urgently needed. Therefore, the present study selected Cicer arietinum seed extract as a phytoestrogen source and/or Coelatura aegyptiaca shell powder as a calcium source to evaluate their effectiveness against osteoporosis induced by ovariectomy.

1149. Role of Cichorium endivia against hepatotoxicity

Amany Sayed, Mohamed Marzouk and Amel Soliman

LAP LAMBERT Academic Publishing, 1-192 (2014)

Liver is the first organ to metabolize all foreign compounds and hence it is susceptible to many different diseases. Liver disorders attribute to its exposure to different xenobiotics, among them is the paracetamol drug. Xenobiotics mainly damage the liver by producing reactive oxygen species (ROS). Acetaminophen (paracetamol) is a widely used analgesic and antipyretic drug, it causes hepatotoxicity in experimental animals and humans at high doses. Most of the present drugs have severe side effects. Thus, the current trend in many therapies is the back to nature. Therefore, it is necessary to search for alternative drugs for the treatment of liver disease to replace currently used drugs. The present study investigates one of a famous plant family, namely, Cichorium endivia on the liver disorders induced by paracetamol.

1150. Anti-neoplastic Effects of Sepia Ink and Coelatura Aegyptiaca

Amel Soliman, Sohair Fahmy and Salma El-Abied

Germany, LAP LAMBERT Academic Publishing, 1-88 (2014)

The present study serve to extend the growing number of earlier investigations on therapeutic products from freshwater and marine sources as potent antineoplastic agents and confirm that both squid ink extract and freshwater mussel extract of C. aegyptiaca decreased lipid peroxidation, improved antioxidant status, and thereby act as a potential therapeutic complement in the treatment of different pathologies that may be related to an imbalance of the cellular oxidoreductive status associated with liver injury following tumor inoculation.

1151. Toxicological effects of zinc oxide nanoparticles: Ecotoxicological effect of sublethal exposure to zinc oxide nanoparticles on freshwater snail Biomphalaria alexandrina

Sohair Fahmy, Fathy Abdel-Ghaffar and Dawlat Sayed

LAP LAMBERT Academic Publishing, 1-148 (2014)

Freshwater snails are used as sensitive biomarkers of aquatic ecosystem pollution. The potential impacts of zinc oxide nanoparticles (ZnONPs) on aquatic ecosystems have attracted special attention due to their unique properties. The present investigation was designed to evaluate the possible mechanisms of ecotoxicological effects of ZnONPs on freshwater snail Biomphalaria alexandrina. ZnONPs showed molluscicidal activity against B. alexandrina snails, and the LC50 was 145 ug/ml.Exposure to ZnONPs (7 and 35 ug/ml) for three consecutive weeks significantly induced malondialdehyde and nitric oxide with concomitant decreases in glutathione and glutathione- S-transferase levels in hemolymph and soft tissues of treated snails. Moreover, ZnONPs elicited a significant decrease in total protein and albumin contents coinciding with enhancement of total lipids and cholesterol levels as well as activities of aspartate aminotransferase, alanine aminotransferase, and alkaline phosphatase hemolymph and soft tissues of treated snails.

1152. Parasites of Egyptian reptiles

Morsy Kareem, Ramadan Nadia and Ali Medhat

LAP LAMBERT Academic Publishing, 1-132 (2014)

Reptiles of different taxonomic groups from different geographical regions all over the world were found to be naturally infected with a widely distributed rang of parasites. These parasites can be divided into endoparasites and ectoparasites . Endoparasites include Protozoa, and many helminthes. Protozoa are the most dangerous group that probably causes various diseases in reptiles, even moderate infection of these organisms in small reptiles may cause fatal diseases. The present study aimed to survey some of the parasitic protozoans and metazoans infecting many species of reptiles collected from some deserts in Egypt. This is followed by a detailed description of the recovered parasites by means of light and scanning electron microscopy. Also, the present investigation was undertaken to elucidate the whole life cycle of the haemogregarine infecting the viper

Cerastes cerastes and to examine the validity of Haemogregarina as the proper genus for the species described herein.

1153. Fish Parasites Part I: Studies on some protozoan and monogenean parasites infecting fresh water fish in Egypt

Morsy Kareem, Hoda Saadi and Asmaa Adel

LAP LAMBERT Academic Publishing, 1-156 (2014)

Monogenean parasites of freshwater fish could be considered as one of the most prevalent diseases affecting skin and gills, which included irritation, severe destruction of the gills, impaired breathing as well as severe losses too. They are the most abundant ectoprasitic flukes of fish, with greater diversity of species occurring in tropics than in the temperate regions of the world. They spend their entire life cycle as parasites on gills and skin of fish, hold to the fish by the use of hooks and attachment organs at the posterior end.This study investigates the prevalence of these parasites infecting some of the economically important fresh water fish from the River Nile at Qena province, Egypt. This is followed by detailed description by means of light microscopy of the recorded parasite species including a detailed description of the different parts of the recovered worms.

1154. Fish Parasites Part Ii

Kareem Said Morsy Sayed

Book Published by Lap Lambert Academic Publishing, (2014)

Monogenean parasites of freshwater fish could be considered as one of the most prevalent diseases affecting skin and gills, which included irritation, severe destruction of the gills, impaired breathing as well as severe losses too. They are the most abundant ectoprasitic flukes of fish, with greater diversity of species occurring in tropics than in the temperate regions of the world. They spend their entire life cycle as parasites on gills and skin of fish, hold to the fish by the use of hooks and attachment organs at the posterior end. This study investigates the prevalence of these parasites infecting some of the economically important fresh water fish from the River Nile at Qena province, Egypt. This is followed by detailed description by means of light microscopy of the recorded parasite species including a detailed description of the different parts of the recovered worms.

Keywords: Monogenean parasites; Fish; Ectoprasites; Light microscopy.

1155. Prognostic Markers and Cancer

Abeer Mahmoud Badr, Somaya El Deeb and Dalia Yehya Kadry

LAP LAMBERT Academic Publishing, 1-128 (2014)

Hematological malignancies are associated with hematopoietic cells that have lost the capacity to differentiate normally to mature blood cells. Intreleukin-18 (IL-8) and matrix metalloproteinases 2 (MMP-2) might be involved in the proliferation of certain leukemic cells, tumor growth and metastasis. A prognostic factor is defined as a clinical measurement that could be predicted by response to treatment associated with overall survival. Determination of prognostic factors is especially important in malignant patients. We aim to investigate the expression of IL-8 and MMP-2 in various hematological malignancies including acute lymphatic leukemia, non-Hodgkin lymphoma, chronic lymphocytic leukemia and acute myeloid leukemia to assess the

1156. Natural Killer Cells and Hepatitis C Virus

Noha Mahana, Somaya El-Deeb and Mona Hassouna

LAP LAMBERT Academic Publishing, 1-88 (2014)

Innate immunity is thought to contribute to sustained virological response (SVR) to pgylated interferon-a/ribavirin (peg-IFN-□ /ribavirin) therapy. Natural killer (NK) cells are implicated in the regulation of a protective immune response in patients chronically infected with HCV. We sought to investigate the level of NK subsets among Egyptian patients with chronic HCV and to analyze the influence of IFN therapy on this level. Samples were collected from chronically infected patients (n= 37) at baseline and from a subset before and after 6 months on peg-IFN-□ /ribavirin therapy. NK cells were characterized by flow cytometry. The number of CD3- CD56+ cells was significantly lower in patients with chronic HCV infection before treatment compared to healthy controls, but they increased during IFN therapy. There was a significant increase in the number of CD16+ and CD3- CD56+ cells in patients with sustained virological responses (SVR) during therapy compared to patients are nonresponders (NR). Meanwhile, CD56+ cells were significantly increased in patients with chronic HCV infection before treatment compared to healthy controls and decreased during therapy in responders.

1157. Diagnosis of Fascioliasis Using Polyclonal and Monoclonal Anitbodies

Azza Mohamed El Amir Atta

Book Published by Scholars' Press, (2014)

Fascioliasis is a disease of human and grass-grazing animals caused by the parasitic worm Fasciola spp; which lives in the bile ducts and cause liver cirrhosis. It is generally agreed that facsioliasis caused heavy economic loss in liverstock throughout the world. Clinically, fascioliasis may be falsely diagnosed asamoebic hepatitis, acute infective hepatitis as well as disorders associated with cirrhosis and primary carcinoma of the liver. Several tests using different fasciolal antigenic preparation, including partially purified antigen and excretory-secretory (ES) products of the adult worm, have been reported for the immunodiagnosis of fascioliasis. To enhance the specificity of immunodiagnosis of fascioliasis, attempts were directed to assay the fasciolal circulating antigen which can be detected in sera obtained from infected specimens as early as the third week after infection. The immunodiagnostic method can provide an accurate tool for diagnosis as well as the assessment of cure of fascioliasis.ES antigenic preparation from adult worms of F. gigantica express a dominant and immunogenic epitope of 15.8 kDa. This epitope demonstrated a strong immunogenic properties in both.

1158. Cysteine protease inhibitors as chemotherapy for mice Schistosomiasis

Alyaa Ahmed Farid and Azza Mohamed El-Amir

LAP LAMBERT Academic Publishing, 1-164 (2014)

This study aims to test the action of three different compounds acting as CP inhibitors (CPIs) namely fluromethylketone (FMK), vinyl sulfone (VS) and sodium nitro prussid (SNP). These specific irreversible inhibitors of CPs inhibit the degradation of hemoglobin (Hb) in developing schistosomula, eventually resulting in worm death and reduce egg production. These inhibitors may recently used as new chemotherapeutic drugs for treatment of schistosomiasis. This work trial to study the possible additive or synergistic effect of both PZQ and these CPIs on susceptible strains of S. mansoni infected albino mice. This study will be applied both in vitro and in vivo.

1159. ELISA Versus Microscopy: Advantages & Drawbacks: Giardia Diagnosis

Alyaa Ahmed Farid and Azza Mohamed El-Amir

LAP LAMBERT Academic Publishing, 1-92 (2014)

Controlling Giardiasis outbreaks can be accomplished by early diagnosis. Recentally, ELISA has been considered as cost effective diagnostic method which can detect small quantities of coproantigens of parasite, even in mild infections, and diagnosed even if the live parasite is absent in the fecal samples. It can detect different soluble antigens dispersed in fecal matter rather than detecting cysts, trophozoites, or antigens on the surfaces of these morphologic forms.

1160. Immunolocalization of Schistosomal Cysteine Proteases: Murine Schistosomiasis

Alyaa Ahmed Farid Ahmed El-Said

Book Published by Lap Lambert Academic Publishing, (2014)

During penetration into the skin, Schistosoma spp. continuously excrete/secrete substances (E/S) into their surroundings in order to aid their passage and/or as part of their metabolism. These E/S products are known to contain different types of proteins and lipids, many of whose function are not fully known. By culturing adult worm in vitro, E/S products have been collected, purified and analyzed for their functional capabilities. One of the major components of the E/S products is cysteine proteases. Proteases have been under scrutiny as targets of immunological or chemotherapeutic anti-Schistosoma agents because of their vital role in many stages of the parasitic life cycle. In addition, proteases are known to act as important regulatory elements in a variety of species. Therefore, immunolocalization techniques could be utilized to determine the presence of E/S in different stages of the parasite's development and within the different organs of naturally infected mice. E/S Ags investigated appears to be membrane bound and can be expected to be released from the S. mansoni surface and gut to the host's blood. The detection and localization of E/S Ags would help in early diagnosis. Keywords: Schistosoma: CP; Immunolocalization.

1161. Immune Responses to Peptides of Hepatitis C Virus (HCV) Genotype 4: Schistosomiasis & HCV coinfection

Alyaa Ahmed Farid

LAP LAMBERT Academic Publishing, 1-140 (2014)

Hepatitis C virus (HCV) is a major causative agent of chronic hepatitis, and it is estimated that 170-200 million people are infected worldwide. The host immune response probably plays a critical role in the control of both HCV replication and liver

injury. HCV infection evokes CD4+ Human leukocyte associated antigen (HLA) class II-restricted and CD8+ (cytotoxic T lymphocytes, CTL) HLA class I-restricted T cell responses. CD4+ T lymphocytes have been shown to be crucial for recovering from acute HCV infection and for maintaining such recovery, since the loss of HCV-specific CD4+ responses correlates with relapsing disease. However, the role of CD4+/CD8+ cells in the natural history of chronic HCV is not yet well established. Differences in the host cellular immune response to HCV may be important in viral clearance and conflicting evidence exists as to whether the specific genotype affects the severity of the disease.

1162. Anti-Cancer Activities of Some Bacterial Polysaccharides Derivatives

Azza Mohamed El Amir

Book Published by Lap Lambert Academic Publishing, (2014)

BSL could be a promising anti-initiation agent in vitro through inhibition of CYP 1A mediated carcinogen metabolism and induction of GST activity as well as GSH level. BSL also possesses anti-inflammatory activity through its capacity to enhance macrophage proliferation rate and its ability to inhibit stimulated NO, TNF-a and COX-2 levels. Besides preventing tumor promotion, BSL showed inhibitory activity toward DNA fragmentation and cytotoxic property against Hep-G2 tumor cell line as anti-progression properties. In vivo administration of BSL before and after DEN induction showed inhibitory activity toward HDAC and lipid peroxidation which induced by DEN. Also, BSL modulates GST-P expression which upregulated with DEN injection. It resulted in a significant increase in GST activity and GSH level. It downregulates TNF-a level and induced apoptosis. Anti-progression properties of BSL represented by its inhibitory activities to DNA fragmentation and VEGF where PDGF level was unaffected. Furthermore, . Garlic showed an induction in GST activity and GSH level and it increases TNF-a and decreases VEGF level.

Keywords: Carcinogenesis; Inflammation; Bacillus subtilis; CYP.

1163. Helminth Infections and their Impact on Global Public Health

Rashika Ahmed Fathi El Ridi

Fabrizio Bruschi, 1-88 (2014) IF:

Helminths are long-lived multicellular organisms that have coevolved with humans over many thousands of years. They are responsible for infections which affect around one third of the human population, at global level. Despite the huge efforts in research during the last years, effective control of helminth infections is still far from optimal standards and the resulting diseases remain neglected. This book aims to give an up-date overview to the epidemiology (including molecular typing), specific biological, immunological and immunopathological aspects, diagnosis and perspectives of control of the most common helminth infections.

1164. Vaccine Candidates from Fasciola gigantica

Somaya El-Deeb, Azza El Amir and Ibraheem Rabia

LAP LAMBERT Academic Publishing, (2014)

Cattle industry is drastically affected by the trematode parasite Fasciola gigantica. This work aims to study the humoral and cellular immune responses to different F. gigantica antigens isolated from adult worm E/S product during the parasite invasion. This research is an attempt to find an effective vaccine against the parasite. Two Antigens were isolated and purified from excretory/secretory products as cysteine protease and fatty acids binding proteins (CP and FABP) of the parasite by immunoaffinity chromatography. From this study it was deduced that F. gigantica CP is a relevant candidate for vaccination against fascioliasis, while the level of protection induced by FABP is ineffective in the protection of these animals.

1165. C-Reactive Protein and Cancer Diagnosis

Somaya El-Deeb, Safinaz Elshabrawy and Mohamed El-Beddini

LAP LAMBERT Academic Publishing, (2014)

Cancer is one of the fatal diseases and its early prognosis would be highly beneficial in curing it. CRP could be a profound tool in early diagnosis and prognosis. The present study proved that CRP levels are a consistent indicator of cancer risk than some tumor markers. In addition, CRP level show a strong association with risk of cancer incidence recurrence and death. The association between cancer incidence and CRP maybe tumor type specific.

1166. Development of Bubulcus Ibis Sense Organs

Youssri Eman, Abu-Taira Amir and Dakrory Ahmed

LAP LAMBERT Academic Publishing, (2014)

In the event that sense represents an important constituent for animals in general, it is considered as a critical element for the life of birds, in particular. Sense is an essential component to a bird for a perfect accommodation of its way of life. An individual gains knowledge of its environment through its sensory organs. A sense organ is that organ through which an animal gains information about its surroundings. The three predominating sense organs in animals are those of smell, sight and hearing.

Faculty of Agriculture

Dept. of Agricultural Biochemistry Section

1167. Plants as a Source of Natural Antioxidants

Emad Ahmed Shalaby

CABI 1- 320 (2014)

A comprehensive overview of both traditional and current knowledge on the health effects of plant-based antioxidants, this book reviews medicinal and aromatic plants from around the world. It covers the different sources of antioxidants including essential oils, algae and marine microorganisms, as well as the role of abiotic and biotic stresses, endophytes, transgenic approaches in scavenging ROS and antioxidant plants used in different therapeutic systems.

Dept. of Agricultural Biochemistry Section 1168. Omics Approaches in Breast Cancer

Emad Ahmed Shalaby

Barh, 1-99 (2014)

Breast cancer is the most common cancer in females that accounts for highest cancer specific deaths worldwide. In the last few decades research has proven that breast cancer can be treated if diagnosed at early stages and proper therapeutic strategy is adopted. Omics-based recent approaches have unveiled the molecular mechanism behind the breast tumorigenesis and aid in identification of next-generation molecular markers for early diagnosis, prognosis and even the effective targeted therapy. Significant development has taken place in the field of omics in breast cancer in the last decade. The most promising omics approaches and their outcomes in breast cancer have been presented in this book for the first time. The book covers omics technologies and budding fields such as breast cancer miRNA, lipidomics, epigenomics, proteomics, nutrigenomics, stem cell, pharmacogenomics and personalized medicine and many more along with conventional topics such as breast cancer management etc. It is a research-based reference book useful for clinicianscientists, researchers, geneticists and health care industries involved in various aspects of breast cancer. The book will also be useful for students of biomedicine, pathology and pharmacy

Dept. of Soil Sciences

1169. Ecological Intensification through Nutrients Recycling and Composting in Organic Farming

Hamada Mohamed Abdelrahman Hassan and Francesco G. Ceglie

Composting for Sustainable Agriculture, 1-22 (2014)

In organic agriculture fertilizers are permitted in organic forms, as defined by regulation. Mineralization of organic fertilizers is a biological decomposition that release plants' available nutrients; hence soil microbial communities are vital in the organic cropping systems. Composting microorganisms can work for the farmer's benefit recycling agricultural organic wastes into aterials that contribute to healthy and biologically active soil. Composting process has been deeply described to highlight the link among starting mixture, process factors and final resulting compost. Composting and crop residues incorporation are fundamental to recycle resources at farm level to improve the nutrients use efficiency and to decrease the off-farm input needs. In the organic farming a balanced combination of compost application and crop residues incorporation increases the microbial carbon use efficiency, which regulates the soil organic matter decomposition and nutrients mineralization resulting both to increase the yield and to decrease the negative impact on the environment.

Faculty of Veterinary Medicine

Dept. of Fish Diseases and Management

1170. Streptococcus Dysgalactiae, a New Fish Pathogen

Mohamed Abdelsalam

LAP Lambert Academic Publishing, 1-164 (2014)

Streptococcus dysgalactiae, the long recognized mammalian pathogen, has currently received a major concern regarding fish bacterial infection. S. dysgalactiae caused either an opportunistic infection in immunocompromised patients or invasive infection in individuals handling livestock and seafood. The infected fish revealed systemic pyrogranulomatous inflammation with a severe necrotic lesion in their caudal peduncles. Despite increased clinical significance, the characterization of S. dysgalactiae strains isolated from different fish species collected in many countries and the epidemiological relationships among them have not been studied. Thus, little information is available concerning the outbreaks and epidemiology of S. dysgalactiae infection in farmed fish. Moreover, the origin, infection mechanism and the genetic basis of its virulence that characterize S. dysgalactiae as a fish pathogen remain unknown. Furthermore, no information is available on the initial step of fish-pathogen interaction. Therefore, the quest for a patent vaccine against this pathogen is hindered by the lack of knowledge regarding the pathogenesis and virulence determinants of S. dysgalactiae.

Dept. of Food Hygeine and Control

1171. Microbiological Safety of Meat | Emerging Pathogens

Mohamed Kamel Hussein Youssef

Encyclopedia of Meat Sciences (Second Edition), Elsevier Ltd, (2014)

Four species of bacteria recently recognized as causes, or suspected of being causes of human illnesses, and which can or might be acquired from meat are considered as examples of emerging meatborne pathogens. Arcobacter butzleri and Clostridium difficile cause enteric illnesses; Streptococcus suis causes meningitis and systemic infections; and Mycobacterium avium subsp. paratuberculosis (MAP) might cause a chronic enteritis. The meats with which these organisms are particularly associated are: chicken, A. butzleri; beef, Cl. difficile and MAP; and pork, S. suis.

Keywords: Arcobacter; Beef; Chicken; Clostridium difficile; Colitis; Crohn'S disease; Diarrhea; Emerging pathogens; Meningitis; Mycobacterium avium Subsp; Paratuberculosis; Pork; Streptococcus suis.

Dept. of Medicine and Infecous Diseases

1172. Aspects in Rumenology of Dairy and Fatting Cattle

Sabry Mousa

LAP Lambert Academic Publishing, 1-468 (2014)

The present study was aimed to studying the effect of seasons of year on physical clinical examination, hematological, biochemical constituents of both blood and rumen liquor in apparently healthy dairy cattle and fattening calves, studying the effect of stages of lactation on physical clinical examination , hematological, biochemical constituents of both blood and rumen liquor in apparently healthy dairy cattle ,studying the effect of some selective digestive disorders on physical clinical examination , hematological, biochemical constituents of both blood and rumen liquor in apparently healthy dairy cattle and fattening calves with therapeutic trial and study its effect.

Dept. of Pathology

1173. Digital Pathological Services Capability Framework

Ammar Adl, Iman B. Shaheed, M. I. Shaalan, A. K. Al-Mokaddem and Aboul Ella Hassanien

Communications in Computer and Information Science, (488) 109-118 (2014)

Pathology digital lab is the modern, flexible and time effective research assistant. The process of creating pathology slides contains five creation steps from the tissue samples collection till clearing and staining stage. The reservation and sharing of such slides using classical models limit the ability of pathologists to benefit from important and rare slides. The virtual lab with its digital slides conquers those limitations and adds more intelligence to research and diagnosis fields. Having the digital slides, it is easy to save, share, search, apply automatic diagnosis through pattern recognition techniques, getting alerts for new slides and much more. The target of this work is to present the virtual lab design with its functionalities by explaining the glass slides creation process and then digitalize through scanners and the digital lab platform.

National Institute of Laser Enhanced Sciences

Dept. of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA)

1174. Spectroscopic Study of Water Soluble Conjugates of Hypericin With Polyvinylpyrrolidone

Shimaa Abdelhamid and Tareq Youssef

Recent Res Devel Photochem Photobiol., 25-34 (2014)

Hypericin (HYP) has been proposed as a fluorescent agent for photodiagnosis and as a potent photosensitizing drug for photodynamic therapy (PDT) of cancer. However, HYP has a hydrophobic character which makes its systemic administration a problematic and may restrict its usage in several medical applications. In the present work spectroscopic study was performed on soluble HYP molecules in water via conjugation with polyvinylpyrrolidone (PVP). Absorption and fluorescence measurements revealed that PVP can bind to HYP molecules with a binding constant (Kb) estimated to be 0.2x104 M-1. The association of HYP with PVP in aqueous medium resulted in dissociation of HYP aggregates into a monomeric state which is considered very essential in its photobiological activity. Interestingly, HYP in its complex "HYP-PVP" showed a significant enhancement in fluorescence emission intensity, up to 300% at PVP concentration of 1x10-2 M relative to noncomplexed HYP. Moreover, the complex exhibited higher

photostability upon irradiation with low light intensity se (irradiance: 15 mW.cm-2) in the visible range suggesting sp promising applications in photoimaging and photodiagnostic of tumors.

1175. Photodynamic Control of Malaria Vector, Noxious Insects and Parasites

Tarek Abd Allah El-Tayeb Ahmed

Photodynamic Therapy from Theory to Application, Springer Berlin Heidelberg, (2014)

It is well documented that PDT has become a major approach for diagnosis and treatment of cancer. However, PDT was early discovered as a photodynamic antimicrobial chemotherapy and it has recently received considerable attention from researchers due to the fact that it has shown promise in the treatment of various tropical pathogens. In addition, PDT has been utilized successfully in recent years as a novel modality for noxious insects and parasite control, which is the subject of this chapter. The different classes of noxious insects, namely the activity of medical insects of vector borne- diseases such as Malaria, Filaria, and Dengue fever and agro-insects and pests which cause considerable damage to agro-economics, will be discussed in this chapter.

Keywords: Photodynamic control; Malaria; Noxious insects.

Faculty of Engineering

Dept. of Chemical Engineering

1176. Intelligent Firefly Algorithm for Global Optimization

Seif-Eddeen K. Fateen and Adrián Bonilla-Petriciolet

Cuckoo Search and Firefly Algorithm, 315-330 (2014)

Intelligent firefly algorithm (IFA) is a novel global optimization algorithm that aims to improve the performance of the firefly algorithm (FA), which was inspired by the flashing communication signals among firefly swarms. This chapter introduces the IFA modification and evaluates its performance in comparison with the original algorithm in twenty multidimensional benchmark problems. The results of those numerical experiments show that IFA outperformed FA in terms of reliability and effectiveness in all tested benchmark problems. In some cases, the global minimum could not have been successfully identified via the firefly algorithm, except with the proposed modification for FA.

Keywords: Global optimization; Nature-inspired methods; Intelligent firefly algorithm.

1177. Simulated Annealing Applications in Thermodynamic Calculations

Seif-Eddeen Fateen

Simulated Annealing: Strategies, Potential Uses, and Advantages, 1-80 (2014) IF:

This book presents state of the art contributes to Simulated Annealing (SA) that is a well-known probabilistic meta-heuristic. It contains 9 chapters explaining SA key concepts, constraint optimization, hybrid SA combining with other techniques, and several applications: aircraft design, molecule reconstruction, spacecraft trajectory, thermodynamics, truck scheduling and marine protected design scenarios. (Imprint: Nova) **Keywords:** Simulated annealing; Thermodynamic calculations.

Dept. of Electronics and Communication Engineering

1178. High Frequency Communication and Sensing: Traveling-Wave Techniques

Ahmed Emira and Ahmet Tekin

Book Published by Crc Press, (2014)

High Frequency Communication and Sensing: Traveling-Wave Techniques introduces novel traveling wave circuit techniques to boost the performance of high-speed circuits in standard low-cost production technologies, like complementary metal oxide semiconductor (CMOS). A valuable resource for experienced analog/radio frequency (RF) circuit designers as well as undergraduate-level microelectronics researchers, this book:

- Explains the basics of high-speed signaling, such as transmission lines, distributed signaling, impedance matching, and other common practical RF background material.
- Promotes a dual-loop coupled traveling wave oscillator topology, the trigger mode distributed wave oscillator, as a high-frequency multiphase signal source.
- Introduces a force-based starter mechanism for dual-loop, even-symmetry, multiphase traveling wave oscillators, presenting a single-loop version as a force mode distributed wave antenna (FMDWA).
- Describes higher-frequency, passive inductive, and quarterwave-length-based pumped distributed wave oscillators (PDWOs).
- Examines phased-array transceiver architectures and frontend circuits in detail, along with distributed oscillator topologies.
- Devotes a chapter to THz sensing, illustrating a unique method of traveling wave frequency multiplication and power combining.
- Discusses various data converter topologies, such as digitalto-analog converters (DACs), analog-to-digital converters (ADCs), and GHz-bandwidth sigma-delta modulators
- Covers critical circuits including phase rotators and interpolators, phase shifters, phase-locked loops (PLLs), delay-locked loops (DLLs), and more.
 Keywords: Travelling wave techniques; Mmwave

communication.

1179. Design for Yield and Reliability for Nanometer CMOS Digital Circuits

Hassan Mostafa, Mohab Anis and Mohamed Elmasry

Book Published by Lambert Academic Publisher (LAP), (2014)

The nano-age has already begun, where typical feature dimensions are smaller than 100nm. The operating frequency is expected to increase up to 12 GHz, and a single chip will contain over 40 billion transistors in 2020, as given by the International Technology Roadmap for Semiconductors (ITRS) initiative. ITRS also predicts that the scaling of CMOS devices and process technology, as it is known today, will become much more

difficult as the industry advances towards the 16nm technology node and further.

This aggressive scaling of CMOS technology has pushed the devices to their physical limits. Design goals are governed by several factors other than power, performance and area such as process variations, radiation induced soft errors, and aging degradation mechanisms. These new design challenges have a strong impact on the parametric yield and reliability of nanometer digital circuits and also result in functional yield losses in variation-sensitive digital circuits such as Static Random Access Memory (SRAM) and flip-flops.

Keywords: Statistical design; Soft error modeling; Adaptive body bias; Negative capacitance circuits

1180. Circuit Design Techniques for Microscale Energy Harvesting Systems

Hassan Mostafa Hassan Mostafa

Book Published by Lambert Academic Publisher (LAP), (2014)

Power Management is considered one of the hot topics nowadays, as it is already known that all integrated circuits need a stable supply with low noise, a constant voltage level across time, and the ability to supply large range of loads. Normal batteries do not provide those specifications. A new concept of energy management called energy harvesting is introduced here. Energy harvesting means collecting power from ambient resources like solar power, Radio Frequency (RF) power, energy from motion...etc. The Energy is collected by means of a transducer that directly converts this energy into electrical energy that can be managed by design to supply different loads. Harvested energy management is critical because normal batteries have to be replaced with energy harvesting modules with power management, in order to make integrated circuits fully autonomous; this leads to a decrease in maintenance costs and increases the life time.

Keywords: Micro-scale energy harvesting; Wireless sensor nodes; Renewable energy.

Dept. of Engineering Mathematics and Physics

1181. Memristor-Based Multilevel Arithmetic Circuit

Ahmed Gomaa Ahmed Radwan

Book Published by Lap Lambert Academic Publishing, (2014)

This work tried to highlight the potential of memristor in binary and multilevel digital circuits. This book focuses on the ternary and redundant circuits where the concept could be generalized for any multilevel circuits. Ternary half adder circuit was the first circuit to be investigated to address the concept of multilevel circuit based on the memristor.

A complete case study for redundant half adder, full adder and Nbit adder circuit based on the memristor analyzed to build an adder that has speed independent on the operand showing the potential of this element in arithmetic circuit. New approach to build digital circuit using the memristor was also introduced, by replacing the complete pull down network with one memristor to work as calculating/saving element to decreasing the number of transistors. An example to implement redundant multiplier circuit based on this approach was then introduced. All works were validated using Orcad. **Keywords**: Memristor; Multilevel arithmetic circuit; Adders; Multipliers; Digital circuit.

1182. Testing Methods for fault Detection in Electronic Circuits

Ahmed Gomaa Ahmed Radwan

Book Published by Lap Lambert Academic Publishing, (2014)

This book includes two testing methodologies based on Built In Sensors (BIS) and an optimization-based technique. The first part proposes two novel built-in sensors (BISs) for digital CMOS and analog circuits testing. The BISs have no voltage degradation, able to detect, identify and localize open and short circuit faults,have simple realizations with very small area and detection time. BIS is used to test a 4x4 multiplier cell where all injected faults are detected and localized.

The other BIS is dedicated to test analog circuits. It is applied to test two well-known analog building blocks; the Current Feedback Operational Amplifier (CFOA) and the Operational Transresistance Amplifier (OTRA). The proposed BIS tests on the terminal characteristics of the analog blocks. Simulations are made to test CFOA-based universal analog filter and an OTRAbased universal filter. The second part proposes a testing algorithm to detect single and double parametric faults in analog circuit by estimating the actual parameter values of the CUT. The algorithm is applied to a Sallen-Key second order band pass filter and simulations show that all injected faults are detected and diagnostic correctly.

Keywords: Testing; Fault detection; Hard; Soft faults; Analog digital circuits.

1183. Analog Circuit Design in the Fractional Order Domain

Ahmed Gomaa Ahmed Radwan

Book Published by Lap Lambert Academic Publishing, (2014)

The majority of the analog designers try to solve the problems of the analog circuits or even the digital circuits like the delay, power consumption and circuit size and complexity by proposing new circuit implementations.

These designers depend on the approximations in their early stages of the design phases to obtain integer values for the results which can be implemented by their ideas. Usually these approximations affect everything in the circuit like the system budget analysis resulted in a filter of order 3.6, the designers will approximate this order to 4 to be able to implement it. On this other hand, this approximation increase the filter delay, complexity and hence the power consumption. On the other hand, a second approach of the circuit design depends on using the fractional calculus. Fractional calculus was a pure mathematical theory until some researchers discovered that they can implement electrical elements of fractional order behaviour . Hence, this fractional order element can be used to design fractional order circuits to satisfy the exact system requirements. This approach should illuminate the overhead of the time and power consumption.

Keywords: Analog circuit design; Fractional-order; Filters, Oscillators; Butterworth.

1184. Optimal Design of Computationally Expensive Em-Based Systems: A Surrogate-Based Approach

Ahmed Sayed Abdelsamea Mohamed

Solving Computationally Expensive Engineering Problems, Springer International Publishing, (2014)

It is quite a challenge to find the optimal design of computationally expensive engineering systems in different areas such as electrical engineering, structural mechanics, fluid dynamics and electromagnetic-based (EM-based) systems. The optimal design of such systems requires solving huge optimization problems involving a lot of expensive function evaluations. For example, in microwave circuit design, a function evaluation requires running a full-wave electromagnetic simulator which may exhaust hours of CPU time. The total computational overhead makes the optimization of these engineering systems practically prohibitive. Computationally cheap surrogates (Response Surfaces, Space Map-ping, Kriging models, Neural Networks, etc...) offer a good solution of such problems. Throughout the optimization process, iteratively updated surrogates are employed to replace the computationally expensive function evaluations.

In this chapter, surrogate-based approaches that can be applied for optimal design of EM-based systems are presented. The first one is a novel surrogate-based trust region optimization approach. The proposed approach relies on building and successively updating quadratic surrogate models to be optimized instead of the objective function over the trust regions. The approach is applied to find the optimal design of RF cavity linear accelerator.

In addition, a novel surrogate-based geometrical design centering technique for microwave circuits is introduced. The technique integrates generalized space mapping (GSM) surrogates with the normed distances concept. The normed distances from a point to the feasible region boundaries are evaluated using norms related to the probability distribution of the circuit parameters. The technique is applied to obtain the design center point of a microwave filter.

Keywords: Computationally expensive engineering systems; Design centering; Em-based systems; Microwave circuit design; Normed distances; Optimal design; Rf cavity; Space mapping surrogates.

1185. From Darwinian Evolution to Flexible Robot Control

Tamer Mohamed Atef Mostafa Gheita

LAP Lambert Academic Publishing, 1-156 (2014)

Since the early days of civilization, scientists have been striving to identify the best from a set of possible alternatives. Such concept of optimization had been practiced by the Ancient Egyptians when building their pyramids and by Euclid of Alexandria when defining the shortest distance between a point and a line. The purpose of this book is to take the reader on a journey starting from Darwin's theory of evolution and ending in its modern application in robot control. Special emphasis is given to genetic algorithms (GAs) and their role in optimization. This comprises their history, structure, strengths, limitations as well as their application to the vibration and position control of flexible robot manipulators. Aside from being an informative text, the book aims at presenting the author's ideas for the enhancement of GAs. Two new techniques are presented: MAGA and EGA. The results show that the latter set a promising ground for further applications involving complex mathematical functions, multiple link robots and on-line control. This is due to its fast convergence, high precision and its ability to combine the merits of both global and local search methods.

1186. Application of Wavelets in Speech Processing

Mohamed Hesham

SpringerBriefs in Speech Technology, 1-80 (2014)

This book describes and justifies the pilot study that was conducted to translate and test the Liver Disease Symptom Index-2.0 (LDSI-2.0) into Arabic. The book presents the translation guideline that was adopted to translate the LDSI-2.0 into Arabic. Finally, the steps of cross-cultural adaptation of the translated LDSI-2.0 are clarified.

Dept. of Mining, Petroleum and Metallurgy

1187. Manufacturing of Nanosurface Aa7075 Composites by Friction Stir Processing

Iman Salah Eldin El-Mahallawi

Light Metals 2014, Wiley Tms, (2014)

Friction stir processing (FSP) is a novel processing technique that has been used for surface composite development and The fabrication of Al2O3 microstructural modification. nanoparticles (~40 nm) reinforced aluminum matrix composite (AMC) using FSP is studied in this paper with the aim of manufacturing high specific strength, hardness, wear and corrosion resistance surface nanocomposite for lightweight transportation applications. The Al2O3 nanoparticles were packed into the groove of 1 mm width and 7.5 mm depth that were machined in 15 mm thick plate of Aluminum alloy AA7075-O. Single pass FSP was carried out using tool of cylindrical probe of 6 mm diameter and 20 mm diameter shoulder, constant rotation rate and traverse speed of 840 rpm and 40 mm/min respectively; also multipass FSP was carried out to improve both dispersion and uniformity of the Al2O3 nanoparticles. The effect of post processing heat treatment after incorporating Al2O3 nanoparticles into different temper conditions of AA7075-T6 and AA7075-O was investigated. The fabricated AMC nanocomposites were analyzed and characterized using optical microscope, scanning electron microscope (SEM) and hardness testing. The hardness of the AMC increased with 89% higher than that of the matrix alloy. Keywords: Friction stir processing; Aluminium nanocomposites; Aa7075; Nanocomposites.

1188. Effect of Nano-Reinforcement on Properties of Cast Mg-Al Alloy Az91

Iman Salah Eldin El-Mahallawi

Magnesium Technology, Wiley Tms, (2014)

In this study, nanocomposites based on magnesium alloy system AZ91 were fabricated by Semi-Solid Rheocasting (SSR) technique. Al2O3 (alpha) nanoparticles were added to the AZ91 alloy with different weight fractions. The results showed that Al2O3 nanoparticles could be mixed with AZ91 semi-solid slurry using mechanical stirrer technique. However, large clusters of nanoparticles were observed. SEM images also detected significant refinement the microstructural features due to the

Al2O3 additives. Hardness tests showed that an addition of 2 wt. % Al2O3 nanoparticles resulted in 17% increase in the hardness. Corrosion tests indicated an improvement of 50% in corrosion resistance due to the addition of 2wt. % Al2O3 nanoparticles. Finally, mechanical dry wear tests revealed a 5% improvement in wear resistance for 2wt. % Al2O3 nanoparticles.

Keywords: Nanocomposites; Az91 magnesium alloy; Semi-solid casting; Al2o3 nano particles.

Dept. of Systems and Biomedical Engineering

1189. Processing Methodologies for Brain Computer Interface: Spectral Subtraction Denoising

Meena M. Makary and Yasser M. Kadah

LAP LAMBERT Academic Publishing, 1-80 (2014)

A brain-computer interface is a direct communication pathway between a human brain and an external device. It allows users to act on their environment by using only brain activity, without using peripheral nerves and muscles. The paralyzed person controls the brain-computer interface device by performing.

Faculty of Computers and Information

Dept. of Computer Science (CS)

1190. Membrane Computing in Optimization: from Biology to Algorithms

Emad Nabil and Amr Badr

LAP LAMBERT Academic Publishing, 1-172 (2014)

Membrane Computing (P Systems) is an emergent and promising branch of Natural Computing. Designing P Systems is a heavy difficult problem. Until now there is no tool exists that can help in designing of P systems. This book shows how to use clonal selection algorithm with adaptive mutation in the design of P systems. In Addition the book proposes a Membrane-Immune algorithm that is inspired from the structure of living cells and the vertebrate immune system. The algorithm is tested by solving the Multiple Zero/One Knapsack Problem. The Membrane-Immune algorithm surpassed two variants of genetic algorithms that solved the same problem. The Membrane-Immune algorithm is also applied to generate a fuzzy rule based system to be used in breast cancer diagnosis. Generating a fuzzy rule system composes an exponential search space, which leads to the area of NP-complete problems. The algorithm is compared with five techniques and surpassed them. Last chapter presents a proposal of P Systems implementation using Cloud Computing. The proposed Implementation is illustrated by solving SAT problem.

Dept. of Information System (IS)

1191. Web Services and Business Processes: A Round Trip

Mohammed Abu Jarour and Ahmed Awad

Web Services Foundations, (2014)

Service-oriented Architecture (SOA) is considered as an implementation for business processes (BP). However, the relation between SOA and BPs is usually inspected in one

direction only. In this chapter, we investigate the *bi-directional* relation between web services and business processes, and explore potential benefits therefrom. In particular, we introduce a novel approach to generate additional information about web services based on the configurations of business processes that consume these web services. This information is then used to enhance and smooth the modeling and configuration of future business processes. Through our approach, we can generate three types of information from consumers' business processes, namely annotations, context, and relations among web services. To evaluate our approach, we use the SAP reference model and we show the results in this chapter.

Dept. of Information Technology (IT)

1192. Evaluating the Propagation Strength of Malicious Metaphor in Social Network: flow through Inspiring Influence of Members

Manash Sarkar, Soumya Banerjee and Aboul Ella Hassanien

Social Networking, Springer International Publishing, 65: 201-213 (2014)

Interaction across social networking sites leads to different kinds of ideas, concepts and choices and sharing or some nourishing effects, which might influence others to believe or trust. Seldom may this cause some malicious effect for members and their peers only. As social network is the domain for sharing opinion and comments, subsequently it can also propagate malicious signature as well. Security and privacy is essential component to protect user profile from this kind of malicious program, which basically evolves from any close acquaintances, that also belongs to same vector plane. The degree of malicious attack of a social network depends on the number of flow links from one user to another with forward operations. It is true that the probability of malicious attack evolves from friend's community is of greater attack prone magnitude than the degree of attack from unknown members. This paper focuses the different verticals of such possibilities of attack under social network processes and also tries to investigate the rudimentary precautionary measure pertaining security algorithm behind it.

Keywords: Propagation strength; Malicious metaphor; Social network.

1193. Genetic Algorithms for Multi-Objective Community Detection in Complex Networks

Ahmed Ibrahem Hafez, Eiman Tamah Al-Shammari, Aboul ella Hassanien and Aly A. Fahmy

Social Networks: A Framework of Computational Intelligence, Springer, 526: 145-171 (2014)

Community detection in complex networks has attracted a lot of attention in recent years. Communities play special roles in the structure–function relationship. Therefore, detecting communities (or modules) can be a way to identify substructures that could correspond to important functions. Community detection can be viewed as an optimization problem in which an objective function that captures the intuition of a community as a group of nodes with better internal connectivity than external connectivity is chosen to be optimized. Many single-objective optimization techniques have been used to solve the detection problem. However, those approaches have drawbacks because they attempt to optimize only one objective function, this results in a solution with a particular community structure property. More recently, researchers have viewed the community detection problem as a multi-objective optimization problem, and many approaches have been proposed. Genetic Algorithms (GA) have been used as an effective optimization technique to solve both single- and multiobjective community detection problems. However, the most appropriate objective functions to be used with each other are still under debate since many similar objective functions have been proposed over the years. We show how those objectives correlate, investigate their performance when they are used in both the single- and multi-objective GA, and determine the community structure properties they tend to produce.

Keywords: Genetic algorithms; Multi-objective community detection; Complex networks.

1194. Bio-Inspiring Cyber Security and Cloud Services: Trends and Innovations

Aboul Ella Hassanien Aly

Springer International Publishing, (2014)

Almost daily we hear news about a security breach somewhere, as hackers are constantly finding new ways to get around even the most complex firewalls and security systems. This turned the security into one of the top research areas. Artificial Immune Systems are techniques inspired by biological immune systemspecifically the human immune system-which basic function is to protect the body (system) and defend against attacks of different types. For this reason, many have applied the artificial immune system in the field of network security and intrusion detection. In this chapter, a basic model of a multi-layer system is discussed, along with the basics of artificial immune systems and network intrusion detection. An actual experiment is included, which involved a layer for data preprocessing and feature selection (using Principal Component Analysis), a layer for detectors generation and anomaly detection (Using Genetic Algorithm with Negative Selection Approach), and finally a layer for detected anomalies classification (using decision tree classifiers). The principle interest of this work is to benchmark the performance of the proposed multi-layer IDS system by using NSL-KDD benchmark data set used by IDS researchers. The obtained results of the anomaly detection layer shows that up to 81 % of the attacks were successfully detected as attacks. The results of the classification layer demonstrated that naive bayes classifier has better classification accuracy in the case of lower presented attacks such as U2R and R2L, while the J48 decision tree classifier gives high accuracy up to 82 % for DoS attacks and 65.4 % for probe attacks in the anomaly traffic.

Keywords: Artificial immune systems; Anomaly detection; Using genetic algorithm.

Institute of Statistical Studies and Research

Dept. of Computer Sciences and Information

1195. Automating Web Service Composition: An Ontological Agent Framework

Fatma Abdou Ibrahim El-Licy

Handbook of Research on Architectural Trends in Service-Driven Computing (2 Volumes), Igi Global, (2014)

In the Service-Driven Computing paradigm, applications are typically built by composing a set of Web services. Web service composition facilitates rapid development of applications via service reuse and enables the creation of complex services from simpler application services. Research efforts in the area of Web service composition are concerned mainly with two challenges, namely automated service synthesis and verification of the composed Web services. This chapter presents a framework for Web service composition based on semantic specification through OWL-S to establish an ontological agent for automating Web service composition. The semantic description serves to define the planning domain for the agent to automate the composition procedure. A Petri nets model is applied to build a formal representation of the structure and behavior of the service. Finally, AND-OR graph methodology is used to represent the dependencies among Web services to select between alternatives based on Quality of Service.

Keywords: Service-driven computing; Web service composition; Semantic specification; Automated service synthesis.

Faculty of Medicine

Dept. of Anesthesiology

1196. Anesthetic Considerations of Hepatitis C Patients

Hala Mostafa Goma

Book Published by Lap Lambert Academic Publisher Germany, (2014)

This book include following chapters:

- Normal liver functions (anesthetic view).
- · Effects of anesthesia and surgery on normal liver functions
- Hepatitis c virus .
- Mode of infection.
- · Clinical stages.
- The hepatic risk factors.
- Anesthesia drugs and liver.
- Anesthetic consideration of chronic hepatitis without liver cirrhosis .
- Anesthetic consideration of chronic hepatitis with liver cirrhosis.
- · Esophageal varices
- Ascites
- · Renal impairment.
- Coaguopathy.
- Anemia.
- Mal nutrition.

Keywords: Anesthesia; Hepatitis C.

1197. Spinal Anesthesia and Opioid Additives

Hala Mostafa Goma

Book Published by Lap Lambert Academic Publisher Germany, (2014)

Advantages of spinal anesthesia: Spinal anesthesia provides adequate anesthesia plus postoperative analgesia lead to reduction requirements of systemic opioids resulting in avoidance of sedation and respiratory depression. More importantly, the inhibition of the stress response to surgery, trauma induced nociceptiveimpulses, and blunting of the autonomic and somatic responses to pain facilitate breathing, coughing, sighing and early ambulation (1). This results in restoration of pulmonary function and reduction of post operative chest infection and pulmonary collapse. Finally, efferent sympathetic blockade results in increased blood flow to the region of neural blockade resulting in better wound healing and reduced risk of deep venous thrombosis and thromboembolism (2).

Keywords: Opioid additives; Spinal anesthesia

1198. Spot Light on Spinal Anesthesia Hypotension

Hala Mostafa Goma

CreateSpace Independent Publishing Platform, (2014)

General anaesthesia is associated with higher mortality rate in comparison to regional anaesthesia. Spinal anaesthesia provides a fast ,intense, and balanced sensory and motor block of high value in patients undergoing lower abdominal and lower limb surgeries .spinal anaesthesia have fewer sides effects and risk than general anaesthesia .patients recover faster and can go home sooner. Hypotension during spinal anesthesia is the most common complication of spinal anesthesia. Hypotension is due to sympathetic nervous system blockade. Spinal induce hypotension can cause significant morbidity and mortality for both mother and fetus. Prevention rather than treatment is the aim of this book.

1199. Spinal Additives in Subarachnoid Anaesthesia for Cesarean Section

Hala Mostafa Goma

Topics in Spinal Anesthesia, in Tech Publisher, (2014)

The main limitations of spinal anaesthesia are its short duration of action and do not provide prolonged postoperative analgesia when it is performed only with local anaesthetics. Adding adjuvants drugs to intrathecal local anaesthetics improves quality and duration of spinal blockade, and prolongs postoperative analgesia. It is also possible to reduce dose of local anaesthetics, as well as total amount of systemic postoperative analgesics. Several spinal adjuvants have been used to improve spinal anaesthesia quality and to prolong postsurgical analgesia. Intrathecal opioids are the most commonly utilized; fentanyl and sufentanil improve neuroaxial anaesthesia, decrease trans operative pain and moderately prolong sensory block, while morphine prolongs postoperative analgesia. Alpha2 adrenergic agonists clonidine and dexmedetomidine shorten onset of action, and prolong duration of spinal anaesthesia. Ketamine, midazolam, neostigmine, magnesium sulphate and others spinal drugs are still under investigation. This chapter is an up to date of spinal additives currently used to enhance subarachnoid anaesthesia for cesarean section and to produce subarachnoid postcesarean analgesia.

2. Spinal additives drugs for cesarean delivery The use of subarachnoid additives in spinal anaesthesia for cesarean section has two main objectives: to enhance spinal block and to produce effective and prolonged postoperative analgesia. Reducing the dose of local anaesthetics used in spinal anaesthesia can decrease some of the side effects such as maternal hypotension, high spinal block, and prolonged motor block. By inducing better analgesia after cesarean section with intrathecal additives, the recently given birth mother is better able to take care of her newborn, which immediately improves mother-baby relationship, decreases prelacteal feeds (feeding any other substance before first breastfeeding), which is closely related to urban residency, firsttime motherhood, and cesarean delivery. Prelacteal feed has been reported as high as 26.5%. It has several harmful effects on the mother-newborn binomia. [10, 11] Immediate proper breast feeding even favor neonatal analgesia for minimum invasive procedures like heel prick. [12]

Keywords: Subarachniod block.

Dept. of Clinical Oncology and Nuclear Medicine

1200. Other Applications of INTRABEAM

Tina Reis, Elena Sperk, Yasser Abo-Madyan, Michael Ehmann, Frederic Bludau and Frederik Wenz

Targeted Intraoperative Radiotherapy in Oncology, Springer, 93-104 (2014)

Intraoperative radiotherapy (IORT) permits the delivery of a high radiation dose directly to the residual tumour or tumour bed while sparing nearby normal tissues. In most cases, IORT with the INTRABEAM® system is employed as a part of multimodal treatment, with the aim of providing an additional benefit in terms of prevention of local recurrence. IORT is used to treat many tumours, the most common being: locally advanced or recurrent colorectal cancer soft tissue sarcomas stomach and pancreatic cancers primary or recurrent gynaecological cancers head and neck tumours.

New fields of application are the treatment of symptomatic vertebral metastases, for which purpose IORT is employed in combination with balloon kyphoplasty ("kypho-IORT"), and intravaginal X-ray brachytherapy. A variety of applicators have been designed for the different treatments.

Dept. of Internal Medicine

1201. Cerebral Blood Flow in Cognitive Dysfunction

Mohamed Naguib Abdalla Shaaban Wifi

Book Published by Lambert Academic Publishing, (2014)

Decline of cerebral blood flow had a significant role in genesis of vascular dementia but recently was suggested to be an etiological factor for development of Alzheimer dementia. The present study was trying to answer this question by estimation of the cerebral blood flow in both vascular and Alzheimer dementia and to compare results with that of healthy elderly. Results showed a lower cerebral blood flow in both types of dementia but, such decline was significant for vascular dementia and insignificant for Alzheimer dementia. Cardiovascular risk factors though were prevalent in vascular dementia than Alzheimer dementia and this support the idea that correction of cardiovascular risk factors is essential in elderly to prevent or ameliorate cognitive dysfunction which is a major manifestation of dementia.

Keywords: Vascular; Dementia; Alzheimer; Cerebral blood flow; Cognitive function.

1202. Vasculitic Manifestations in the Gastrointestinal Tract

Gaafar Mohamed Mohamed Ragab

Oxford Textbook of Vasculitis, (2014) IF:

Introduction: Gastrointestinal (GI) vasculitis used to be underrepresented in the medical literature, in spite of its significant morbidity and mortality. There is, however, an increased awareness of the importance of early diagnosis and prompt management to avoid its potentially serious sequelae.

In order to better understand the manifestations and consequences of vasculitic lesions in the GI tract, and the different approaches to diagnosis, it is necessary to briefly review the anatomy and physiology of the GI tract. It is also important to understand the various pathogenic mechanisms causing bowel ischaemia, and the wide range of differential diagnosis. The recent developments in our understanding of the human gut microbiome is also expected to contribute to our knowledge of the role of the GI tract in autoimmunity, and its potential contribution to future therapeutic approaches.

Keywords: Vasculitis; Gastrointestinal tract; Manifestations; Dignosis.

1203. The Kidney in Schistosomiasis

Rashad Sami Barsoum

Comprehensive Clinical Nephrology, Elsevier, (2014)

Schistosomiasis affects the kidney through two pathogenetic mechanisms: 1) T-Cell mediated granuloma formation in the lower urinary tract, with eventual fibrosis and calcification, leading to bladder contraction, hyperirritability or atony, ureteric fibrosis and back pressure manifestations in the kidneys. Bladder cancer is a fairly common complication of this pathology. 2)Antibody-medicated glomerular injury due to the formation of immune-complexes composed of schistosomal gut antigens and immunoglobulins M,G and E. This leads to different forms of glomerulonephritis, which are categorized into 6 classes namely, mesangioproliferative, exudative, mesangiocapillary, focal segmental sclerosis, amyloidosis and cryglobulinmic. Class II is usually due to associated salmonella infection and Class VI to hepatitis C infection. Early stages of both types of schistosomal kidney disease respond to treatment with praziquantel. Later stages do not respond to corticosteroids or immunosuppressive agents. Surgical treatment may be needed for fibrotic lesions in the lower urinary tract. Untreated cases progress end-stage kidney disease requiring renal replacement therapy. The outcome of kidney transplantation in such cases is broadly similar to that in non-schistosomal patients.

Keywords: Bilharzial urinary tract; Glomerulonephritis; Amyloidosis; Cryoglobulinemic glomeruopathy; Salmonellosis; Hepatitis C.

Dept. of Neurology

1204. Update on Carotid Revascularization: Evidence from Large Clinical Trials

Foad Abd-Allah

Carotid Artery Disease - from Bench to Bedside and Beyond, Intech, (2014)

In the era of evidence-based medicine, doctors rely on clinical trials to guide their decisions. The best method of treating carotid stenosis is still debatable after six decades from the first carotid surgical revascularization performed. Despite the conduct and publication of dozens of trials on carotid revascularization, the truth remains shaggy. The interpretation of these trials is influenced by the design, inclusion criteria, credentialing of the operators and even their specialties. We will try to discuss the trials of carotid endarterectomy and carotid artery stenting trying to reach a conclusion of where is the truth regarding carotid revascularization. We will discuss the trials of CEA versus medical therapy, then the initials registries of CAS, then the trials that compared CEA against CAS, we will elaborate on the two techniques in peculiar situations and finally we will give a short notice about ongoing trials and future directions.

Keywords: Carotid artery disease; Revascularization; Clinical trials.

Dept. of Obstetrics and Gynecology

1205. Human Reproduction: Basic Anatomy and Physiology

Akmal Nabil El-Mazny

Book Published by Createspace Publishing, (2014)

The male and female reproductive systems consist of the gonads, testes or ovaries; the reproductive tract; the external genitalia; and the hypothalamic-pituitary unit. The functions of the reproductive system are to produce and deliver gametes, spermatozoa or oocytes, for sexual reproduction; and produce hormones that regulate reproductive function and secondary sex characteristics. Abnormalities in anatomic or physiologic function affect the development and delivery of gametes, and potential fertility. This book provides a comprehensive review of the anatomy and physiology specific to reproduction, emphasizing developmental and hormonal processes of gamete production, fertilization, implantation, and embryonic development. This review has been designed to meet the educational needs of physicians and allied health professionals who care for couples experiencing infertility. By developing a clear understanding of what is normal, you will better understand abnormalities affecting reproduction and the mechanisms behind treatment.

Keywords: Human; Reproduction ; Anatomy; Physiology.

1206. Cervical Cancer: Risk Factors and Screening

Akmal Nabil El-Mazny

Book Published by Createspace Publishing, (2014)

Cervical cancer is the third most common malignancy in women worldwide, and it remains a leading cause of cancer-related death for women in developing countries. Human papillomavirus (HPV) infection appears to be a necessary factor in the development of almost all cases of cervical cancer. Cancer screening using the Pap smear can identify precancerous changes in cervical cells. Recognition of the etiologic role of HPV infection in cervical cancer has led to the recommendation of adding HPV testing to the screening regimen. However, women who have symptoms, abnormal screening test results, or a gross lesion of the cervix are best evaluated with colposcopy and biopsy. HPV vaccines are currently approved for the prevention of HPV-associated cervical dysplasia and neoplasia. Treatment of cervical cancer usually consists of surgery in early stages, and chemotherapy and/or radiotherapy in more advanced stages of the disease. This book provides a comprehensive review of cervical cancer along with its risk factors and screening, which will be of immense value for physicians and allied health professionals. Keywords: Cervical cancer; Risk factors; Screening.

1207. Heart Disease in Pregnancy: Complications and Management

Akmal Nabil El-Mazny

Book Published by Createspace Publishing, (2014)

Pregnancy makes profound changes in the cardiovascular system that have the potential to adversely affect maternal and fetal health, especially in the presence of underlying heart conditions. Valvular heart disease in pregnancy is relatively infrequent, and tends to have a favorable prognosis if the risks are appropriately managed. Patients with congenital heart disease were traditionally advised against pregnancy; however, as our understanding of the unique issues facing this population has improved, many of those limitations have been removed. The presence of cardiovascular disease in pregnant women poses a difficult clinical scenario in which the responsibility of the treating physician extends to the unborn fetus. Therefore, women with cardiovascular compromise due to cardiac disease need specialist input and careful pre-, peri-, and post-partum follow-up. I hope that this book will provide a comprehensive review of heart disease in pregnancy along with its complications and management, and that you will be able to apply this information to your professional practice.

Keywords: Heart disease; Pregnancy; Complications; Management.

1208. Biomedical Statistics: Research Methods and Data Management

Akmal Nabil El-Mazny

Book Published by Createspace Publishing, (2014)

Medical research is necessary to establish the safety and effectiveness of specific health and medical products and practices. Analyzing the data and interpreting the results are the most exciting stages of a research project because these provide the answers to the study questions. This book discusses the basic process by which research studies are conducted, and show how to report results for publication. Section I provides an overview on the principles of research design; including an essential introduction to evidence-based medicine. Section II provides a comprehensive knowledge of conducting and interpreting biomedical statistics, and guides researchers through the processes of data management. Everything is easy when you know how – I hope that this book will provide the "know how" for all researchers, academicians and health-care professionals.

Keywords: Biomedical statistics; Research methods; Data management.

Dept. of Ophthalmology

1209. Repeat Trabeculectomy

Ahmed Mostafa Hassan Abdelrahman

Isgs Textbook of Glaucoma Surgery, Jaypee, (2014)

The chapter discusses The management options after trabeculectomy failure. Repeat Trabeculectomy is an option. The technique, difficulties and complications are discussed in details. **Keywords:** Repeat trabeculectomy; Glaucoma; Iop.

Dept. of Pediatrics 1210. Pediatric Review

Mostafa Zakaria Mohamed

Lap Lambert Academic Publishing, (2014)

pediatric review is one of the popular books especially in middle east countries. The first edition appeared in 2000, and since that time, it became a well established textbook for medical students for many years. It present the whole curriculum in a very simple and illustrated way

Keywords: Pediatric; Review; Undergraduates.

Dept. of Rheumatology

1211. Osteoporosis and Biologic Therapy : Basic Concepts and New Era

Tamer Mohamed Atef Mostafa Gheita

Book Published by Lap Lambert Academic Publishing, (2014)

Osteoporosis is a chronic disease affecting millions of people worldwide and is characterized by compromised bone strength predisposing to increased risk of fracture. Modern discoveries in bone biology demonstrate that Receptor Activator of Nuclear factor kappa-B Ligand (RANKL) is an essential mediator of osteoclast formation, function and survival with Wnt signaling involvement. New biologic therapies are used to treat various autoimmune diseases and recently for osteoporosis. This book throws light on the new era in the management of osteoporosis and on the new biologic agents with potential therapeutic effects. The book presents an overview on the basic concepts of osteoporosis and the evolution of biologic therapies. It is designed to provide a useful and informative outline for medical students and professionals and the content is sufficiently comprehensive serving as a reference for clinicians dealing with osteoporosis patients. Readers will take a worthy idea on the disease and the advanced concepts in its management. This book should prove useful in throwing light on biologic therapy and its role in osteoporosis, and in translating these concepts to improve human health.

Keywords: Osteoporosis; Biologic therapy.

1212. Osteoarthritis and Gene Therapy: Back to the Future

Tamer Mohamed Atef Mostafa Gheita

Book Published by Lambert Academic Publishing, (2014)

Osteoarthritis (OA) is the most common chronic joint disease in the world. Pathological changes in all joint tissues are the impetus for considering OA as a disease of the joint 'as an organ', resulting in joint failure. Although the management of OA remains under-provided, this book provides a new insight on the future of gene therapy after going through the preceding advances in therapeutic discoveries. An overview of the role of gene therapy in other rheumatic diseases was considered. This book presents a comprehensive description of the basics of OA and gene therapy with in-depth discussion. It provides advanced information of such a mysterious and interesting therapeutic approach. The book is designed to provide a useful and informative overview for rheumatology students and professionals and the material included is sufficient to serve as a reference for clinicians dealing with OA patients. The readers will take a worthy idea on the disease, updates in medical treatments and the advanced concepts in its management. This book should prove useful in throwing light on gene therapy and its role in OA, and in implementing these updates to improve human health and quality of life.

Keywords: Osteoarthritis; Gene therapy.

1213. Measurement of Malondialdehyde, Glutathione, and Glutathione Peroxidase in SLE Patients

Tamer Mohamed Atef Mostafa Gheita

Systemic Lupus Erythematosus, Springer New York, (2014)

Oxidative stress contributes to chronic inflammation of tissues and plays a central role in immunomodulation, which may lead to autoimmune diseases such as systemic lupus erythematosus (SLE) and antiphospholipid syndrome. Markers of oxidative damage include malondialdehyde (MDA), antioxidant scavengers as glutathione (GSH), and glutathione peroxidase (GSH Px), which all correlate well with SLE disease activity. Amelioration of some clinical manifestations of SLE may be expected by targeting lipid peroxidation with dietary or pharmacological antioxidants. Here, we describe the detection of the key players of oxidant/antioxidant imbalance in SLE. **Keywords:** SLE; MDA; GSH; GSHPX.

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Faculty of Pharmacy

Dept. of Pharmaceutical Technology and Industerial Pharmacy

1214. Buccal Systems to Enhance Buspirone Hydrochloride Bioavailability

Ahmed Roshdy Abd El-Mohsen Abd Alla Fares

Book Published by Lambert Academic Publishing, (2014)

Buccal delivery systems involve the administration of the drug through the buccal mucosal membrane lining of the oral cavity bypassing the first-pass effect. Buspirone hydrochloride is an anxiolytic drug which undergoes extensive first-pass metabolism that results in a very low oral bioavailability (4%). In addition, buspirone hydrochloride has short and variable elimination halflife (approximately 2.4h). so it is a good candidate for the preparation of sustained release buccal dosage forms. The aim of this work was to formulate and evaluate buspirone hydrochloride buccal mucoadhesive cup and core tablets and sponges to sustain its action and improve its systemic bioavailability. The results of the in-vivo performance study confirmed that the prepared cup and core buccal tablets succeeded in increasing the bioavailability of buspirone 5.6 folds in comparison to the oral immediate release market product.

Keywords: Buspirone hydrochloride; Buccal; Cup and Core tablets; Chitosan sponges.

Dept. of Pharmacognosy

1215. Herbal and Microbial Products for the Management of Obesity

Essam Abdel-Hamid Abdel-Sattar

Anti-Obesity Drug Discovery and Development, Bentham Science, (2014)

Obesity is a global epidemic and one of the major health burdens of modern times. The prevalence of obesity is increasing worldwide; it constitutes a serious problem in developed as well as developing countries. Beside adults, the number of obese teenagers and children in particular has dramatically increased. Obesity is characterized by accumulation of excess fat in adipose tissues in an extent to produce adverse effects on health, leading to a reduction in life expectancy and/or a raise in health hazards. People are classified as overweight (pre-obese) and obese on the basis of the Body Mass Index (BMI), crude measure which compares weight to height. Obesity is usually associated with and can lead to many disease conditions, mainly type-2 diabetes, cardiac diseases, hypertension, sleep apnea, cerebrovascular incidents, osteoarthritis and certain types of cancers. The tremendously increasing number of reviews on the subject of obesity obviously reflects the amount of investigations currently dedicated to this field. The core of obesity treatment is dieting and physical exercise. The consumption of energy-dense food is reduced versus an increase in that of dietary fibers. Conventional medication relies mainly on drugs which either reduce appetite or inhibit fat absorption. However, drug treatment of obesity despite short-term benefits, is often associated with undesirable harmful side effects, rebound weight gain after discontinuation of drug intake, and the incidence of drug abuse. If diet, exercise and pharmacological therapy are ineffective; surgical intervention may be useful. The anti-obesity potential of natural products if

accurately explored might provide an excellent alternative strategy for the scientifically-based development of safe and effective drugs. Especially that, they are actually widespread for this purpose as nutritional supplements. OTC anti-obesity natural products are mostly complex in terms of chemical composition and may exert a variety of pharmacological actions leading to weight loss. These include: inhibition of lipases activity, suppression of appetite, stimulation of energy expenditure, inhibition of adipocyte differentiation and regulation of lipid metabolism. A variety of natural products, including crude extracts and isolated compounds induce body weight reduction and prevent diet-induced obesity. Examples of these constituents are polyphenols, triterpenoidal and steroidal saponins, pregnane

glycosides, alkaloids, abietane diterpenes and carotenoids amongst others. In addition, a number of lipase inhibitors are obtained from microbial sources The present chapter is intended to survey the vast array of natural products from plant and microbial origin currently suggested as conventional drug alternatives for management of obesity. This will cover the natural sources, extracts, safety assessment and structures of bioactive compounds, as well as the biochemical markers used to evaluate the anti-obese effect and/or determine the mechanism of action. New drug targets that may play a role in the regulation of body weight will also be considered.

Keywords: Anti-obesity; Herbal medicine; Natural products; Phytochemicals; Plants; Micro-organisms; Mechanisms.

Dept. of Pharmacology and Toxicology

1216. Rheumatoid Arthritis: Therapeutic Potentials of Key Players

Sanaa Abdel Baky Kenawy

Book Published by Lambert Academic Publishing, (2014)

Our understanding of the pathogenic mechanisms and possible treatments of autoimmune diseases has significantly increased over the past decade. Rheumatoid arthritis (RA) is a systemic autoimmune disease, afflicting ~1% of the population. RA is characterized by synovitis, pannus formation and bone erosion. New biologic therapies are used to treat various autoimmune diseases and recently for RA. This book throws light on the new era in the management of RA and on the medications with potential therapeutic effects. The book presents an overview on the pathogenesis of the disease, therapeutic targets and the evolution of therapies. It is designed to provide a useful and informative outline for medical students and professionals and the content is sufficiently comprehensive serving as a reference for clinicians dealing with rheumatoid arthritis patients. Readers will take a worthy idea on the etiology of the disease and the advanced concepts in its management. This book should prove useful in throwing light on the medications used in the management of RA in order to improve their quality of life and heal

Keywords: Rheumatoid arthritis; Key players; Hydroxychloroquine.

1217. Neuroprotection in Experimentally Induced Parkinson'S Disease in Rats

Noha Fawzy Abdelkader

Book Published by Lap Lambert Academic Publishing, (2014)

Parkinson's disease is a chronically progressive age-related neurodegenerative disease. Currently effective treatment strategies are aimed at improving the motor impairment which results from reduced dopamine levels, with the primary goal being to improve motor function sufficiently to minimize disability. However, it is important to employ strategies that provide symptomatic benefit, while delaying as much as possible the development of motor fluctuations and dyskinesia induced by dopaminergic therapy. Thus, neuroprotection therapies that aim to interfere with the ongoing process of neuronal cell death, in order to preserve the remaining neurons and stop disease progression are expected to have a major impact on the treatment of Parkinson's disease.

Keywords: Parkinson'S disease; Neuroprotection; Motor fluctuations.

Faculty of Nursing

Dept. of Community Health Nursing

1218. Bloodborne Diseases Prevention and Infection Control for Nurses what Nurses Should Know About Bloodborne Diseases Hazards and Prevention?

Ebtesam Moawad Elsayed

Book Published by Lap Lambert A Cademic Publishing Company Germany, (2014)

Nurses are dangerously exposed to a variety of occupational hazards on a daily basis. Many studies showed that third world countries have registered very high incidences of needle-sick and sharps injury, and other blood-borne diseases (hepatitis B, C and Aids) mainly due to improper handling, use, and methods of disposal of sharps among nurses being the front-line providers of health care. Inadequate waste disposal systems extend the problem beyond health personnel to cleaners, laundry personnel, porters, 'rag pickers' and the general community. Although compliance with standard precautions in hospitals is well documented, there is limited research specific to community nurses. Therefore, the aim of this study is to examine the impact of a blood-borne prevention program on compliance with infection control standard precautions among nurses in family health centers, El-Fayoum governorate, Egypt. Four family health centers currently implementing family medicine system at El-Fayoum Governorate was selected. Then all nurses involved in primary health care activities were included in the current study. An interviewing questionnaire nurses' self- reported knowledge, attitude and practices as well as an observational checklist for both work environment and observed practice based on MOH, WHO, CDC, and OSHA standards were used. A significant relationships indicating an improvement in nurses levels of nurses' self- reported knowledge, attitude and practices as well as compliance level. Around one fourth of nurses had sucked with needle-sticks. Furthermore, a relationship was found between exposure to needle-sticks and sharps injury, and nurses handling practices. The current study recommending provision of obligatory three full hepatitis B vaccine series for all nurses as well as replication of the study on a nationwide large scale project to obtain more generalization of the results and to gain more consciousness about prevention of blood-borne diseases problem in Egypt.

Keywords: Blood-borne diseases; Needle-sick and sharps injury; Knowledge; Attitudes; Practices; Infection control standard precautions.

1219. Ergonomics Intervention for Work-Related Low Back Pain: Human Spinal Column and Work

Eman Mahmoud Seif El-Nasr

Book Published by Scholars' Press, (2014)

The aim of this study was to develop, implement ergonomics intervention program for workers who have work-related low back pain and to evaluate the effectiveness of this ergonomics intervention program. The biopsychosocial model of low back pain was used as a conceptual framework. A total sample of 150 (80 for study and 70 for control) workers at production and administrative sectors who experienced work-related low back pain were selected from the workers medical files in the health clinic. Interviews were used to collect data through; assessment sheet, sheet of functional capacity assessment and ergonomics checklist for both groups before, immediate and three months after intervention. The results of this study revealed that after the intervention, significant differences were detected in; intensity, frequency and duration of pain added to achievement of daily activity as personal care, work duties, sleeping and frequency of bed rest among both groups. Workers' ability to stand, sit, lift weight, walk and bend back showed significant differences among both groups after intervention. Regarding ergonomics assessment, differences were found among both groups for infrequent long reaching, change of posture, infrequent bending, and fitness of seat with workers' body and support of; back, feet and hand. Statistically significant differences were found regarding total scores of disability as a result of work related low back pain and between degrees of disability with; infrequent long reaching, change of posture, infrequent bending and back support during sitting for work achievement. Concerning psychosocial influences of work, only work relationships showed differences after intervention. The findings of this study support the research hypotheses that workers who received ergonomics intervention program experienced less work-related low back pain than control group. In conclusion, the workers had work-related low back pain were affected physically, psychologically, economically, socially and recreationally. This study recommended that ergonomics intervention programs should be available and should have an active role in all health services activities for workers with low back pain. Nursing role is essential in any ergonomics intervention program for workers with work-related low back pain.

Keywords: Work-related low back pain; Prolonged sitting; Ergonomics assessment; Ergonomics intervention.

1220. Community-Based Rehabilitation, its Impact on Disabled Children

Gehan Moustafa Ismail Moustafa

Book Published by Scholars' Press Publishing is A Trademark of: Omniscriptum Gmbh & Co. Kg, (2014)

The study aims at planning and implementing a rehabilitation educational program following the CBR model for: training of the caregivers to care for their disabled children and evaluating the impact of the rehabilitation educational program on the disabled children. Demographic data were collected using a structured questionnaire designed by the investigator. A questionnaire tool was developed by the investigator to determine the caregiver's knowledge about disability. The investigator developed a rating scale to collect data about caregiver's perception toward disability. A checklist was developed by the investigator to assess what the caregiver can actually do regarding managing their disabled children. The rehabilitation educational program was conducted in 12 months from January 2001 to January 2002 at Nahia village, Giza governorate. Results revealed that the mean scores of the total pre-post test of caregiver's knowledge and skills were increased from pre to post rehabilitation educational program. In relation to perception scale, a slight change occurs in negative perception of caregivers from pre to post rehabilitation educational program but without any significant differences. Regarding caregiver's skills, their mean scores were increased from pre to post rehabilitation educational program. As regard child development, results showed that mean scores of child development in motor, language, cognitive, social, self care and general development have increased from pre to post rehabilitation program. The present study results suggest the need to develop inservice training program for nurses on early detection and prevention of disability. Also it recommend that rehabilitation educational programs need to be conducted through specialized institutes in the communities of their catchement. Keywords: Community; Based rehabilitation; Disabled children.

Dept. of Maternal and Newborn Health Nursing 1221. "Assessment of Common Types of Vaginal Infections Among Women

Amel Dawod Kamel Gudia

Book Published by Lap Lambert Academic Publishing is A Trademark of: Omniscriptum Gmbh & Co. Kg, (2014)

The aim of this exploratory study was two fold; to assess the common types of vaginal infection among women during childbearing period; and to prepare a plan of action for women suffering from vaginitis (10%) of sample". Four hundred women having abnormal vaginal discharge, and attending Gynecology Clinics at El-manial University Hospital, Cairo University, Egypt were recruited for the studyThe prevalence of vaginal infections among the total sample was 58.8%. Vulvo-vaginal Candidiasis was diagnosed in 156 women (41%), Bacterial Vaginosis was identified in 39 women (10.2%), twenty three women (6%) had Trichomonas Vaginalis, and six women (1.6%) had mixed infection. The results indicated that subside the women complaint and normal vaginal swabs with statistically significant difference with highly statistically significant difference among women who were receiving health education and follow up. The study recommended that accurate diagnoses based on laboratory investigations and health education which helps in reducing the incidence and recurrence of vaginal infection.

Keywords: Common types of vaginal infection; Prevalence; Impact of health education.

1222. Impact of Omega-3 Fatty Acids on the Occurrence of Preeclampsia

Abeer Mokhtar Abu Bhatia Orabi

Impact of Omega-3 Fatty Acids on the Occurrence of Preeclampsia Rct, Lambert Academic Publishing, (2014)

Impact of nutritional protocol of omega-3 fatty acids on the occurrence of preeclampsia among high risk pregnant women: "an evidence based approach"

Background: Supplementation with Omega-3 Fatty Acids has been proposed to reduce the risk of preeclampsia, but the effects of this intervention are still uncertain.

Aim: The aim of this study is divided into two parts: 1) to analyze previous studies related tosupplementation of omega-3 fatty acids and occurrence of preeclampsia utilizing systematic review approach and 2) to examine the impact of a nutritional protocol of omega-3 fatty acids on the occurrence of preeclampsia among high risk pregnant women (randomized controlled trial).

Design: A combination of two designs was used for this study, a systematic review of previous studies as well as a randomized controlled trail.

Setting: The randomized controlled trial was conducted at antenatal outpatient, El Manial University hospital. In addition to, delivery ward (section 10) and post natal unit in the department of obstetrics and gynecology.

Sample: Concerning sample characteristics among the included studies, all were healthy pregnant women with risk factors for developing preeclampsia and not diagnosed with any medical disorder. While, 400 high risk pregnant women were randomly assigned to either omega-3 supplementation (n=195) as a study group or routine antenatal care (n=205) as a control group throughout the RCT.

Interventions: Online databases were searched as well as searching in Egyptian Journals of nursing and Obstetrics and Gynecology for Egyptian RCTs of relevant studies. Besides, nutritional protocol of omega-3 fatty acids has been applied from the beginning of the RCT till delivery or diagnosis of preeclampsia. Outcomes: Primary out come was the development of preeclampsia. While, secondary outcomes were; mode of delivery, the occurrence of maternal complication, preterm birth, low birth weight or still birth, and the need for NICU. Five tools were used for data collection in this trial; two of them were designed by the researcher: interviewing questionnaire schedule and a follow up and assessment sheet. In addition to, research report critiquing guidelines (AMA guidelines), the data extraction sheet and quality assessment form (randomized controlled trials) for the systematic review.

Results: The trials of omega-3 fatty acids supplementation showed a decreased incidence of preeclampsia in high-risk pregnant women. While, results of the current RCT revealed, a statistically significant difference between the groups in relation to the occurrence of preeclampsia

following the nutritional protocol (P < 0.05). While, there were no significant differences between the groups in relation to mode of delivery, the occurrence of maternal complication, the risk of

preterm birth, low birth weight, still birth and the need for NICU (P>0.05).

Conclusion: From the results of the current RCT and the systematic review it could concluded that, supplementation with omega-3 fatty acids during the second or third trimester of pregnancy may reduce the risk of preeclampsia in high risk pregnant women.

Keywords: Omega-3 fatty acids; High risk pregnancy; Preeclampsia; Supplementation.

1223. Prenatal Counseling for Intrauterine Invasive Procedures

Amel Shaaban Abdelmonem

Book Published by Lap Lambert Academic Publishing ist Ein Imprint Der/Is A Trademark Omniscriptum Gmbh & Co.Kg, (2014)

The main indication for undergoing prenatal invasive procedures is a history of having a child or more affected with congenital disease which might related to the high percentage of consangious marriage in Egypt. However, prenatal invasive procedures are accompanied with higher levels of anxiety among women. The current study revealed that application of a structured prenatal informative counseling administered for pregnant women undergoing diagnostic or therapeutic interventions significantly decreased their anxiety level.

Keywords: Prenatal counseling; Anxiety; Intrauterine; Interventional; Procedures.

1224. Risk Factors for Fetal Congenital Anomalies Among Pregnant Women

Amany Mosad Ahmed, Shadia Abd. El Kader Hassan and Azza Ali Abd. El-Hamed

Book Published by Lambert Academic Publishing, (2014)

Background, congenital anomaly is a defect that is present at birth, and can result from either genetic, environmental factors, or both. Aim, was to assess the risk factors which may lead to fetal congenital anomalies. Design, a descriptive research design was adopted. Sample, a total of 265 pregnant women was recruited according to the following criteria: pregnant in a fetus with a congenital anomaly; at any reproductive age; no specific gravidity or parity; single or multiple gestations. Setting, Fetal Medicine Unit at El-Manial University Hospital. Tools, two tools were constructed and filled in by the researcher: 1) fetal assessment sheet 2) interviewing questionnair schedule. Results, age range of the pregnant women was 17-44 years with a mean of 26.63 + 5.37years. Seventeen percent of them cannot read and write while, 20% had university education. Renal anomalies, central nervous system (CNS), muscloskeletal, and cardiovascular anomalies were the most common congenital anomalies constituted 36.6%, 34.7%, 20.8%, 10.6% respectively of the total anomalies. Regarding to risk factors for congenital anomalies, 45.7% of the pregnant women had first degree consanguinity, 16.6% had a family history of a congenital anomalies, 19.2% had a previous child with a congenital anomalies, 29.1% gave a history of consuming drugs during present pregnancy, 18.5% of the pregnant women live near industrial source and 21.5% of them experienced infection during present pregnancy. Conclusion, renal, CNS and muscloskeletal anomalies were the most common type of congenital anomalies. Positive consanguinity, family history for congenital anomalies, previous child with a congenital anomaly, consuming drugs during pregnancy, living near industrial source and exposure to infections during pregnancy, were the most common risk factors associated with congenital anomalies. Recommendations, premarital examination for consanguineous marriages should be encouraged. Antenatal care is very important for suspection and early detection of congenital anomalies.

Keywords: Risk factors; Congenital anomalies; Pregnant woman.

Dept. of Medical-Surgical Nursing 1225. Administration of Medications Via Nasogastric Tube Nurses' Knowledge and Practices

Maha Salah Abdullah Ismail

Book Published by Lambert Academic Publishing, (2014)

Administering medication via enteral tube is predominantly a nursing responsibility across countries. It is important to identify what nurses actually know and do when giving enteral medication for critically ill patients to ensure patient's safety and prevent complications. The aim of this study is to assess the nurses' knowledge and practices about administration of medications via nasogastric tube (NGT) among critically ill patients at Cairo University Hospitals. Sample consists of sixty bedside male and female nurses who are working in the different Critical and Intensive Care Units. Descriptive/exploratory research design was utilized in the current study. This study was conducted at the different Critical and Intensive Care Units at El-Manial Specialty Hospitals affiliated to Cairo University. Three tools were utilized to collect data pertinent to the study; Nasogastric medication administration nurses' knowledge questionnaire schedule, Nurses' opinionaire sheet and Nasogastric medication administration observational checklist. The nurses were interviewed for answering the knowledge questionnaire schedule and opinionaire sheet then each nurse was observed during administration of medication via NGT for three different times using nurses' observational check list. The mean of the three observations was calculated. Findings of this study shows that the majority of the studied sample were females, married and having diploma qualification as well, more than two third of them their age ranged between 26 - 45 years. More than half of them had more than 10 years of experience. All of them were having an unsatisfactory level of knowledge and practices. Results of the present study indicated that there is a gap between nurses' knowledge and practices as compared to the standard guidelines about medication administration via nasogastric tube. The study recommended that enrichment of the Critical Care nurses at El-Manial Specialty Hospital knowledge and practices related to administration of medications via nasogastric tube according to the standard guidelines will be helpful to ensure patient safety and provide cost effective care. Also replication of this study on larger probability sample at the different geographical location at Egypt is highly recommended.

Keywords: Nasogastric tube; Administration of Medication via nasogastric tube; Critically III patient; Nurses' knowledge; Nurses practices.

1226. Care of Acute Spinal Injuries Patients

Amany Farag Hassan Mohammed

Book Published by Lampert Academic Publishing (Lap), (2014)

Traumatic spinal injuries are perhaps the most devastating orthopedic injury. They produce dramatic change in the patient's life. Rehabilitation of these injuries has increasingly important role, and nurses are the key person in directing successful rehabilitation effort to assure patients attain functional capabilities, avoid further disabilities, and prevent complications. Therefore in this book, the author determine the impact of a designed protocol of nursing care on acute spinal injuries patient's outcomes including , functional status , life satisfaction, patients, complications. A sample of thirty adult patients (as own received the protocol of nursing care had high improvement in functional status, life satisfaction and exposed to minimal secondary complications. So comprehensive protocol of nursing care for acute spinal injuries patient is recommended to be available in all orthopedic wards to improve patient's outcomes. **Keywords:** Spinal injuries; Functional status; Life satisfaction; Patient'S complications; Physical exercises; Rehabilitation program.

1227. Factors Affecting Quality of Life of Patients Undergoing Hemodialysis

Amal Mohammed Mohammed El-Shahied

Book Published by Lumbert Acadimic Publisher, (2014)

Hemodialysis (HD) is one of the treatment modalities for end stage renal disease patients (ESRD). ESRD and dialysis affects the daily lives of many patients and families confronted by changes in health status, lifestyles, and roles, leading to impaired QoL. Therefore, this study was conducted to assess the QoL exhibited by patients undergoing HD and the factors that might affect their QoL. A descriptive exploratory design was utilized in this study. A purposive sample of 100 adult male and female patients undergoing HD was recruited from two renal insufficiency and dialysis units at one of the university hospitals in Cairo governorate. Interviewing schedule questionnaire and Kidney disease quality of life short form (KDQoL-SF TM) tools were used to achieve the purpose of this study. Findings of this study indicated that, QoL of patients undergoing HD was significantly impaired, numerous clinical and socio-demographic factors were found to have a statistically significance difference with QoL total score and its subscales, such as gender, occupation, income, cardiovascular disease, hepatitis C virus, but the most powerful predictors of impaired QoL are psychosocial factors such as sleep, emotional-wellbeing, and social support. Finally, there was a statistical significance difference between KDQoL-SF subscales. To conclude there are numerous factors affecting QoL of ESRD patients. Identifying and understanding the QoL of patients undergoing HD and its determinant factors are a fundamental aspect to help health care providers especially nurses in establishing methods that would help patients to lead more productive lives and designing and implementing nursing interventions according to patients' needs and concerns, thus continuous monitoring and evaluating QoL of patients undergoing HD is highly recommended.

Keywords: End stage renal disease; Quality of life; Hemodialysis; Psychosocial factors.

1228. Nurses' Knowledge and Practices in Patients Undergoing CABG

Sanaa Lotfy Abd Elghany

Nurses' Knowledge and Practices in Patients Undergoing Cabg, Lambert Academic Publishing, (2014)

patient undergoing coronary artery bypass graft surgery deserves to have confidence that the professional nurse is knowledgeable, caring, efficient, and effective in providing necessary preoperative care. Proper preparation of the patient and

significant others, expertise during the intraoperative phase, and a thorough knowledge base combined with skill and compassion of the nursing staff during the postoperative phase increase the likelihood of a positive outcome for the patient . The aim of the current study was to assess nurse's knowledge and practices regarding care of mechanical ventilator and chest tube among postoperative CABG patients at Cairo University Hospitals. A descriptive exploratory design was utilized in the current study. A Sample of convenience 40 diploma nurses and B.Sc.N, working in the cardiothoracic ICUs of Cairo University Hospitals were recruited for a period of 6 months constituted the study subjects. Two tools were utilized to collect data for this study namely: Sociodemographic data sheet and nurse's knowledge assessment sheet about caring of mechanical ventilator and chest tube. Chest tube and mechanical ventilator competency checklist to evaluate nurse's practices related to mechanical ventilator and chest tube. The main study findings revealed that two fifths of nurses aged between 20-25 year old, half of them had experience ranged between 5 to less than 10years and at least 5years of working in cardiothoracic ICUs, two thirds of them were diploma nurse. Most of studied sample have average level of knowledge regarding care of mechanical ventilator and chest tube with score less than 85%, also there is inadequate nurses practices regarding care of mechanical ventilator and chest tube.

Total score of nurses' practices regarding care of mechanical ventilator was 69.10% and care of chest tube was 60.25%. Based on results of the present study, it can be concluded that, nurses' knowledge level is unsatisfactory regarding mechanical ventilator and chest tube, so the study recommended that there must be enhancement of cardiothoracic nurses' knowledge regarding care of mechanical ventilator and chest tube through continuous educational program.

Keywords: Cabg; Chest Tube; Mechanical Ventilator; Knowledge and Critical Care Nurses.

1229. Nurses' Knowledge / Practice for the Patients Undergoing Hemodialysis

shimaa raafat ali abd elhalim

Book Published by Lambert Academic Publishing, (2014)

Hemodialysis is the most common method used to treat advanced and permanent kidney failure. Although it becomes the best procedure for most patients, it still a complicated therapy that requires a coordinated effort from whole health care team, including nephrologists, dialysis nurse, dialysis technician, dietitian, and social worker. Nephrology nurse should assist the patients in managing their health problems. Therefore; this study aimed to assess nurses' knowledge and practice provided to the patients undergoing hemodialysis.

A descriptive exploratory research design was used to attain the aim of the study. A convenient sample of 65 male and female nurses working in hemodialysis units in a university were selected over a period of six months. Two tools were developed by the investigator to collect data, (1) Knowledge assessment sheet consists of two parts; part one covers socio demographic data while part two covers knowledge assessment data. (2) Hemodialysis nurses' practice checklist. Structured interviews and direct observation were utilized for data collection. Results, more than half of the study sample had average knowledge regarding hemodialysis, while all of the study sample had an unsatisfactory level of practice regarding care provided to patients undergoing hemodialysis. In conclusion, knowledge regarding hemodialysis within average level while the level of hemodialysis nurses' practice was unsatisfactory. The study recommended that, the hospital should institute regular contenuuing training for nurses regarding care to the patients undergoing hemodialysis. **Keywords:** Hemodialysis; Knowledge; Practice.

1230. Predictors of Hospital Readmissions After Open Heart Surgery

Shaimaa Ramadan Abdelnaby

Book Published by Lambert Academic Publishing, (2014)

Background: Early hospital readmissions after cardiac procedures are believed to be associated with higher in-hospital mortality and may predict poor outcomes. In addition high rate of readmission following discharge is associated with increased cost of care. Awareness of factors that predict increased risk for hospital readmission after cardiac surgery may improve the ability to reduce early readmission rates among patients undergoing the procedure. Aim: This study was conducted to assess predictors for hospital readmission after cardiac surgery. Research design: A descriptive exploratory design was utilized in the current study. Sample: A sample of convenience including 115 of adult patients who were admitted to cardiothoracic departments at Kasr El Aini Hospital, Cairo University over a period of six months were recruited. Tools: Four tools were utilized to collect data pertinent to the current study: Socio-demographic/medical data sheet; Perioperative open heart surgery assessment Sheet; Hospital readmission assessment sheet; and The LACE index Scale. Findings: Males represented (67.8%)of the studied sample , of the 115 patients discharged from the hospital, 18 % (21) of patients required a second hospital and ICU readmission .Main readmission problems reasons for were wound (42.9%), congestive heart failure (14.3%), atrial fibrillation (9.5%), pleural effusion (9.5%), renal failure (9.5%) and respiratory failure (4.8%).Binary logistic regression analysis revealed that preoperative renal failure, failure of early extubation (mechanical ventilation > 8 h), reexploration for bleeding, perioperative use of IABP, postoperative dysrhythmia, postoperative heart failure and postsurgical (ICU) LOS (>3 day) were independent predictors for readmission. Conclusion & amp; Recommendations: It can be concluded that readmission following discharge is an important adverse outcome of cardiac surgery that needs continued attempts to explore and manage the risk factors of readmission. So the study recommended that identification & amp; close monitoring are essential for patients with any of these risk factors and might help to decrease risk for readmission.

Keywords: Open heart surgery; Hospital readmission; Predictors.

1231. Quality of Life of Patients with Chronic Liver Disease and Cirrhosis

Naglaa Fathy Afifi Youssef

Book Published by Lap Lambert Academic Publishing, (2014)

Study of quality of life and health-related quality of life has grown up during the last few decades particular Study of quality of life and health-related quality of life has grown up during the last few decades particularly among people with liver disease. Measurement of quality of life has become an important patient reported outcome that reflects the success of therapy or medical procedures in clinical studies. This book has four parts. Part 1 aims to discuss liver cirrhosis as a worldwide health problem and a national health problem in Egypt. It discusses the epidemiology of liver cirrhosis and liver disease, causes, the epidemic of the hepatitis C virus (HCV) in Egypt, complications and challenges of treating patients with cirrhosis. Part 2 explains the nature of Quality of Life (QOL), beginning with defining QOL, then it discusses the relationship between QOL and health. An examination of Health-Related Quality of Life (HROOL) in terms of its definition, domains and the importance of measuring HRQOL are critically discussed. Part 3 discusses the term of social support beginning with defining social support, then presenting the types and sources of social support, and discussing the underlying mechanism of social support. Then, relationship between social support and HRQOL, and available paradigms of measuring social support are discussed. Finally, in order to gain more insight about HRQOL, symptoms experience and perceived social support in liver disease patients and its associated factors it was essential to review, analyse and discuss litterateurs, see part 4.

Keywords: Quality of life; Chronic liver disease; Cirrhosis; Review of literature; Social support; Symptom.

1232. The Arabic Version of the Liver Disease Symptom Index 2.0

Naglaa Fathy Afifi Youssef

Book Published by Lap Lambert Academic Publishing, (2014)

This book describes and justifies the pilot study that was conducted to translate and test liver disease symptom index-2.0 (LDSI-2.0) into Arabic. The book presents the translation guideline that was adopted to translate the LDSI-2.0 into Arabic. Finally, the steps of cross-cultural adaptation of the translated LDSI-2.0 are clarified.

Keywords: Liver disease symptom index; Quality of life; Symptom; Egypt; Liver disease; Cirrhosis.

1233. Thyroid Patients' Problems & Needs with Radioactive Iodine Therapy

Hanan saber abd elfatah abd el gayed

Book Published by Lambert Academic Publishing, (2014)

Thyroid gland is a unique organ, has a natural avidity for iodine that isn't manifested in any other tissue of the body. Indeed, oral administration of I131 has been a commonly accepted procedure for treatment of benign and malignant conditions of the thyroid since the 1940s. Patients who will receive radioactive iodine RAI therapy should be provided by comprehensive information about it, to overcome their misconceptions, problems and needs. This study was aimed to assess patients' knowledge, needs and problems among patients undergoing RAI therapy. A descriptive exploratory design was utilized in this study.

A sample of Convenience 65 adult patients with thyroid disorders admitted to the Nuclear Unit at Cairo University hospitals and scheduled for RAI therapy over a period of six months were recruited.

Three tools were used to collect data for the present study namely: sociodemographic characteristics and previous thyroid management questionnaire, patient's knowledge about the treatment (RAI) assessment questionnaire, and radioactive iodine patient's needs and problems assessment questionnaire. The main findings of the study revealed that about two thirds of study sample had lack of knowledge and need to know about RAI treatment and its precautions, especially knowledge about the post-treatment period. As well they complained from physical, psychological, social and financial problems and reported they need help in many areas of them. Conclusion and recommendations:

The nuclear nurse should provide a comprehensive assessment of patients' problems and needs and their informational needs to maximize the effectiveness of RAI therapy. Multidisciplinary team should be collaborating in management of patients undergoing RAI therapy and helping them to overcome their problems and needs. The nuclear nurses should inform those patients about different resources that can help patients during their disease process.

Keywords: Assessment; Thyroid; Knowledge; Needs; Problems; Radioactive Iodine (Rai); Therapy.

Dept. of Mental Health Nursing

1234. Application of Cognitive Behavior Oriented Program for Violent Prisoners

Eman Mohamed Ibrahim El genady

Book Published by Jharrison, (2014)

Several well conducted meta-analyses have identified cognitivebehavioral therapy (CBT) as a particularly effective intervention for reducing the recidivism of offenders. Pearson, Lipton, Cleland, and Yee (2002), for instance, conducted a metaanalysis of 69 research studies covering both behavioral (e.g., contingency contracting, token economy) and cognitive behavioral programs. They found that the cognitive-behavioral programs were more effective in reducing recidivism than the behavioral ones, with a mean recidivism reduction for treated groups of about 30%. Similarly, a meta-analysis by Wilson, Bouffard, and MacKenzie (2005) examined 20 studies of group-oriented cognitive behavioral programs for offenders and found that CBT was very effective for reducing their criminal behavior. In their analysis, representative CBT programs showed recidivism reductions of 20-30% compared to control groups. But, in the final analysis, they all address and seek to help the person change their own decision making process and then examine the consequences of their decisions and behavior. This is precisely the approach of the Criminon program (Criminon International, 2005).

Keywords: Cognitive; Behavior; Violent; Prisoners.

1235. Causes and Management of Psychiatric Patients' Aggression & Violence

Eman Mohamed Ibrahim El genady

Book Published by Opomogaibog, (2014)

Aggression and violence have always been difficult behaviors for any society to manage, and when such behaviors present in psychiatric patients, special approaches and interventions need to be considered. The psychiatric nurse has a crucial role in preventing and managing aggressive behaviors. Therefore, this study was conducted to assess and compare causes and management of aggression and violence among psychiatric patients as perceived both by nursing staff and patients. A descriptive comparative design was utilized in this study. A sample of convenience of 200 psychiatric patients and nurses were recruited from the inpatient departments and outpatient clinic of EL-Abbassia Mental Health Hospital in Cairo. Socio-

demographic/medical data sheet and causes and management of aggression and violence attitude scale were used to achieve the purpose of this study. A semi-structured interview was used to collect the data from both the studied patients and nurses. Findings of this study indicate that, psychological, interactional and environmental factors are the most frequent causes for aggression and violence among psychiatric patients. The most common types of aggression from both studied samples were verbal aggression, followed by physical aggression against others. There were statistically significant differences between nurses and patients responses as regard talking the patient down, and speaking in calm and low voice. To conclude it is important for nurses to remember that aggression and violence may not be solely a result of patient pathology but may be also a reaction to the situation in which patient find himself/herself. Periodical inservice training programs should be designed and implemented for nursing staff in prediction and management of aggressive and violent behaviors in psychiatric settings. More attention should be paid to educate patient alternative coping methods, by encouraging them to participate in group teaching stress management activities through the day treatment program.

Keywords: Causes; Management; Aggression; Violence; Psychiatric patients; Nursing staff.

1236. Self-Perceived Interpersonal Competence and Ways of Coping Among Schizophrenic Patients

naglaa mostafa gaber

Book Published by Lap Lambert Academic Publishing Ist Ein Imprint Der/Is A Trademark Omniscriptum Gmbh & Co.Kg, (2014)

Schizophrenic patients typically have problems relating to others and demonstrate global deficits in social skills. The psychiatric nurse has a crucial role in identifying interpersonal skills and deficits in schizophrenic patients. Therefore, this study was conducted to assess interpersonal competence and ways of coping among schizophrenic patients. A descriptive correlational design was utilized in this study. A sample of convenience of 100 schizophrenic patients were recruited from the Out-patient Clinics El-Abbassia Mental Health Hospital in Cairo. Socioof demographic/medical data sheet, Interpersonal Competence Questionnaire (ICQ), Ways of Coping Questionnaire (WCQ), Emotional Support from Others Scale, and Positive and Negative Syndrome Scale (PANSS) were used to achieve the purpose of this study. A semi structured interview was used to collect the data from the patients. Findings of this study indicate that, the majority of the studied sample were not able to initiate or maintain interpersonal relationships with others. To conclude schizophrenic patients need emotional and social support from others to maintain their stability and interpersonal competence. Social skills training should be introduced as a useful way to help patients to develop and promote their interpersonal competence.

Keywords: Schizophrenia; Interpersonal competence; Social skills; Coping.

Dept. of Nursing Administration

1237. Correlates of Missed Nursing Care in Medical Intensive Care Units

Manar Ahmed Elbadawy Abd El Rehem

Book Published by Lap Lambert Academic Publishing, (2014)

Missed nursing care MNC dangerously impacts on the staff nurse and patient outcomes as for example, units with higher rates of missed care and absenteeism had more dissatisfied staff nurses with intention to leave in addition, the missed care aspects have been correlated with patients' outcomes such as falls, medication errors, bed sores and nosocomial infections. The research was conducted to determine the correlates of MNC at six selected medical intensive care units in EL Manial Specialized hospital and El Manial University hospital. The convenience sample of staff nurses working on the six units who took a daily patient assignment and provided direct patient care, has more than one year experience in their worked units and accepted to participate in this research. Data were collected by using two different methods as the modified MISSCARE self reporting questionnaire and missed nursing care observational checklist. Results concluded that there was a significant difference between perceived and observed nursing care elements being missed and the most reported factors were related to patient, hospital systems & policies and nursing staff.

Keywords: Correlates; Missed nursing care; Medical intensive care unit.

1238. Nurses' Perception of Barriers and Facilitators for Implementing Ebnp

Mohammed Ali Mahmoud Pessa

Book Published by Lap Lambert Academic Publishing (31 Oct. 2014), (2014)

Integration of research findings in to practice is now a necessity as it provides the best scientific evidenced for practice, which help to improve the quality of patient care and outcomes. The study aimed at investigating the perception of bachelor nurses of the barriers and facilitators for implementing evidence-based nursing practice. A descriptive exploratory design was utilized. All bachelor nurses working at The New Kaser El-Aini Teaching Hospital were included; a total of 112 nurses returned the questionnaire, representing 86% response rate. More than half of the study nurses were not familiar with the term evidence-based practice. The organizational readiness to integrate EBP was 55.3%. The major barriers identified were inadequate facilities, lack of authority to change the patient care, insufficient time on the job to read or to implement the new ideas and unavailable research reports/articles. On the other hand, the major facilitators were hiring more nurses, giving rewards, improving availability of research reports and arranging regular meetings to discuss it. Keywords: Evidence-based practice; Barriers; Facilitators; Research utilization.

Dept. of Nursing Critical Care and Emergency

1239. Clinical Pathway for Postoperative Organ Transplants

Tahsien Mohamed Okasha

Lap Lambert Academic Publisher, (2014)

Transplantation medicine is one of the most challenging and complex areas of modern medicine. Some of the key areas for medical management are the problems of transplant rejection, during which the body has an immune response to the transplanted organ, possibly leading to transplant failure and the need to immediately remove the organ from the recipient. When possible, transplant rejection can be reduced through serotyping to determine the most appropriate donor-recipient match and through the use of immunosuppressant drugs. Postoperative care actually begins before the surgery in terms of education, discharge planning, nutrition, pulmonary rehabilitation, and patient/family education. This also allows for expectations to be managed. A multidisciplinary approach is the key, and collaborative team meetings are essential to ensuring that all team members are "on the same page." .The following clinical pathway map and guidelines with the aim to decrease alteration in clinical practice and are intended for those healthcare professionals who look after organ transplant patients.

They are also intended to be useful to both medical and surgical trainees as well as nurse specialists and other associated healthcare professionals involved in the care of organ transplant patients. This pathway is general pathway include the general guidelines that can be applicable for all types of organ transplant with special considerations to each organ.

Keywords: Organ transplant; Clinical pathway; Postoperative care.

1240. High Alert Medications

Reda Samy Mohamed Abd El-Baset

Lambert, (2014)

Background: Nurses' lack of knowledge is considered to be one of the most significant factors contributing to medication administration errors. Although any medication can cause harm when used improperly, high alert medications are more likely to cause harm, and the harm they produce is likely to be more serious.

Aim: the aim of this study is two – fold, first: to assess nurses' knowledge regarding high-alert medications, Second: to evaluate nurses' practice during administration of high alert medications. Design: Descriptive exploratory design will be utilized in this study. Sample & Setting: 70 bedside male and female nurses working in the different ICUs in the Critical Care Department of El-Manial specialty hospital, Cairo University, during morning shift for 6 Consecutive months.

Tools: Three tools were formulated and tested to collect data pertinent to the study; background data sheet, interview knowledge questionnaire schedule about administration of high alert medications and an observational checklist about administration of high alert medications.

Result: majority of the studied sample (87.1%) knowledge level were unsatisfactory and more than one third of the studied sample (39.8%) answered knowledge questions incorrectly. approximately all the studied sample (98.6%) levels of practice were unsatisfactory and more than half of the studied sample (54.8%) has incorrect practices regarding high alert medications.

There were no significant statistical differences between background data, nurses' knowledge and practices total mean scores except there were significant statistical relationship between academic qualification with total knowledge and total practice mean scores.

Conclusion: It can be concluded that critical care nurses have inadequate knowledge and practice regarding selected high alert medication and nurses with baccalaureate degree had better knowledge and practice score than diploma and technical institute nurses. Recommendation: the study recommended replication of this study on a larger probability samples from the different geographical locations at the Arab Republic of Egypt.

Keywords: High alert medication; Critically Ill patients; Nurses knowledge; Nurses practice.

1241. Impact of A Designed Discharge Plan on Myocardial Infarction Patients

Abdelhameed Mahros Abdelhameed

Book Published by Lap Lambert Academic Publishing, (2014)

Myocardial infarction (MI) is a life threatening disease that influences the physical, psychological and social dimensions of the individual. there is no doubt that Improper lifestyle is one of the causes of this disease. The designing and implementing of discharge plan for MI patients at cardiac care units could be one of the important and fundamental steps in changing the risk factors associated with MI and improvement of MI patient's outcomes indicated by increasing patient's knowledge, practice and compliance to the prescribed regimens

Keywords: Myocardial infarction; Cardiac care nursing; Discharge plan.

1242. Implantable Cardiac Devices: Critical Care Nurses' Knowledge and Practices

Ali Hussein Abdel- mageed Mohamed

Book Published by Lap Lambert Academic Publishing, (2014)

Background: patients with implanted cardiac devices constitute a growing segment of the contemporary health practice. Many life threatening complications may arise after implanted cardiac devices insertion. Nurses' Knowledge and practices could be beneficial in caring of patients with these devices and preventing any self or environmental interactions which can adversely affect proper device function and will increase adherence to the follow-up treatment.

Aim of the study: to assess Critical Care Nurses' knowledge and practice regarding implantable cardiac devices. Research Design: A descriptive exploratory design was utilized. Research questions: a) what is the Critical Care Nurses' knowledge about Implantable Cardiac Devices? b) How do Critical Care Nurses manage patients with implantable cardiac devices? Setting: selected Critical and Cardiac Care Departments at El-Manial University Hospitals during morning shifts for consecutive nine months.

Sample: A convenient sample of 40 nurses with a minimum one year of experience was included in the study. Tools of data collection: Tool 1: background data sheet that included gender, age, educational level, area of work and years of experience. Tool 2: Interview Knowledge questionnaire Schedule to assess nurses' knowledge regarding Implantable Cardiac Devices. Tool 3:Implantable Cardiac Devices Care Observational checklist to assess nurses practices who caring of patients planned for implantable cardiac devices insertion

Results: The current findings revealed an unsatisfactory nurses' knowledge and practices levels and no significant correlations were existed between gender, age, years of experience and their level of knowledge as well as practice except negative correlation were existed between practice and years of experience regarding implantable cardiac devices .

Conclusion: critical care nurses have inadequate knowledge and practices regarding implantable cardiac devices. Recommendations: The study recommended replication of this study on a larger probability sample from the different geographical locations at the Arab Republic of Egypt.

Keywords: Nurses' Knowledge; Nurses practice; Implantable cardiac devices.

1243. The Lived Experience of Mechanical Ventilator After Open Heart Surgery

Azza Awed Mahmoud Emam Alguindy

Book Published by Lap Lambert Academic Publishing, (2014)

The lived experience after open heart surgery. This is a qualitative phenomenological study provides new insights regarding the care of patients during the period of connection to the mechanical ventilator during the recovery period after open heart surgery. From the clinical experience of the author, it has been observed that, being connected to the mechanical ventilator during the recovery period after open heart surgeries was expressed as the most stressful and harsh experience to those patients despite of being connected to other multiple invasive devices. Therefore this qualitative phenomenological study aimed to explore the lived experience of mechanically ventilated patients during the recovery period after open heart surgery. And to formulate recommendation guidelines to improve nursing management of mechanically ventilated patient during such period.

Keywords: Lived experience; Mechanically ventilated patients; Recovery period; Open-heart surgery.

Faculty of Economics and Political Science

Dept. of Economics

1244. Determination of Optimal Schooling Level

Marwa Mohamed Shibl Biltagy

Book Published by Lambert Academic Publishing, (2014)

Although numerous studies have discussed the rate of return to education, only few studies (e.g. Ashenfelter and Rouse, 1998 and Regan et al., 2006) have examined the optimal schooling levels. The discussion of the economics of education could be originated somewhere between the late 1950's and early 1960's with the concept of human capital. The basis of this concept lies in the theories of Theodore Schultz (1961, 1963), an economist at the University of Chicago who was awarded the Nobel Prize in economics in 1979. The main objective of this book is to provide an economic analysis of human capital models in order to specify the optimal schooling level and its determinants. In order to achieve this objective, a literature review on different models of human capital investment will be introduced in order to clarify the procedure of determining the optimal level of schooling. It focuses on the pioneering model of Mincer (1974). In addition, some other models like Ashenfelter and Rouse (1998) and Regan et al. (2006) will be presented.

Keywords: Theory of Human Capital; Human capital models; Equilibrium level of schooling.

1245. Promoting Decent Work Through Local Economic Development : the Case of Ghana"

Hanan Hussien Ramadan Nazier

Book Published by Lambert Academic Publishing, (2014)

A Local Economic Development (LED) initiative that aims at achieving better quality of life for all -that is combination of economic and social development- need to integrate promotion of decent work as one of its main targets. The ILO's approach to LED is the first attempt to do that, as it adds the creation of "decent work" as a central objective in what is called Local Economic and Social development (LESD) initiative.

In this context, this study aimed at examining the ability of LED to promote decent employment opportunities utilizing the ILO's LED Programme in Ghana. In an attempt to identify the fundamental pillars that sustain the LED experiences, the contribution to the decent work strategies, the main constrains and the learned lessons about the gaps to be overcome.

Based on the experience of the LESD approach applied a few key factors are concluded to describe good practices in local economic development in accordance with the approach of decent work. These factors are:

Participation: Sharing a mutual vision of the future is necessary in order to realize sustainable development at local level.

Achievements depended less on the economic situation than on the leadership and commitment of relevant stakeholders: commitment, willingness to cooperate and capacity to develop new and creative ideas of champions influence the LED process as much as economic potentials.

Take commitment form national level to local implementation: LED initiatives cannot be exclusively local, while local government plays a main role, interventions on this level must be backed up by policies at the macro level stressing the importance of linking local and national level policies.

Capacity Building and Upgrading: complementarity of skills and resources is vital to overcome constraints on the development process.

Setting up co-operative credit unions: as an alternative to limited availability of other sources of credit.

Sustainability: the success of LESD approach depends on achieving 3 aspects of sustainability Financial Sustainability, Social Sustainability and Institutional Sustainability.

Support to vulnerable groups. LED should favor social inclusion of the vulnerable groups like women, disabled persons and informal sector.

Keywords: Decent work; Local economic development; Chana led.

1246. Financial Risk Management Using Asymmetric Heavy-Tailed Distributions and Nonlinear Dependence Structures of Asset Returns Under Discontinuous Dynamics

Alaa Essam El-Shazly

Econometric Methods and Their Applications in Finance, Macro and Related Fields, World Scientific, (2014)

This article studies a copula-based model of stock markets that can serve as a basis for sound risk management practices in a portfolio context using the value-at-risk (VaR) statistical concept to strengthen financial stability. The model uses the Normal Inverse Gaussian (NIG) distribution and the *t*-copula function to capture observed skewness and leptokurticity of asset returns as well as complex dependence among risky assets whose price dynamics are typically driven by non-Gaussian Levy processes. The modeling scheme allows measuring the strength of nonlinear relationships among stock returns under both normal and extreme market conditions and devising portfolio and risk management strategies. Typically, empirical implementation of the copula model involves estimating the multivariate distribution of asset returns by the maximum likelihood method. The fitted distribution is then used for VaR computation to assess market and operational risks associated with the constructed portfolio and

unique survey conducted in 2009/2010 in 141 of the poorest

1,000 villages of Egypt, covering a total 10,568 households. The

poverty rate in these villages is estimated at 81.7 percent against

22 percent for Egypt as a whole and 28 percent for rural Egypt.

The Gini inequality across households in these villages is

estimated at 29.4 percent against 31.1 percent for Egypt as a whole and 22.4 percent for rural areas. Thus, while the poverty rate in these villages is extremely high, the inequality level is very

close to the national figure. The paper attempts to explain the

level of inequality using a regression decomposition approach

(Fiorio and Jenkins 2007) and a Gini coefficient regression in an effort to disentangle those factors that derive from household

abilities such as health, education and employment (household characteristics) from those factors that derive from local

opportunities such as the availability of health, education and

economic facilities (village characteristics). The paper finds that

about 37.3 percent of inequality can be explained by household

and village characteristics with the former contributing 31 percent

and the latter 6.3 percent. However, the factors that contribute to

changes in poverty and inequality can have discordant or

concordant signs. Only one factor (having a minimum level of

education) can reduce both poverty and inequality while factors

such as fertility, disability, work in the informal sector outside

establishments in agricultural or non-agricultural activities, and

male-headed households can increase both poverty and inequality. Factors such as higher employment and higher education, which

are standard objectives of poverty reduction strategies, are found

to reduce poverty but increase inequality. Other factors such as

people of Egypt may necessarily entail an increase in inequality.

As the Middle East continues to grow as a predominant force

within the international marketplace, research into Islamic

practices and culture is necessary to promote business success in

the region. Emerging Research on Islamic Marketing and

Tourism in the Global Economy offers in-depth perspectives on

the influence of Islam on consumer behavior, the travel industry,

product development, and the promotion of goods and services.

Focusing on current trends and tools, comprehensive interviews, questionnaires, and emerging research, this book is an essential reference source for academicians, entrepreneurs, policymakers,

university students, and educators interested in research

model validity. As shown in an application to international stock markets, the model yields useful information on dependence structure of the return distributions for portfolio allocation and risk management with a reasonably good predictive power. Keywords: Financial risk management; Nig distribution; T-

copula.

Dept. of Political Science

1247. Minorities Between State Society Dynamics in **Post Revolutionary Processes**

Mai Mogib Abdel Moneim Mosad

Book Published by Dictus Publishing, (2014)

The concept of "minority" has acquired new urgency. The last two decades have witnessed a widespread resurgence of the political reflections of the concept. Although the dilemmas are enduring ,it's now possible to confront them in a quite new light. Revolutionary periods are often a product of numerous events that snowball into fully fledged eruptions that lead to drastic changes in the political and social fabric of states and societies and thus to the context of minorities, and it's clear that the case of Egypt introduced new givens to the concept and its reflections.

Keywords: Minorities; Egypt; Copts; State-Society Relations.

1248. Wired Citizenship: Youth learning and activism in the Middle East

Rehab Sakr

Routledge New York and London, (2014)

Wired Citizenship examines the evolving patterns of youth learning and activism in the Middle East and North Africa (MENA). In today's digital age, in which formal schooling often competes with the peer-driven outlets provided by social media, youth all over the globe have forged new models of civic engagement, rewriting the script of what it means to live in a democratic society. As a result, state-society relationships have shifted-never more clearly than in the MENA region, where recent uprisings were spurred by the mobilization of tech-savvy and politicized youth.

Combining original research with a thorough exploration of theories of democracy, communications, and critical pedagogy, this edited collection describes how youth are performing citizenship, innovating systems of learning, and re-imagining the practices of activism in the information age. Recent case studies illustrate the context-specific effects of these revolutionary new forms of learning and social engagement in the MENA region. Keywords: Muslim brotherhood; Egypt; Children; Artists; Arab world; Cybrus; Turkey.

Dept. of Statictics

1249. Chapter 4 Titled: Poverty and Inequality in the Arab Republic of Egypt's Poorest Villages

Sahar El Tawila, May Gadallah and Enas Ali A.El-Majeed

Inside Inequality in the Arab Republic of Egyptfacts and Perceptions Across People, time and Space, The World Bank, (2014)

This study provides a first-time assessment of the state of poverty and inequality among the poorest villages of Egypt. It used a List of Books & Chapters

1251. Quality Management and Productivity

Hatem Osman Aly Salem El-Gohary

surrounding the impact of Islam on business.

Faculty of Commerce

Dept. of Business Administration

Tourism in the Global Economy

Hatem Osman Aly Salem El-Gohary

Publishing, 1-99 (2014)

Book Published by Lap Lambert Academic Publishing, (2014)

The main aim of this book is to determine to what extent did quality management practices been effectively adopted and implemented by Pakistani manufacturing companies as well as to

identify best practices for adoption by such companies. The book investigates the relationship between quality management (QM) and productivity. The research conducted within this book revealed that there is a positive relationship between quality and productivity of manufacturing companies. The evidence deduced from the research shows that foreign owned companies performed better compared to local owned companies in terms of quality and productivity in Pakistan. Furthermore, the evidence from this study also points out that, automobile sector in Pakistan performed well in the adoption and implementation of QM practices.

Keywords: Quality management; Productivity; Manufacturing companies; Hatem El-Gohary; Tahir Iqbal.

Faculty of Arts

Dept. of English Language and its Literature

1252. The Development of Samuel Beckett's Dramatic Technique

Abeer Abolnaga

Book Published by Lap Lambert Academic Publishing, (2014)

A semiotic analysis can be of great help in understanding a given dramatic text. This book offers in-depth analysis of how Beckett makes use of verbal and non-verbal elements in his plays. The book examines the development of his technique from using verbal elements in his earlier plays to non-verbal ones in his later plays. The plays reflect Beckett's attempt to dispense with language as a means of communication and to use mime instead. The plays discussed reflect the suffering and anguish of the characters who find relief in resorting to silence.

Keywords: Verbal; Non-verbal elements.

1253. The Emergence of Politicized collective identity in Online news Commentaries as a form of Social Capital

Nahla Mahmoud Helmy Nadeem

Identity and Leadership in Virtual Communities: Establishing Credibility and Influence, Igi- Global, (2014)

This chapter explores how online news commentaries as a platform for social interaction can be considered a form of social capital that later led to the Arab Spring Revolutions. In the study, social capital is conceptualized as consisting of two linguistically measurable variables: a) the emergence of the posters' politicized collective identity (Simon & Klandermans, 2001; Simon, 2004) that emerges in the data through the foregrounding of certain shared aspects of the posters' identity, mainly their Arab nationality; and b) the collaborative performance of face attacks and solidarity acts in the posting content. The data used are responses written to an article posted on the Al Jazeera Website describing the aftermath of the tragic suicide of the Tunisian Bouazizi. Drawing on contemporary theories of sociolinguistics, pragmatics, and social identity, the study provides empirical evidence that such online communication should be considered a social and political capital that can foster social and political activism.

Keywords: Information science reference; Media; communications; Social computing; Virtual communities; Virtual reality.

1254. "Egypt.... Isn't that in Switzerland?": American Cartoons and the Egyptian Revolution

Walid Abdel Aal Abdellah El Hamamsy

Shifting Borders: America and the Middle East/North Africa, American University in Beirut (AUB) Press, (2014)

This chapter examines two types of popular hemispheric American reaction to Egypt's 2011 revolution (January 25-February 11): American cartoons produced by a variety of U.S. artists and the work of Brazilian cartoonist Carlos Latuff. This comparison shows two undercurrents that the chapter considers within a transnational context. It shows how the former group's cartoons do not exceed the boundaries of essentialist Orientalist cultural symbology, whereas Latuff's work constitutes an example that bypasses the limitations of stereotypical representation. It also highlights the widespread circulation of Latuff's work among Egyptians as proof of the success of such examples of South-South dialogue. Additionally, It analyzes a number of factors that have led to the success of Latuff's work, which helps underscore the consequences of Orientalist representations on cultural dialogue between the U.S. and the Arab world.

Keywords: Egyptian revolution; Popular culture; Cartoon latuff; Orientalism.

1255. Toward, Around, and Away from Tahrir: Tracking Emerging Expressions of Egyptian

Lobna Abdel-Tawab Youssef Ahmed

Cambridge Scholars Publishing, (2014)

How do we understand current events in Egypt? Prior to January 25, 2011, when asked about unusual images, sights, or sounds, Cairene responses ranged from a litany of complaints to well-rehearsed, guidebook descriptions of picturesque neighborhoods and magnificent ruins. Occasionally, however, a thoughtful resident would remain silent, leaving visitors and guests to accept the surrounding smiles, shrugs, honking horns, blaring loudspeakers, and strings of expletives as background ambience. During the revolution, when the call for freedom and democracy became more coherent, the demand for change further complicated questions about Egyptian identity. This volume focuses on written and oral expression as viewed through the lenses of rhetoric, language and communication in order to further understand some of the changes that appear to have altered and strengthened Egyptians' perceptions of themselves.

Keywords: Toward; Around; Away from tahrir tracking emerging expressions of egyptian identity.

Dept. of French Language and its Literature

1256. Abbas II, Khédive D'egypte Et Nubar Pacha Stratégies D'écriture De Leurs Mémoires

Rania Aly Mohamed Aly Sayed Ahmed

Book Published by L'harmattan, (2014)

The Writing Strategies of the Political Memoirists: The Memoirs of Nubar Pacha and the Memoirs of Abbas Hilmi II, Khedive of Egypt Away from the political scene, Abbas II in exile, Nubar retired, each one has written his memoirs to offer to the posterity their precious testimony in french, not only about their public life but also about Egypt's vice-kings and about their time.

Nubar, this pacha of armenian origin, and who served all the vicekings of Egypt since Mohamed Ali to Abbas II, insists in his memoirs on the projects which he defended the most and his won challenges over the years: the justice reform, the defense of the fellah's rights, the rejection of the canal of Suez project, his opposition to the whims of Saïd and especially those of Ismaïl which have led Egypt to the bankruptcy.

Abbas II defends himself in front of the history, especially against his rival's charges: Cromer, the general British consul published in Modern Egypt and in Abbas II. The Khedive highlighted his nationalist struggle that he led in several fields: political, educational, cultural fields in order to face the British occupation. He explains the evolution of his relation with the British generals from the discord policy under Cromer leadership to the agreement that began in 1907 after the Denchaway incident (1906).

This form of personal writing differs from its related forms (the diaries, the autobiography, the travel novels) by its mixed identity (historical, legal, political and aesthetic). This explains the variety of the strategies followed by the pacha and the Khedive in their memoirs: strategy of denial, of disqualification of the opponent, of the interpretation, the caution, etc. We study these texts focusing on the literary side which is usually marginalized in the benefit of their historical side.

The memoirs are weapons of the politician which give him free style due to their hybrid identity. The political memoirist multiplies his writing strategies to prove his credibility. He defends himself and makes his book a monument able to cross the centuries by both historical and aesthetic value. Despite the debate about the subjectivity of the memoirist and its relationship with writing the history, the historical value of Memoirs is undeniable. At the end of our study, we reclaim to insert the Memoirs in the education programs: a way among others to save this precious heritage from oblivion and give it its rightful place in the collective memory.

Keywords: Memoirs; Nubar; Abbas; Hilmi; Khedive; Egypt; Political; Francophony; Testimony; History; British occupation; Nationalism.

1257. L'autobiographe Temoin De Son Temps

Amina hanim Rashid

Poetologue Du Temognage Un Dialougue De Recherche Egypto-Francais, Editions Publisud, (2014)

Les articles rassemblés dans ce livre sont le fruit d'un dialogue mené dans le cadre d'un programme de recherche commun par des chercheur(e)s de l'université du Caire et de l'université Blaise Pascal de Clermont-Ferrand. Ils abordent la question du témoignage à partir du paradoxe clairement énoncé par Jacques Derrida quand il écrit que "tout témoignage responsable engage une expérience poétique de la langue".

Keywords: Tout témoignage responsable engage.

1258. Le Canal De Suez À Travers Le Cinéma Et La Télévision

Maha Ahmed El Said Gad El Hak

Communication and Developpement, Dar Elnahda Elarabia, (2014)

Cette recherche comparative s'intéressera essentiellement à deux moments cruciaux de l'histoire du canal : le creusement (1859-

1869), et la nationalisation (1956), et ce, à travers quatre œuvres présentées par la télévision et le cinéma : le feuilleton égyptien la Porte d'al-Halawani (diffusé à partir de 1999), le documentaire français Le Canal de Suez (2006), le film égyptien Nasser 1956 (1996) et le reportage français Le canal de Suez : rétrospective (2006).

Ce corpus, appartenant à deux des médias les plus importants, la télévision et le cinéma, sera analysé selon une perspective sémiotico-historique. L'important impact de ces medias quant à la mémoire collective est reconnu. A travers l'analyse, nous essaierons de voir comment s'articulent les rapports complexes entre Histoire, mémoire et représentation.

Keywords: Canl de suez; Television; Cinema; Analyse de L Image.

1259. Le Témoignage Dans Le Texte Du Coran

Heba Abdel Latif Salem Machhour

Poetologie Du Temoignage, Publisud, (2014)

Les articles rassemblés dans ce livre sont le fruit d'un dialogue mené dans le cadre d'un programme de recherche commun par des chercheur(e)s de l'université du Caire et de l'université Blaise Pascal de Clermont-Ferrand. Ils abordent la question du témoignage à partir du paradoxe clairement énoncé par Jacques Derrida quand il écrit que "tout témoignage responsable engage une expérience poétique de la langue". La réflexion sur ce paradoxe entre responsabilité et "expérience poétique de la langue" est ici menée à partir de situations, de formes et de genres aussi singuliers que divers. Comment se dit le témoignage dans le Coran?

Keywords: Temoignage; Coran; Responsabilite.

1260. Temoignages De Femmes: Les Romancieres Francophones Du Maghreb

Ghrraa Hussein Mehanna

Poetologie Du Temoignage, Editions Publisud, (2014)

Fruit d une collaboration egypto-francaise, cette etude pose la question suivante: Comment l ecriture ds Femmes du Maaghreb temoigne-t-elle de la condition feminine et de ses luttes?.Elle presente un temoignage feminin sur les interdits et les souffrances qui est un besoin de verite et de revelation, une liberation de la parole et une rupture du silence.

Keywords: Temoignage; Maghreb; Ecriture francophone; Condition de la femme; Liberation; Souffrances.

1261. "Sois Présent Dans L'absence" Le Témoignage Du Poème: État De Siège De Mahmoud Darwich

Rania Mohamed Fathy Mohamed Abdou

Poétologie Du Témoignage, Editions Publisud, (2014)

Comment se présente le témoignage en poésie ? Sur quels éléments se fonde le langage poétique pour construire son système de crédibilité ? Partant de ces deux questions, le présent travail se propose d'analyser État de siège (2002), long poème de Mahmoud Darwich, traduit par Elias Sanbar, écrivant les chroniques du siège de Ramallah et dessinant, jusque par sa typographie même, les paysages chaotiques d'une ville encerclée. Sous le regard du poète, témoin oculaire vivant le tragique d'une histoire hostile, défilent les scènes apocalyptiques des ruines et décombres, scènes que rend une description détaillée transmettant sur le vif les signes d'une mort aux aguets. Avec le visuel, s'impose la voix du poète dans toute sa vivacité, une voix qui livre l'horreur vécu par des mots simples mais combien signifiants. Des mots qui, par toute leur force incantatoire, tissent une continuité triomphant de la mort et brisant le siège. Bien plus que du témoignage sur le siège de Ramallah, il s'agit dans le poème de Darwich d'un témoignage sur son écroulement.

Keywords: Témoignage; M. Darwich; Poésie xxème siècle; Etat de siège.

1262. Identite Et Violence:Les Sous-Cultures Des Zones D'habitat Informel A Travers Le Discours Cinematographique

Farida Ahmed El Said Gad EL Hak

Identités. Constructions, Négociations, Négations, Presses De L'universite Laval, (2014)

This chapter explores the relationship between "identity" and violence through discourse on " grey zones" in Cairo (slum areas or" ashwaiyyat") and in Paris (suburbs or" banlieues"). After presenting historically and contextually these zones, a discourse analysis of two movies- the Egyptian "Hina Maysara", and the French "Ma cite va craquer"- is conducted within a comparative approach, in order to question the "subculture" concept and its links with "identity". The inhabitants of these zones are represented as culturally different from the rest of the society, and in most media discourse, as a source of danger. The study shows that this kind of stereotypes misleads objective judgment, presenting socio-economic problems as cultural issues.

Keywords: Identity; Subculture; Counter culture; Ghettos; Violence; France; Egypt; Slum areas; Movie discourse.

1263. Témoignage Et Film Documentaire

Salma Adel Mobarak

Poétologie Du Témoignage, Publisud, (2014)

Ce chapitre est consacré à la lecture du film du cinéaste égyptien Mohammad Bayoumi, Le peuple égyptien salue son chef Saad Zaghloul Pacha, sorti en 1923. Cette lecture est menée à partir des théories littéraires développées autour de la notion de témoignage. Ce transfert a permis de reposer la question du statut de vérité des images documentaires dans le champ de la pensée cinématographique et à montrer que le débat sur la dichotomie documentaire/fiction présente une analogie avec une antithèse littéraire : témoignage/fiction. Cette interaction a permis également de voir que le dépassement des oppositions ne dépend pas des propriétés spécifiques au discours littéraire ni cinématographique, mais que ce dépassement se situe à un niveau supérieur, celui de l'énonciation artistique. L'étude du documentaire de M. Bayoumi a révélé les lieux de l'énonciation dans le discours filmique et a contribué à rendre moins étanches les démarcations entre les pôles des oppositions classiques.

Keywords: Cinéma Égyptien; Témoignage; Documentaire; Théorie littéraire.

Dept. of German Language and its Literature

1264. Wortschatz Und Mehr. Einkurzerblickaufden DAF-Unterrichtan Der Derkairouniversität

Mona Noueshi

Higher Humanities Education in the 21St Century, Ministry of Education and Science of the Russian Federation, (2014)

Thearticle focuses on the use of the mass media advertisement texts in the lessons of German as a foreign language. The author presents and describes her own experiment – analyzing vocabulary, verbal and non-verbal advertisement components used in the advertisement texts, which she has carried out at Cairo University, Faculty of Arts

Keywords: Textlinguistics; DAF; Adverstisement texts; Semantics.

1265. Zur Wirklichkeitswiedergabe in Den Werken Der Schriftsteller Stifter Und Büchner

Mona Noueshi

Nachrichtenblatt Der Rheinischen Adalbert-Stifter-Gemeinschaft, Arthur Brande (Ed.), (2014)

The aim of the following research is a stylistic anlysis of someworks of Stifter and Buechner, and how the reality is described in their works. The paper focuses on the influence of Stifter's surrounding and Büchner's philosophic and natural science studies on the style of writing; it means the influence on the language, the describtion of figures and nature.

Keywords: Stilistics; Buechner werke; Stifter werke; Textlinguistics.

Faculty of Archaeology

Dept. of Conservation **1266.** Handbook of Historic Embroidery Textiles Conservation

Harby Ezzeldeen Hassan Ahmed

Book Published by Lap Lambert Academic Publishing, (2014)

The embroideries were one of the most sumptuous kinds of textiles produced in the world. Metal threads in historic embroideries textile deteriorate over time and corrode due to chemical attack by different corrosive factors such as high and fluctuating relative humidity, air pollutants and elevated temperatures. Handbook of Historic Embroidery Textiles Conservation, Principals and practical application will present extensive study of historic embroideries conservation strategy. Furthermore, it will facilitate understanding of degradation process, corrosion process, textiles conservation treatment, the behavior of object during these treatments, and analysis of historic textiles. Also, this book will present physical and chemical properties of natural fiber and metallic threads that used in historic embroideries textiles. This book will present practical application of historic embroideries textiles. By this information it will be easier for the conservators to make decisions, plain of conservation, and select material for conservation.

Keywords: Historic; Textiles; Conservation; Cleaning.

1267. Microscopic study of deterioration in archaeological wood used in architectural purposes

Safa Abdel-Kader Mohamed Hamed

Microscopy: Advances in Scientific Research and Education", Formatex Research Center, (2014)

This paper focuses on investigating deterioration of archaeological wood which were used as architectural elements such as ceilings, doors, floors, domes, mashrabias. Nine samples were collected from different architectural elements, then a scanning electron microscope (SEM) study was undertaken, to monitor the significant structural changes in the wood samples according to their function. SEM data, however, show that loads and stresses affect the anatomical structure of wood badly, in addition to other deterioration factors, especially in the large wooden objects and structural wooden elements. The main problem is the separation and fractures resulting in the wood structure which might cause the structure to collapse. So, developing new materials and techniques that could be used in the treatment and conservation of archaeological wood subjected to this type of deterioration is restricted at understanding condition of this wood.

Keywords: Archaeological wood; Deterioration; Architectural Elements; Sem.

Dept. of Egyptian Archaeology

1268. Inaros Son of Petese in the Galleries of Tuna Al-Gebel Necropolis

Mahmoud Ebeid Shahat

Acts of the Tenth International Congress of Demotic Studies, Peeters Publishers, (2014)

The chapter deals with the personality of Inaros son of Petese, in the galleries of the sacred animals in Tuna al-Gebel necropolis. He devoted number of votive offerings to the God Thoth. He might be a high official in the ibis organization.

Keywords: Tuna Al-Gebel necropolis; The galleries of the sacred animals; Votive offerings; The god thoth.

The Institute of Educational Studies and Research

Dept. of Curriculum and Instruction

1269. Improving Reading Fluency in EFL Using Repeated Reading

Muhammad Muhammad Mahmoud Abdel Latif

Teaching, Learning and Researching Reading in Efl, Tesol Arabia, (2014)

Reading fluency has taken a front seat in the literature of student reading development and effective reading instruction. Differences in reading fluency not only distinguish good readers from poor, but a lack of reading fluency is also a reliable predictor of reading comprehension problems. This chapter reports on a study that examined how a repeated reading intervention can improve Egyptian prep school students' reading fluency. Thirty students from an Egyptian prep school received English reading training that aimed to improve three components of their reading fluency: a) reading accuracy: reading without hesitation or substitution, or word omission, and with correct pronunciation; b) reading rate: oral reading speed measured by calculating the correct number of words the students read per minute as compared to the reading errors they made; and c) reading prosody: chunking words of sentences into meaningful segments with actual cues, using the appropriate vocal tone in narrative text or dialogues to represent character's mental states, and using the appropriate intonation while reading. These three aspects of the students' reading fluency were measured before and after the repeated reading intervention. The results indicated that the intervention helped the students attain significant gains in the three reading fluency aspects. The chapter discusses these results and presents implications for designing fluency-oriented repeated reading instruction.

Keywords: Teaching reading; Teaching english; Reading fluency.

1270. Arab Students' Use of Monitoring in their Efl Composing: the Role of Linguistic Knowledge

Muhammad Muhammad Mahmoud Abdel Latif

Teaching and Learning English in the Arabic-Speaking World, Routledge, (2014)

Although much research has been conducted on the L2 composing process, the number of the studies dealing with writers' monitoring is scarce. This paper reports on a study which examined how two groups of Arab students (n = 7 students in)each group), who had varied linguistic knowledge levels, use monitoring in their English composing. The study derived its data from the think-aloud protocols generated by the fourteen students while composing an argumentative task. The results showed that the students in the upper-intermediate level group attended more to monitoring their text production and used more types of monitoring behaviors than the students in the lower-intermediate level group. The study concludes that when writers do not have adequate linguistic resources, they are unable to allocate much effort to monitoring their text production due to their preoccupation with translating prelinguistic ideas into linguistic messages. Consequently, it is viewed that the best way to enhance writers' use of monitoring is to develop their English linguistic knowledge; developing writers' linguistic knowledge will result in enabling them not to be preoccupied with textual planning and retrieving linguistic resources, and in turn to allocate appropriate efforts to monitoring their English composing.

Keywords: Writing; L2 Composing; Teaching english.

1271. Recent Developments in Writing Fluency Measurement

Muhammad Muhammad Mahmoud Abdel Latif

Exploring Efl Fluency in Asia, Palgrave Macmillan, (2014)

This chapter provides a detailed and critical review of writing fluency definitions and indicators, and discusses their validity in light of evidence from related literature. This review leads to the conclusion that that fluent written production is best defined as the ability to produce texts in large chunks or spans, and that it is assessed more validly via depending on writers' real-time production of text parts, i.e. their translating episodes. The chapter presents an exemplary description of how to count the length of writers' translating episodes, and it ends with suggesting some pedagogical recommendations.

Keywords: Writing fluency; Language fluency; Teaching writing.

1272. The Effect of Using a Program Based on the Electronic Activities VIA the Internet on Developing the Skills of Producing the Interactive Education Diploma

Amal Abd Elfatah Ahmed Swidsn

Mockba, (2014)

The problem of the current study can be expressed, in an attempt to answer the following main question:What is the effect of using a program based on the electronic activities via the internet on developing the skills of producing the interactive educational software for the students in general education diploma?

This question is divided into the following sub-questions:

1- What are the skills of producing the educational interactive software for the students of General Diploma in Education?

2- What are the bases of designing a program based on the electronic activities via the internet for developing the skills of producing the educational interactive software?

3- What is the effect of using the program based on the electronic activities across the web in developing the cognitive aspect for producing the interactive educational software for the students of General Diploma in Education?

4 - What is the effect of using the program based on the electronic activities across the web in developing the per formative aspect for producing the interactive educational software for the students of General Diploma in Education?

Keywords: Program; Electronic activities VIA the internet; Skills; Interactive educational software; Education diploma.

Institute of African Research and Studies

Dept. of Geography

1273. Climate Change in Libya and Desertification of Jifara Plain

Attia Mahmoud Mohamed El-Tantawi

Book Published by Scholars Press, (2014)

Climate change is the most serious environmental challenge that threatens developed and less developed countries. It has reached a critical magnitude with a serious impact on society and quality of human life. Reconstructions of climate causes in the 20th century indicated that the natural climate forcing probably increased during the first half of the 20th century. The changes observed over the last decades are mostly due to human activities, and some changes were also reflecting natural variability. The expected impacts of climate change will be acute in different aspects, such as biodiversity, food security, water resources and human health. Libya is potentially one of the country's most at risk from the effects of climate change because it has limited natural resources (water and soils); located in the arid and semiarid lands and more than 95% of its people live in coastal zone which is threatened by sea level rise. The study was arranged to manifest its objectives through preceding it with an introduction. Particular attention was paid in the second chapter to discuss the physical settings of the study area, together with an attempt to

study the climatic characteristics. In the third chapter, observed temporal and spatial changes of climate in Libya was investigated through the trends of temperature, precipitation, relative humidity and cloud cover amount over the periods (1946-2000) as a longterm period, (1946-1975), and (1976-2000) as short-term periods, comparing the results of the trends with the global scales. In the forth chapter, the physical and human causes of climate changes focusing on greenhouse effect have been explained. The potential impacts of climate changes on Libya were examined in the fifth chapter. While desertification of Jifara Plain in north western Libya was investigated in the sixth chapter. In the last chapter, projections and mitigations of climate change in Libya and desertification of Jifara Plain were discussed. Then, the main results and recommendations were mentioned followed by short summery of the study and list of references.

Keywords: Climate change; Desertification; Libya; Jifara palin; Gis; Rs.

Dept. of Natural Resources

1274. Studies on Seed Germination of Some African Acacias

Amira Shawky Ahmed El-Said Soliman

Book Published by Lap Lambert Academic Publishing, (2014)

Acacia is very important multipurpose genus. Although sexual reproduction in Acacia is the only natural cheapest method for propagation, its seed used to be very dormant and not germinate easily even under favorable conditions, hence the problem of their propagation has to be considered in scientific research. Acacias have a great economic importance and can be utilized in several ways. Acacias can provide lumber, fuel wood, tannin; and many other products. They are also important to pastures and agricultural crops as they can fix atmospheric nitrogen in their root nodules. Their leaves, young fruits and seeds are very nutritive and eaten by livestock. In addition, Acacias are keystone species as they improve soil conditions under their canopies. Plant species diversity and occurrence beneath the tree canopies is higher than in the surrounding areas. So, the objectives of this study were to assess the effect of pre-sowing treatments, seed coat anatomy, growth promoters and inhibitors on seed germination of some African Acacias.

Keywords: African acacias; Seed germination; Keystone species.

1275. Improving Acacias in Africa

Amira Shawky Ahmed El-Said Soliman

Book Published by Lap Lambert Academic Publishing, (2014)

Leguminous tree species such as Acacia could be good candidates to grow in soils very deficient in nitrogen because of their associated rhizobial symbioses constitute a source of N input to the ecosystem. This nitrogen is returned to the soil by the natural loss of leaves which improves the soil fertility and its physical properties through maintenance of soil organic matter, or soil aggregation. In addition, they provide high- quality animal fodder, timber, fuel wood, charcoal, gums and other products. In addition, Acacias are keystone species as they improve soil conditions under their canopies. Plant species diversity and occurrence beneath the tree canopies is higher than in the surrounding areas. It is very old genus; some reports provide evidence for its presence in the Eastpans (Abu Ballas) as well as in the Hidden valley depression (Farafra oasis) and were aged between 6700 and 6200 years before present. Therefore, the objectives of this study were to evaluate the effect of different fertilizers and growing media on growth and chemical composition of Acacias in Africa.

Keywords: Leguminous tree; Rhizobial symbioses; Africa.

1276. Recent Changes of Lake Nasser Hydrology

Mohamed Mahdy

Book Published by Lambert Academic Publishing, (2014)

HADL evaporation prediction have been and still studied by many researchers to choose the best model of the Lake evaporation prediction. In this study many methods and models were tested and correlated to water budget to find the best model for Lake evaporation prediction.

These methods namely water budget method, energy budget method, mass transfer method, radiation methods, temperature based methods and combination methods. Then trend analysis was performed on Lake Inflows and evaporation both monthly and annually. The results showed that energy budget method, especially Priestley-Taylor model is the best model representing the Lake Evaporation. Also the trend analysis showed that, there is no accountable change in Lake inflows, as well as evaporation at any month or even in annual basis.

1277. Biotechnology and Ginger Plant

Mohamed Said Abbas

Book Published by Lambert Academic Publishing, (2014)

This study was carried out in collaboration between Plant Biotechnology Department, Genetic Engineering and Biotechnology Division, National Research Centre, Cairo, Egypt, and Plant Resources Laboratory, Natural Resources Department, Institute of African Research and Studies, Cairo University, Egypt during the period from 2008 to 2010.

This study includes application of different techniques of plant biotechnology and biochemistry, i.e. tissue culture, in vitro propagation, microrhizomes formation, molecular markers and finally characterization the in vitro produced 6-gingerol in ginger (Zingiber officinale Rosco). The obtained results revealed that, an efficient in vitro propagation method was developed using fresh rhizome sprouting buds.

Explants cultured on MS medium supplemented with 4.5 mg/l BAP resulted highest rate of shoot multiplication. Shootlets were rooted on half strength B5 medium supplemented with 1.0 mg/l NAA. In vitro plantlets were transplanted in the green house for hardening and their survival was 80-100%. Moreover, callus was induced from young leaves of ginger on revised MS medium supplemented with 3 mg/l 2,4-D. For achievement of shootlets regeneration, callus was further sub-cultured on MS medium supplemented with 1.0 mg/l BAP. Moreover, microrhizomes were induced at the base of the in vitro derived shootlets upon transferred to MS medium supplemented with 9 mg/l BAP and 60-90 g/l sucrose under 16-h photoperiod within 10 weeks of cultivation.

Concerning the biochemical distinguish of ginger regenerated plantlets and in vitro rhizomes formation with ginger original rhizomes was carried put using SDS-PAGE of protein and RAPD-PCR of DNA. The DNA finger prints and SDS-PAGE markers showed high similarity between them. Moreover, The HPLC analysis showed a pure single peak of 6-gingerol existing in all tested samples. **Keywords**: Zingiber officinale; In vitro propagation; Callus; Regeneration; Microrhizomes; Sucrose; BAP; Photoperiodism; Sds-Page; Rapd-Pcr; Tlc; Hplc; 6-Gingerol.

1278. Rangeland in Western Mediterranean Coastal area of Egypt

Mohamed Said Abbas

Book Published by Lambert Academic Publishing, (2014)

The present investigation was carried out in Wadi El-Ramla, coastal sand dunes and salt marshes habitats in Western Mediterranean coastal area of Egypt during spring 2005 and 2006 to assessment the relationship between some common range plants and environmental factors in terms of botanical structure, productivity, nutritive value and their ability to sustain and renew themselves under different habitats. The results indicated that ninety eight plant species belonging to thirty families were recorded and the plant species divided into sixty one were perennials and thirty seven were annuals. According to palatability fifty nine were palatable and thirty nine were unpalatable. The richest habitat was Wadi El-Ramla followed by coastal sand and the poorest habitat was salt marshes. The studied characteristics of range plants were frequency, abundance, plant density, cover percentage, importance value and productivity as well as nutritive value of range plants evaluated by determining crude protein, crude fiber, ash, ether extract, and nitrogen free extract percentages. All characteristics showed differences between different range plants under different habitats.

1279. Petroleum Potential from Source to Trap

Naglaa Saleh Mohamed Hassan

Book Published by Lap Lambert Academic Publishing, (2014)

The study aims to investigate the influence of rifting on the processes of organic matter maturation, hydrocarbon generation, expulsion, and migration, as well as the influence of rifting on the preservation of accumulated hydrocarbons in the Gulf of Suez. The study identified the presence of sixteen generating and expelling troughs based on the results of thermal burial histories: Darag, Nebwi, Lagia, October, Fieran, Amer, Belayim, July, Ramadan, Morgan, West Zeit, East Zeit, Ashrafi, Ghara, Gemsa, and Sharm troughs. These names were given after geographic areas or known oil fields in the proximity to the respective trough or in its vicinity. All the source formations in the sixteen troughs reached top oil window and expelled their hydrocarbons at 10 million years before present (mybp) and continued till present. Such timing post-dates the Early Miocene Mid Clysmic or Mid Rudeis "disturbing" event and the Late Miocene Messinian "quiet" event, which suggest high Migration and accumulation efficiencies for hydrocarbons generated in these troughs. The Darag, Amer, Belayim, Ghara, and Sharm troughs are considered the highest in preservation as migration started the latest among other troughs (4.8 and 2.5 mybp relative to 10 to 6 mmybp for the July, Ramadan, Morgan, West Zeit, East Zeit, Ashrafi, and Gemsa troughs,). The suggested prospective areas for future exploration should be located updip and in the hydrocarbon migration pathway.

Keywords: Petroleum potential; Thermal burial history; Great african rift; Gulf of Suez; Tanzania.


International Publications Awards Cairo University



Authours' Index

Authors' Index

A

Aal, Asmaa:	615, 719
Abadir, Magdi:	449, 453
Abbas, Mohamed:	1131, 1277
Abbas, Samah:	852
Abbass, Marwa:	826
Abbassi, Maggie:	895
Abd El -Fattah, Alaa:	352
Abd El-Ghany, Wafaa:	412, 413
Abd El-Halim, Sally:	991, 1000, 1001
Abd- Elhameed, Waleed:	212, 216, 217, 218, 225,
	239
Abd Rabo, Fawzia:	352
Abdalla, Maged:	684
Abdallah, Aynam:	625, 726
Abdallah, Dalaal:	1030, 1032, 1044
Abd-Allah, Foad:	711, 712, 713, 714, 1090,
	1204
Abdallah, Hossam:	1011, 1016, 1025
Abdallah, Mahmoud:	858
Abdallah, Mohammed:	967
Abdallah, Tayseer:	146
Abdeen, Mostafa:	491, 520, 521, 524, 526,
	527, 528
Abdel Azim, Sabry:	137
Abdel Harith, Mohamed:	427, 428, 430, 431, 436
Abdel Latif,	1129, 1269, 1270, 1271
Muhammad:	
Abdelaal, Amaal:	733
Abdel-Aal, Seham:	298, 1146, 1147
Abdel-Aziem, Amr:	1091, 1092, 1093, 1094
Abdel-Azim, Hamdy:	691
Abdelaziz, Alshaymaa:	1065
Abdelaziz, Ashraf:	680, 683
Abdelaziz, Dalia:	760
Abdelaziz, Heisham:	1051
Abdelaziz, Mohamed:	699, 705, 710
Abdel-Aziz, Mohamed:	100, 169, 172
Abdel-Aziz, Mosaad:	667, 668, 669
Abdelaziz, Omar:	663
Abdelaziz, Wessameldin:	425
Abdelbaki, Passent:	1026
Abdelbary, Aly:	970,979
Abdelbary (Lbada)	004
	994
Abdelfatah, Sally:	994 1115 1022 1047

Abdel-Gaber, Rewaida:	313
Abdel-Gawad, Ahmed:	1061
Abdel-Gayed, Hanan:	1233
Abdel-Ghaffar, Fathy:	313, 314, 315, 317, 319
	1151
Abdelghany, Hend:	293
Abdel-Ghany, Hoda:	640
Abdelghany, Mona:	1125
Abdel-Ghany, Sanaa:	1203
Abdelhadi, Hyam:	140
Abdelhady, Marwa:	768
Abdelhafez, Mohamed:	688
Abdelhafiz, Heba:	707
Abd-El-Hafiz, Salwa:	486, 517
Abdel-Hakeem,	897
Mohamed:	
Abdelhalim, Mona:	653
Abd-Elhalim, Shimaa:	1229
Abdelhamid, Abdou:	144
Abdelhamid, Ismail:	66
Abdelhamid, Mahmoud:	443
Abdel-Hamid,	353
Mahmoud:	
Abdel-Kader, Fawzy:	279, 290
Abdel-Kader, Karim:	821
Abdel-Kader,	1175
Mahmoud:	
Abdelkader, Noha:	1033, 1038, 1217
Abdel-Kader, Nora:	96
Abdel-Karim, Abeer:	84, 127
Abdelkawy, Mohamed:	831, 832, 837, 839, 846
	858, 859, 864, 866, 867
Abdelkhalek, Shimaa:	443, 1174
Abdellatif, Galila:	433
Abdel-Latif, Mostafa:	642, 645
Abdelmageed, Alaa:	488, 502
Abdelmaguid, Tamer:	531
Abdelmaksoud, Ahmed:	676
Abdel-Maksoud, Gomaa:	1121
Abdel-Malek, Hany:	1184
Abdel-Meguid, Manal:	793
Abdel-Mobdy, Yasmin:	324
Abdel-Moein, Knaled:	424
Abdel Mehsen Mestefer	121, 131, 182
Abdelmenem Ameli	014 1002
Abdel Mosty	1223
Addel-Mooty,	540, 500
Abdel Moteled Debaby	1058 1061
Abdelmoty Hotom:	1036, 1001
Abdelnahy Shaimaa	121, 124
Abdelnaeem Mostaz.	695
Abdelrahman Ahmed.	533 535
Abdelrahman, Ahmed.	1209
were writering / hillieu.	

www.gsrd.cu.edu.eg

Abdel-Rahman, Ahmed:	1146, 1147	Abul-Fotouh, Amr:	704
Abdelrahman, Maiada:	542	Aburahma, Mona:	969, 971
Abdel-Rahman,	755, 775	Abu-Seida, Ashraf:	414, 416, 417
Mohamed:		Adel, Mohamed:	199
Abdelrahman, Yasser:	905, 910	Adham, Fatma:	176
Abdelraouf, Osama:	1091, 1093	Adly, Amr:	486
Abdel-Rassoul,	817	Affifi, Amal:	361, 363
Mohammed:		Afifi, Reham:	631, 638, 719
Abdel-Razek, Abdel:	767	Aga, Mohamed:	830
Abdelrazek, Fathy:	153, 154, 155, 156, 162	Agha, Aza:	843, 914, 1034, 1039,
Abdelrazik, Noha:	744		1043
Abdelrhman, Amr:	1117	Agha, Hala:	768, 776
Abdelrohman,	1109	Ahmad, Neveen:	179, 181, 183
Mahmoud:		Ahmed, Ahmed:	41, 44, 69, 108, 111
Abdelsalam, Mohamed:	1170	Ahmed, Ahmed:	38, 47, 83, 95, 98, 103,
Abdelsalam, Rania:	876, 1031		104
Abdelsalam, Rania:	959	Ahmed, Ashour:	168
Abdel-Salam, Zinab:	428	Ahmed, Ashour:	60, 124
Abdel-Sattar, Essam:	1015, 1016, 1025, 1027,	Ahmed, Eman:	956
,	1215	Ahmed, Esayed:	66, 104
Abdel-Wahab, Yasser:	231, 235	Ahmed, Hanan:	699, 705, 707, 710
Abdo, Ahmed:	48, 58, 117, 120, 122, 302	Ahmed, Hanan:	603
Abdou. Mohamed:	337, 338, 340	Ahmed, Hanev:	387
Abdou. Rania:	1261	Ahmed, Harby:	1266
Abd-Rabou, Mahmoud:	529, 530	Ahmed, Hoda:	99
Abdulaziz, Osama:	957, 1048	Ahmed. Ibrahim:	355
Abdulmagead, Ibrahim:	273	Ahmed, Kawkab:	390, 392, 393, 415
Abed. Saved Hassan:	1141	Ahmed, Lobna:	1255
Abhar. Hanan:	1030 1031	Ahmed, Maha:	798
Abo, Mennat:	622, 631	Ahmed, Mohamed:	281 282 283 284 285
Aboelnaga, Abeel:	1252		289
Aboelwafa, Ahmed:	966 973	Ahmed, Mohamed:	140
Abou Zeid, Alaa:	802 803	Ahmed, Nadia:	64 128 129
Abou-Dina, Moustafa:	209 228	Ahmed, Nadia:	489 494 495
Abou-Elew, Heba	787	Ahmed, Olfat:	743
Abou-Elnasr, Hend:	821	Ahmed, Rania:	1256
Abouelsaood Ahmed:	490	Ahmed Rhaam	324
Abou-Khadra Maha	773	Ahmed Salwa	26.27
Aboulela Waseem	818	Ahmed Samah	437
Aboul-Enein Ahmed	25	Ahmed Saveda	356 357 359
Aboulfotouh Ismail.	25 717	Ahmed Soher	586
Aboul-Hassan Ahmed	521 526	Ahmed Tamer	<i>AA</i> 7 <i>AA</i> 8
Abou-Sari Sabar	923 928	Ahmed Voussri	212
Abou-Voussef Hozem.	605	Allassar Mohamad	45 46 79 167 1132
Abouzeid Aymen:	403 406 407 409	Alaasai, Wonancu. Alanani Naglaa:	35 771 772 790 794
Abu El-Ela Fatan.	327	Alanani, Nagiaa.	706
Abu Modion Abmod	632 633 636 1200	ALChobashy Modbat.	832 833 853 870
Abu Abdoon	285	Alguindy Azzo:	1243
Abu-Abueen, Mohommod:	283	Algunuy, Azza.	270
Ahuarah Mahamadi	3/1	Ali Abduloziz	5/7
Abualfadi Tamari	571 A72	Ali Ahmed.	816
Abu Elyozood		Ali Aliaa.	674 761
Mohamad.	702	Ali Hosom:	02 4 , 701 348
Abu Khalil Dahami	610	Ali Hussepir	940 914
Abu-Kham, Keham:	017	AII, HUSSSelll:	014

81, 157

428

770

912

1047

1191

353

415

740

1099

766

682

704

558

178, 182

441, 442

898, 899, 904, 909

1

65, 82, 118

608, 614, 957, 1048

Ali, Maisa:	1123
Ali. Mohamed:	1051
Ali, Nouran:	489
Ali, Olfat:	700, 730
Ali, Riham:	62, 64, 89
Ali. Shaimaa:	971, 972, 986, 997
Ali, Shimaa:	48, 120, 122
Ali. Yomna:	726
Alieldin, Nelly:	1054 1055 1056
Al-Inany, Hesham:	717 718 723
Alkhazindar, Maha:	29
Allah, Elham:	418
Allam Samy:	288
Al-Mahallawi	980
Abdulaziz:	200
Al-Mokaddem, Asmaa	390
Alshafei, Arwa:	725
Al-Shorbagy	1032
Muhammad:	1002
Alv. Ahmed:	634
Alv. Mahmoud:	545
Alv. Marwa:	649
Alv Mayssa.	710
Alv. Samir:	930
Ameer. Magda:	110 121 132
Amer. Aziza:	407
Amin. Amr:	634
Amin. Heba:	872
Amin. Ismail:	235
Amin. Kamilia:	920, 937, 942
Amin. Magdy:	908 916 917 918
Amin, Mona:	303, 306, 307, 308
Amin, Shaimaa:	799
Amir. Azza:	310, 1157, 1158, 115
	1162.1164
Anany, Mervat:	639
Anis. Hussein:	462
Ansarv. Mervat:	706
Anwar. Ghada:	756, 770
Arab, Hany:	876, 1032
Arafa, Reem:	73, 925, 926, 929, 94
Aref, Mortada:	185, 187
Aref, Wael:	733
Arnaout, Heba:	772
Asaad, Mohamed:	230, 234, 236, 237
Ashmawi, Abeer:	756
Ashmawy, Maha:	584
Ashour, Fatma:	447
Ashour, Hani:	354
Ashour, Hossam:	901, 902, 903, 906, 9
Ashry, Mohamed:	937
Ashur, Wafaa:	610
Atiya, Amir:	500, 501
Atta, Nada:	48, 58, 117, 120, 122

86, 997 2 1056 23 32 42 17,918 07, 308 1158, 1159, 6,929,947 36, 237 03, 906, 907 Attaby, Prof.: Attalla, Sherief: Atteyah, Amany: Attia, Ahmed: Attia, Amina: Attia, Wael: Awad, Ahmed: Awad, Awad: Awad, Mohamed: Awad, Naglaa: Awad, Zainab: Awadein, Ahmed: Ayoub, Amany: Azim, Fadwa: Aziz, Mohamed: Aziz, Nahla: Aziz, Ramy: Aziz, Rasha: Aziz, Tamer: Azzouz, Iftitan:

B

Badawey, Amr:	851, 865
Badawi, Alia:	987
Badawy), Mohammed:	43, 49, 67, 143
Badawy, Mohamed:	152
Badawy, Omnia:	1089
Badr, Abeer:	1155
Badr, Ahmed:	788
Badr, Amr:	574, 1190
Badran, Ahmed:	730
Badran, Mona:	1102
Badway, Hesham:	721
Bahaa, Nevien:	620, 640
Bahaa, Sara:	688
Bakr, Eman:	1173
Bakr, Mona.:	441, 442
Barakat, Dalia:	354
Barakat, Maged:	891
Barsoum, Rashad:	687, 1203
Basalious, ?Emad:	998
Bashtar, Abdel:	313, 316, 319, 320
Bashtar, Abdel-Rahman:	295
Bassiony, Heba:	306
Bassiouny, Dalia:	651
Bassiouny, Yasmin:	625, 726, 732
Bassyouni, Iman:	807, 808
Bastawros, Nabil:	201, 202, 1141
Basyoni, Maha:	692, 693, 743
Battecha, Kadrya:	1094
Baz, Tamer:	673, 675, 676, 677, 680,
	683

	502 5 00		107
Bazaraa, Hafez:	783, 788	El Badawya, Shaima:	407
Bedir, Hayat:	567	El Barkooky, Ahmed:	195
Belal, Dawlat:	695	El Hussieny, Noha:	691, 696
Bendas, Ehab:	968, 978, 979, 990	El Menvawi, Manal:	689, 701
Beshary, Tarek:	490	El Saved, Nesrine:	1008 1037 1045
Beshlawy Amal	21 749 757 758 765	El Sherbiny Tharwat	288
Desinawy, Amai.	766 767	El Sandony Zainah	620 640 641
	1101 1104 1244	El_Saauany, Zamad.	020, 040, 041
Biltagy, Marwa:	1101, 1104, 1244	Elagna, Abdalla:	598
Boghdady, Noha:	883	El-Anadouli, Bahgat:	41, 44, 65, 111
Bossiela, Manal:	648	Elansary, Afaf:	954, 960
Botros, Manal:	294	El-Ansary, Sohair:	938
Botros, Shahira:	637, 638, 778	El-Anwar, Omar:	558, 561
		Elanwary, Sherif:	623
		El-Arnaouty, ?Saved:	361 363
n		Fl-Askary Hesham	1017
D		Elesson Abdelbalim	005
		Elassasy, Abuellallill.	99J (92
Darauti Mahammadi	657 651	Elattar, Inas:	083
Darouti, Mohammau.	150, 151	Elattar, Mona:	761
Darweesn, Anmed:	150, 151	El-Aty, A.:	394, 395, 396, 397, 398,
Darweesh, Amira:	1063, 1064, 1065		399, 400, 401, 402, 403,
Darweesh, Hanan:	707		404, 405, 406, 410, 411
Darwish, Elham:	81, 141, 149	El-Avadi, Moataz:	470, 477
Darwish, Hany:	838, 847, 849, 854, 855,	Fl-Azah Jala.	425
	856, 860, 868, 871	Elbadowy Monori	1227
Darwish, Hebatallah:	604 876 879 885	El Da dave A success	1237
Darwish Moshora	1090	El-Badry, Ayman:	744, 820
Darwish, Woshera.	1000	El-Bagary, Ramzia:	921, 932, 935, 945, 946,
Daw, Zakria:	172		951
Dawood, Dalia:	894	El-Banna, El-Sayed:	1126
Dawood, Hend:	1143	El-Bardicy, Mohammad:	852
Dawood, Kamal:	102, 135, 140, 161	Elbaroty, Gamal:	328
Deeb, Somaya:	1155, 1156, 1164, 1165	Elbasha, Noussa:	761
Dessouky, Ali:	1113	El-Batawy Vasser	490
Doghaim, Rawhia:	390	Elbayoumi Abmod	1116 1117
Doha. Eid:	200 207 211 213 217	ElDayouini, Annieu.	1165
	219 220, 221, 212, 213, 217, 219, 220, 221 222 223	El-Deddini, Monamed:	1103
	219, 220, 221, 222, 223, 224, 225, 224, 225, 226, 227, 232	El-Beltagy, Mohamed:	503
	224, 225, 220, 227, 252,	Elbialy, Nihal:	11, 13, 14, 15, 18
	239	Elbnna, Hossny:	408
Doss, Essam:	/45	El-Boghdadi, Hatem:	457
Draz, Amira:	1092, 1094, 1098	Elbolkainy, Tarek:	1083
		El-Dahshan, Ahmed:	420
		Eldaly, Mohamed:	736
		Eldanasouri, Nabiel:	641
		Fldash Aliaa.	601
H.		Eluasi, Aliaa.	41 44 60 108 111
		El-Dead, Froi.:	41, 44, 09, 108, 111
		Eldebss, Tana:	59
Ebid. Anwar	1098	Eldeeb, Abeer:	1095
Abdelgaved.	1070	Eldeeb, Mohamed:	36
Ehid Emod	1000	Eldegheidy, Nelly:	780
EDIU, EIIIAU:	1000	El-Dek, Samah:	281, 284, 285
Eddin, Mohamad:	/30	El-Densharv, Ezz:	702, 1029, 1035
Edmardash, Yusuf:	183, 820	El-Dessouky. Maher:	92.119
Edris, Amira:	792	El-Dieb, Samia.	352
Eishi, Nermine:	698	Fl Din Hohet.	852
Eissa, Ahmed:	456	Eldin Lomica	002
Eissa. Ehab:	715	rium, Lamiaa:	1055, 1054, 1056, 1039

El-Ela, Mona:	767	El-Latif, Hekmat:	1046
El-Fadaly, Amina:	582	El-Licy, Fatma:	1195
Elfadaly, Fadlalla:	1112	Ellithi, Ali:	240, 242, 243, 245, 246,
Elfakhrany, Noha:	667		248, 249, 250, 251, 252,
Elfalky, Mona:	761, 776		253, 254, 255, 257, 258,
El-Fattah, Magda:	1237		259, 260, 261, 268, 269,
El-Fattah, Prof.:	81, 157		274, 275, 294
Elfavoumy, Hany:	814	El-Mahallawi, Iman:	543, 1187, 1188
El-Favoumy, Neveen:	810	El-Mahallawy, Hadir:	918
El-Feky, Osama:	1124	Elmahdy, Magdy:	391
El-Fiky, Nabaweva M.:	1021	Elmahgoub. Iman:	631, 638, 719
Elfowy, Fayza:	603, 744, 769	Elmahrouk, Galal:	966, 973
El-Gaidi, Mohamed:	715	Elmalah. Afaf:	959
El-Gamal. Mohamed:	522	El-Manawi, Abd:	185, 191
Elgammal. Mosaad:	1062, 1063, 1065	El-Maraghy, Shohda:	877, 880, 884, 893
El-Gavar. Sanaa:	1112	El-Marsafy, Aisha:	760
El-Gebaly, Reem:	17	El-Mazny, Akmal:	720, 1205, 1206, 1207.
El-Genady, Eman:	1234, 1235	;,;,	1208
Elgendy, Azza:	177	Elmegeid, Marwa:	278 280 287
Elgendy, Dina:	688	Elmeshad, Aliaa:	977
El-Ghandour, Nasser	716	Elmessiery, Medhat	487
El-Ghany Nahedahd	129	El-Midany Avman	536 537 538 539 541
Fl-Ghareeh Tarek	823	Li-winding, ryman.	544
El-Ghar Mahamad	306	Flminiawy Hala.	307 303
Fl-Cohry Hatem	1110 1250 1251	Eliminawy, Maia. Fl-Mistikowy Torok:	<i>1</i> 00
El-Gomy, Hatem.	28	Elmoomly Sharaaf.	618
Elbadidi Basman	28	Elmogy Mohamod	177
Elhafoz Salam.	1001	Elmonom Ahmod	11 13
Elliarez, Salalli.	1091	Elmongy Magda:	1056
El-Hanawally, All.	1007, 1008, 1011, 1023	Elinohowy Ahmody	1050
El-Hamanisy, Wanu.	1234	El Nodi Lotfio:	451,1177
El-Hawagi y, Magui. Filiawary Dahah.	608 614	El-Naul, Luttia. Elnaggar Mahmoud:	457
Elhalf Islam:	658	Elnaggar, Sahari	507 508 512
Elholy Doboby	277	El Nabid Maggio:	507, 508, 512 611
Elholy Doboby	277	El Nogr Emon.	1210
Ellielw, Kellad. Elhonody, Eotmo:	776	El Nassan Hala:	052 057
Ellifnowy Nivoon	1053	El Nobrouy, Emon	955,957 699
Elillawy, Niveeli:	1055	El-Nebrawy, Elliali:	626
El-Huggeiny Ogemen	240	Ellioshokaty, Esaili: Elrogoby Norimon	020
El-Husselly, Osalla. Ellabbany, Faroula.	249 278	Elrahman Ahmadi	000 002 003 006 000
Elkaddally, Falouk.	270	En annan, Anneu:	990, 992, 993, 990, 999, 1002
Elkauy, Ellad.	921, 932, 933, 940, 943,	El Dohmon Mohoggon	671 672
El Kady Maham	951, 952 22, 24	El Dohmon Drof	145
El-Kauy, Maller:	55, 54 199 190 101 102	El-Kallillall, FT01.:	143 650
El-Kammai, Ammeu.	100, 109, 191, 190 662, 762, 764	El Doziky Moisso.	674
El-Nalaksy, Hallaa:	005, 705, 704	El Dohim Dondo.	074
El Kashaumy El Savada	975, 981, 991 1017, 1020	El Difoi Nibol.	700 780 782
El-Mashoury, El-Sayeda:	1017, 1020 617	Elsahoo Mahaw	100, 102 62 1126 1127
Elkaleo, Sara:	01/	Elsabee, Maner:	05, 1150, 1157
El-Khavot Walcod	1042 700	El-Salu, Alyaa: El Sajad Haba	1130, 1139, 1100, 1101 726
El-Milayat, waleeu:	122 611 617	El-Saleu, fieba: El Sajadi Soria	796
Eikiloiy, Nesriii:	044,047	El-Salem Former	100
ElKnoly, Sala:	05	El-Salalli, l'awzý:	U 202
El-Kolaly, HISham:	230 590	El-Sanousi, Anmed:	373 604 800 802 1026
Likorany, Abeer:	300	EI-Sawaini, Mana:	004, 890, 892, 1036

El-Sayed, Abeer:	648
Elsayed, Ahmed:	659, 662
El-Sayed, Ashraf:	346, 347
Elsayed, Ebtesam:	1218
Elsayed, Khaled:	476
Elsayed, Mohamed:	481
El-Sayed, Mohamed:	1186
Elsayeh, Bahia:	1040, 1044
Elsetouhy, Doaa:	987, 1003
El-Shaarawy, Ehab:	582, 585, 586, 715
El-Shabrawi, Mortada:	763, 771, 772, 789
Elshafeey, Ahmed:	970, 975, 976, 982
Elshafei, Abdel Latif:	460
El-Shafeiy, Moataz:	188
El-Shahied, Amal:	1227
El-Shakankiry, Navera:	1049
Elshakhs, Neveen:	603, 750, 754, 788
El-Shamy, Shamekh:	1098
Elsharkawy, Aisha:	685
Elsharkawy, Marwa:	685
El-Sharkawy, Mohamed:	720, 722
Elsharkawy, Tarek:	823
El-Shazly, Alaa:	1246
Elshazly, Malak:	740
El-Shazly, Mohamed:	529 530
Elshazly, Mostafa:	663
Elsheikh. Mohamed:	817
El-Sheikh, Mohamed:	1130
Elshemev, Wael:	16 21
El-Shemy, Hany:	25 325 326 327
Elshenofy, Ahmed:	817
El-Sherbiny, Mahmoud:	529 530
El-Sherbiny, Shakinaz:	449 453
El-Sherbiny, Walid:	719
El-Sherei Moshera:	1026
El-Sherif, Ahmed:	84 127
Elsherif Rasha	600
El-Sherif Samir	357
Elshimy, Mohammed:	815 818 819
El-Shorbagy, Reem:	787
El-Sissy, Azza:	618 623 628
Elsissy, Maha:	612 618 623 628
El-Soda, Mohamed:	364 366
El-Tagui, Mona:	766 768
Eltamawy, Mohamed:	1090
Eltanamly, Rasha:	738 740
El-Tantawi, ?Attia:	1273
El-Tawdy Amira	604 653 701
Eltoukhy Omar:	415
El-Wahah Azza:	389
Elwahy, Ahmed:	76 77 113 152 158
Elzahahy Eman	732
El-Zaher Asmaa.	921 932 940 945
El-Zalahani Sohair	137
El-Zalavalli, Sullelli	137

Elzawahry, Heba: 1053 El-Zawawy, Mohamed: 1144 **El-Zeany, Badr:** 838 El-Zeini, Laila: 1107 **Elzomor**, Sayed: 415 Elzorkani, Bassel: 806 Emara, Mohamed: 423 Emira, Ahmed: 468, 480, 1178 Eshrah, Islam: 471, 472, 475, 479 Esmael, Ihab: 263, 276 Esmat, Gamal: 674, 677, 678, 681, 685, 686, 1202 Esmat, Samia: 650, 653, 688 **Ezzat, Bassant:** 826 Ezzat, Shahira: 1019, 1027 Ezzeldeen, Nashwa: 378

\mathbf{F}

Fahmay, Mohamed:	91, 126, 127, 139, 164
Fahmi, Abdel Gawad:	78, 1132
Fahmy, Ahmed:	564, 568
Fahmy, Gamal:	31
Fahmy, Hossam:	473
Fahmy, Mona:	129
Fahmy, Rania:	974, 997
Fahmy, Reham:	684
Fahmy, Yasmine:	473
Fakhr, Ibrahim M Y:	1068, 1069, 1070, 1078
Farag, Ahmad:	61, 148, 149, 150, 151,
	158, 166
Farag, Aya:	1113
Farag, Magdi:	78, 99, 1132
Farag, Mohamed:	1009, 1010, 1012, 1013,
	1014, 1022
Farag, Prof.:	263, 276
Farag, Radwan:	328
Farag, Randa:	39, 68
Farag, Sherif:	463
Faragg, Samy:	35, 53, 54, 55, 56
Farahat, Sahar:	698
Farawela, Hala M.:	606
Fares, Ahmed:	977, 1214
Farghaly, Thoraya:	72, 102, 125
Farhan, Marwa:	622, 693
Farid, Samar:	894
Fateen, Seif:	450, 451, 452, 454, 455,
	1176, 1177
Fathalah, Waleed:	682
Fathey, Magda:	1007, 1018
Fathy, Hesham:	814
Fathy, Mohamed:	15
Fathy, Mona:	744

629, 766, 767, 768, 785,

809, 811, 813, 1211, 1212,

1145, 1197, 1198, 1199

59, 72, 73, 75, 125, 144,

498, 503, 518, 523, 525

795

1213

714

153

198

161

710

726

599

1221

445, 446

121, 132

465.467

609, 612, 620

937, 938, 943

753, 769, 777

778, 792

Fattah, Gamal: Fattah, Hussam: Fattah, Sherif: Fawzi, Marwa: Favad, Amr: Favad, Tarek: Fayed, Hatem: **Fayez, Mohamed:** Fayez, Yasmin: Fekry, Mostafa: Fishawy, Hussein: Foad, Marwa: Foad, Pakinam: Fol, Mona: Fouad, Hanan: Fouad, Shawky: Fouda, Mohamed:

G

Gaafar, Taghrid:	608, 614, 621
Gaber, Naglaa:	1236
Gaber, Wafaa:	810
Gad, Ahmed:	344
Gad, Zeiad:	1070
Gadalla, May:	1249
Gadallah, Abdel-Sattar:	438, 439, 441, 442
Gad-Allah, Prof.:	145
Gadel-Hak, Farida:	1262
Gado, Ahmed:	737
Gahleb, Ahmed:	209, 210, 228, 1142
Galal, Mona:	369
Galal, Nermeen:	747, 748, 760
Galal, Rasha:	783
Gamal, Yosr:	433, 434, 435
Gamaleldin, Rasha:	779
Gamaleldin, Sameh:	724
Gawad, Fayza:	584
Gawad, Hamdy:	238, 1140
Gawad, Iman:	1048, 1053
Gawad, Mohamed:	195
Gawad, Nagwa:	937
Gawdat, Heba:	604, 644, 649, 650
Gazayerly, Omaima:	966, 973, 982, 989
Gazzar, Iman:	811
Gedawy, Ehab:	959
Genidy, Gehad:	51, 52, 87, 90, 92, 102,
	105, 106, 107, 109, 115,
	119, 138, 160, 165
George, Riham:	919, 922
Georgey, Hanan:	939
Geweely, Neveen:	1122
Ghaith, Doaa:	787

644, 649, 653 500, 501 842,844 1004, 1006 811, 813 946, 951, 952 699,705 692, 693, 694, 1052 504, 506, 513, 515

440

460

662

817

817

335

736

316

Ghany, Eman: Gheita, Tamer: Ghoneima, Adel: **Ghozlan**, Said: Girgis, Marian: Gobashy, Mohamed: Goma, Hala: Gomaa, Ahmed: Gomaa, Sobhy: Goniem, Azza: Gouda. Heba: Gouda, Mai: Gouda, Mohamed: Gouda. Ossama: Gouda, Sherif: Grace, Said R.: Gudia, Amel:

Ghamrawy, Mona:

Ghany, Doaa:

Η

Habib, Basant: 988 Habib, Serag: 469 Hafez, Hafez: 699 760 Hafez, Mona: Hafez, Vanessa: 651 Hak, Maha: 1258 Halim, Dalia: 650 Hamad, Hanan: 302 Hamdan, Mohamed: 194, 1139 Hamde, Mohamed: 873, 893 Hamdy, Mona: 763 Hamed. Dalia: 727, 782, 808 Hamed, Dina: 700, 703, 704, 705, 708, 709 Hamed, Safaa: 1267 Hamid, Azza: 1224 Hammoud, Khaled: 815 Hamouda, Nadia: 851, 865 Hamouda, Rania: 787 Hamza, Hala: 608, 614 Hanafy, Hamdy: 343, 345 Hanna. Mariam: 601.621 Harb, Emad: 1190 Haroun, Ehab: 349 Hashad, Assem: 714 Hashem, Abdelgawad: 912 Hashem, Mohamed: 356, 357, 358, 359 Hashish, Essam: 471

Health Name	701	Haras Mahammada	036 038
Hashish, Nawara:	721	Hussein, Monammeu:	930, 938
Hassan, Abdel-Karim:	522, 1184	Hussein, Kania:	/10
Hassan, Ahmed:	298	Husseni, Maha:	635
Hassan, Dr.:	40, 137, 163	Hussien, Shimaa:	277
Hassan, Fatina:	7/9, 781, 819	Hussin, Hussin:	420, 421, 422, 423
Hassan, Hagar:	58		
Hassan, Hamada:	367, 1169	т	
Hassan, Hassan:	1128	l	
Hassan, Hassan:	210		
Hassan, Hebatallah:	301, 304	Thus have Main	268
Hassan, Maha:	546, 560	Ibrahem, Mai:	308
Hassan, Mohamed:	514, 519	Ibrahim Ak, Adel	443
Hassan, Mohamed:	705, 710	Ibrahim Ak:	500
Hassan, Nagiba:	835, 836, 858, 869	Ibrahim, Ahmed:	522
Hassan, Naglaa:	1279	Ibrahim, Amal:	1056
Hassan, Reem:	639	Ibrahim, Amany:	596
Hassan, Safaa:	91, 139	Ibrahim, Asmaa:	1089
Hassan, Said:	838	Ibrahim, Ayman:	299
Hassan, Samira:	1041	Ibrahim, Hassan:	241, 244, 247, 267, 270,
Hassan, Sawsan:	777		271, 272
Hassan, Seham:	695	Ibrahim, Hayam:	835, 836, 837, 841, 845,
Hassaneen, Hamdi:	140, 146, 154		857, 869
Hassanien. Aboul:	576, 577, 578, 579, 580,	Ibrahim, Ibrahim:	569
, , ,	1173, 1192, 1193, 1194	Ibrahim, Ihab:	888
Hassanien. Mostafa:	742	Ibrahim, Ilham:	787
Hassanien, Reda:	342	Ibrahim, Marwa:	368, 369
Hassona, Amira:	699 700 705	Ibrahim, Mohamed:	603, 617, 769
Hay Rania:	646 651 654 655 656	Ibrahim, Mona:	627
11uj, 11uiu	657	Ibrahim, Noha:	640
Heakal Fakiha	57 114	Ibrahim, Safaa:	911
Hegaz Radwa:	878	Ibrahim, Safinaz:	928
Hegazi Nahil·	335	Ibrahim, Sherif:	300, 301, 304
Hegezy Abdel	814	Ibrhim, Ghaneva:	923, 942, 943
Hogazy, Abuci. Hogazy, Cohan:	034	Isaac, Sally:	1105, 1106
Hogazy, Ochan. Hogazy Maha	831 841 846 859 864	Ishaq, Micheal:	586
ficgazy, wiana.	867	Ismail. Ali:	1108, 1110, 1111, 1114
Hogozy Donio	738	Ismail, Hebat:	350
Hegazy, Rama:	730	Ismail. Ibrahim:	447
negazy, Kenad:	654, 656	Ismail. Ismail:	10
Hoikol Ahmodi	034, 030 701	Ismail. Ismail:	358
Heikai, Allilleu:	701	Ismail Maha:	1225
Henal, Monanieu:	200, 1143	Ismail, Mahmoud:	470 474 476 477 478
Hemeda, Anmed:	444	Ismail Mahmoud:	264 266 273 294
Hemeda, Sayed:		Ismail Manal	873 891
Hilai, Rifaat:	, 60, 80, 123, 124, 136,	Ismail Mohamed	387
TT'I I' X / I	163, 173	Ismail Nahila.	879
Hilali, Mosaad:	388, 389	Ismail Doom.	674 786
Hosni, Hassnaa:	28	Isman, Accin.	024,700 27 74 112 124
Hunter, Shereen:	680	Issa, I ousi y.	57, 74, 112, 134 610, 611, 617, 762
Hussein, Ahmed:	818	155au, martanne:	010, 011, 017, 702
Hussein, Ali:	1242		
Hussein, Amr:	720	Т	
Hussein, Hamdy:	509, 510	J	
Hussein, Hanaa:	116, 133		
Hussein, Hussein:	529, 530	Jakee Jakeen.	378
		JANCE, JANEEII.	510

L

K

Kadah, Yasser M.:	566, 570, 571, 1189
Kadry, Dalia:	1155
Kadry, Hanan:	960, 961
Kamal, Aliaa:	954
Kamel, Abdullah:	1125
Kamel, Ahmed:	427, 429
Kamel, Gehan:	923
Kamel, Manal:	605, 792
Kamel, Marwa W.:	1071
Kamel, Mona:	955
Kana, Maram:	440
Kandil, Hisham:	725
Kandil, Zeinab:	1017, 1023
Kaoud, Hussein:	420
Kasam, Huessin:	714
Kasem, Mohamed:	430
Kasem, Rehab:	828
Kassab, Asmaa:	959
Kassab, Nazmi:	155
Kassem, Mohamed:	977
Kenawy, Sanaa:	811, 1040, 1042, 1216
Khafaga. Medhat:	1069
Khairy, Walaa:	804
Khalafb, Abd:	369. 419
Khaled. Hussein:	325, 805, 1057, 1059,
	1060, 1083
	100
Khaleel. Amal:	1026
Khaleel, Amal: Khalial, Gamal:	1026 78, 100, 128, 169, 172
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy:	1026 78, 100, 128, 169, 172 669
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba:	1026 78, 100, 128, 169, 172 669 1090
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser:	1026 78, 100, 128, 169, 172 669 1090 426
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali:	1026 78, 100, 128, 169, 172 669 1090 426 193
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed:	1026 78, 100, 128, 169, 172 669 1090 426 193 116
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khatab, Marwa:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khatab, Marwa: Khattab, El:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khatab, Marwa: Khattab, El: Khattab, Fatma:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khatil, Wafaa: Khatab, Marwa: Khattab, El: Khattab, Fatma: Khattab, Mahmoud:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khalil, Wafaa: Khatab, Marwa: Khattab, El: Khattab, Fatma: Khattab, Mahmoud: Khattab, Sherif:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Nadia: Khalil, Wafaa: Khatib, Marwa: Khattab, El: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khatib, Marwa: Khattab, Marwa: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Mohamed: Khalil, Wafaa: Khalil, Wafaa: Khatib, Marwa: Khattab, Marwa: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola: Khorshied, Mervat:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Mohamed: Khalil, Nadia: Khalil, Wafaa: Khalil, Wafaa: Khatiab, Marwa: Khattab, El: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola: Khorshied, Mervat: Khouisa, Mnia:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619 980, 992
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Nadia: Khalil, Wafaa: Khalil, Wafaa: Khatib, Marwa: Khatab, Marwa: Khattab, El: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola: Khorshied, Mervat: Khouisa, Mnia: Kishk, Nirmeen:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619 980, 992 698, 773
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Nadia: Khalil, Wafaa: Khalil, Wafaa: Khalil, Wafaa: Khatab, Marwa: Khatab, Marwa: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola: Khorshid, Ola: Khorshid, Mervat: Khouisa, Mnia: Kishk, Nirmeen: Komy, Mohamed:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619 980, 992 698, 773 701
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Nadia: Khalil, Nadia: Khalil, Wafaa: Khalil, Wafaa: Khalil, Wafaa: Khatab, Marwa: Khatab, Marwa: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Kholy, Amani: Khorshid, Ola: Khorshied, Mervat: Khouisa, Mnia: Kishk, Nirmeen: Komy, Mohamed: Koptan, Wael:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619 980, 992 698, 773 701 708
Khaleel, Amal: Khalial, Gamal: Khalifa, Badawy: Khalifa, Heba: Khalifa, Heba: Khalifa, Yasser: Khalil, Ali: Khalil, Mohamed: Khalil, Mohamed: Khatiab, Marwa: Khatiab, Marwa: Khattab, Fatma: Khattab, Fatma: Khattab, Sherif: Khoty, Amani: Khorshid, Ola: Khorshid, Ola: Khorshid, Mervat: Khouisa, Mnia: Kishk, Nirmeen: Komy, Mohamed: Koptan, Wael: Kord, Ahmed:	1026 78, 100, 128, 169, 172 669 1090 426 193 116 956 15 392, 393 6 861, 862 1033 575 602, 616, 624 609, 613 606, 609, 612, 613, 619 980, 992 698, 773 701 708 475, 479

Labib, Khaled: Leheta, Tahra: Lotayef, Mohamed: Louis, Dina:

1117 655, 656 1069, 1078 1002

\mathbf{M}

Mahraka Dania.	340
Machhour Hoha	1250
Machinour, ficua. Macky Tamar	735 737 730
Madhuly Dogo	1109
Madian Noba	17
Madi Rania:	624 767
Maged Ahmed	727 728 729
Mahana Noha	1156
Mahdy, Amina:	813
Mahdy, Dali:	1012
Mahdy, Mohamed:	1276
Mahgoub, Doaa:	648
Mahgoub, Shirihan:	613
Mahmod, Shreen:	601
Mahmood, Hala:	1122 1125
Mahmoud, Ahmed:	565
Mahmoud, Avman:	423
Mahmoud, Enas:	964
Mahmoud, Enas:	1050
Mahmoud, Mohammed:	1238
Mahmoud, Mona:	784
Mahmoud, Nagwa:	1033
Mahmoud, Samia:	762, 774
Mahmoud, Serag:	630, 688, 690, 693
Mahmoud, Sherif:	676, 1050
Mahmoud, Walaa:	92, 119
Mahmoud, Abdelkader:	279
Mahrous, Engy:	1009
Mahrus, Mona:	725, 731, 732
Makar, Samuel:	603
Makary, Meena:	566, 1189
Makhlouf, Amal:	967, 989, 994
Maksoud, Abdel-	1070
Maksoud:	
Mansour, Hesham:	296, 297
Mansour, Lobna:	746
Mansour, Mohie:	534
Mansour, Osman:	1069, 1078
Mansour, Wael:	1072
Marei, Waleed:	386
Marouf, Hala:	762, 774
Marouf, Sherief:	380, 381, 382

Marzahan Raghda.	684	Mohamad Sobair	710
Marzook Hoda	774	Mohamed Tarek	448
Marzouk Huda	862	Mohamed Waal	210
Marzouk Mohamed	547 548 549 550 555	Mohamed Waleed	1075
Warzouk, Wonameu.	557 550 562	Mohamed Zeinat:	24 26 27
Manzault Mahamadi	307, 339, 302	Mohammad Walaa	24, 20, 27
Marzouk, Monameu:	592 700	Sound.	1091, 1093
Marzouk, Samar:	/00	Sayeu:	1226
Mattar, Mervat:	891	Monammed, Amany:	1220
Mausour, Monamed:	892	Monammed, Faten:	391
Mazioum, Reda:	1115	Monammed, Mona:	153
Meguid, Afar:	1/8	Monammed, Samin:	816
Meguid, Khadiga:	646, 657	Mohany, Safaa:	861, 862
Mehaisen, Gamal M K:	348	Mohareb, Rafat:	70, 71, 170, 171, 174, 175
Mehaney, Dina:	604, 605, 696, 761	Moharram, Hatem:	229
Mehanna, Ghrraa:	1260	Mohey, Abeer:	810
Mehanny, Sameh S F:	551	Mohey, Muhammed:	677
Mehasseb, Marwa:	685	Mohieldin, Ahmed:	468, 480
Mekky, Ahmed:	150, 151, 158	Mohsen, Adel:	493, 496
Merey, Hanan:	843, 848	Mohsen, Lamiaa:	763
Meshaal, Safa:	601, 760	Mohsen, Mohsen:	612
Meshref, Alaa:	815, 816	Mokhtar, Sherif:	896
Metwally, Fadia:	856, 868	Monem, Azza:	1024
Metwally, Nadia:	155, 159	Morad, Mohamed:	696
Mina, Mary:	882	Morgan, Sherif:	332
Mishaal, Marwa:	602	Morsi, Nadia:	967
Moawad, Adel:	385	Morsy, Hany:	815, 818, 819
Mobarak, Enas:	822	Mosaad, Dalia:	1094
Mobarak, Salma:	1263	Mosaad. Nehad:	1050
Mogahed, Adel:	573	Mosad, Mai:	1247
Mogoda, Awad:	1135	Mosharafa, Adel:	210
Mohamed, Abdo:	21	Mosharafa, Ashraf:	816.817
Mohamed, Abeer:	1075	Mossallam, Ghada:	1053
Mohamed, Ahmed:	264 266	Mostafa, Azza:	850
Mohamed Ahmed:	1184	Mostafa Eman	378
Mohamed Ahmed:	376 377 384 424	Mostafa Hamdy	14 18
Mohamed Ali	581	Mostafa Hassan	483 1179 1180
Mohamod Amany:	110 121 132 147	Mostafa Mahaa	277 208
Mohamed Aymon	282	Mostafa Nadia:	624, 780
Mohamed, Ayman.	202	Mostofo Somio	402
Mohamed Daviet	1050	Mostofo Toymoury	492
Mohamed, Dawlat:	592	Wiostara, Taymour:	502 504 505
Mohamed, Ellas:	JOJ 702 709 996		<i>393, 394, 393</i>
Monamed, Hazem:	/03, /08, 880	Mostala, walaa:	127, 128, 129
Mohamed, Heba:	844	Motaal, Amira:	1026
Mohamed, Ibrahim:	970, 975, 982	Motawi, Tarek:	883, 884, 885, 886, 888,
Mohamed, Khaled:	956, 958		890
Mohamed, Magda:	302	Mougi, Fatma:	769
Mohamed, Magdi:	998	Mourad, Sherif:	546, 553, 556, 560
Mohamed, Mervat S.:	30, 66	Mousa, Heba:	610
Mohamed, Mohamed:	140	Mousa, Mahmoud:	692, 1051, 1052, 1067
Mohamed, Mohamed:	286, 292	Mousa, Sabry:	1172
Mohamed, Mostafa:	1210	Mousa, Somaia:	622, 626, 627, 629, 631
Mohamed, Prof.:	166	Moussa, Bahia:	948
Mohamed, Sabrein:	1133, 1134	Moussa, Salwa:	, 432
Mohamed, Sandy:	1066	Moussa, Tarek:	22, 23, 26, 27, 30

Moustafa, Gehan:	1220	Raafat, Hala:	813
Moustafa, Hosna:	635	Rabie, Walaa:	625
Mukhtar, Ahmed:	684, 787	Radwan, Ahmed:	484, 485, 504, 505, 506,
Mustafa, Prof.:	93, 94, 142		513, 515, 516, 517, 1181
			1182, 1183
N T		Radwan, Ghada:	801
IN		Radwan, Noha:	1053
		Ragab, Fatma:	924, 925, 927, 933, 941,
NT-1	007 005 1000 1002		944, 949
Nabarawi, Monammed:	987, 995, 1000, 1003	Ragab, Gaafar:	689, 1202
Nadaam, Maklas	003, 779, 788	Ragheb, Marianne:	948
Nadeem, Nama:	1255	Raheem, Nahid:	542
Naga, Mazen:	090 100 160 172	Rahman, Abdel:	1086
Naguib, Hala:	100, 109, 172	Rahman, Enas:	1024
Naguid, Monamed:	1201	Rahman, Hala:	608, 613, 787
Nagy, Sayeu:	50	Rahoma, Walid:	6
Nasr, Ami: Nasr Mamdauh	013	Rakaiby, Marwa:	909, 914
Nasr, Mamuoun:	4/2	Ramadan, Dalia:	617
Nasralla, Mogeda:	582 1062	Ramadan, Hazem:	546, 560
Nassar, Hanan:	1002	Ramadan, Mohamad:	1069
Nassar, Monamed:	497, 514, 519	Ramadan, Nesrin:	843, 850
Nassar, Nona:	8/7, 1052, 1055	Ramadan, Othman:	551
Nassar, Rama:	534 1001	Ramadan, Safaa:	1060
Nasian Hanan	1091	Ramadan, Sohair:	1151
Nazier, Hanan:	1243	Rashad, Ragaie:	543, 1188
Nissan, Tassin: Nach Mahammadi	920, 931, 930, 930, 938	Rashed, Laila:	588, 644, 646, 654, 695,
Noughi Mona.	1264 1265		697, 702, 703, 708, 710,
Noub Mohamadi	202		799
Nour Samia.	088	Rashed, Youssef:	554
ivoui, Saima.	300	Rashid, Amina:	1257
		Rashwan, Weam:	827
$\mathbf{\cap}$		Raslan, Ayman:	724
U		Rassem, Mohamed:	5
		Rawy, Enaam:	210
Obayah, Gihan:	787	Raziky, Mona:	/64, /84
Ogaly, Hanan:	369	Refai, Monamed:	3/9
Okasha, Tahsien:	1239	Keneem, Nadia:	1069, 1089
Omar, Mohammed:	1096, 1097	Reniem, Ayman:	682
Omara, Fatma:	573, 575	Kenim, Emam: Dorbollah, Nogrinos	324 951 965
Omran, Dalia:	630, 682	Rezkanan, Nesrine:	851,805
Orabi, Abeer:	1222	Rezy, El: Diad Normina.	699,703
Oraby, Azza:	769	Riau, Nermine: Didi Daghika.	027
Osman, Amira:	614, 621	Niui, Kasilika: Divadh Savadi	512, 521, 1105 75
Osman, Kamelia:	375, 376, 378, 380, 381,	Niyauli, Sayeu. Dizk Amoli	75 806
	382, 383, 384	NIZK, Allial. Dizk Aymon:	582
Osman, Mohamed:	238, 1140	NIZK, Aymäni. Dizk Hussian:	502 602 639
Osman, Omneya:	614, 621	NIZK, HUSSICII; Dizk Somio:	502,059
Othman, Ahmed:	962, 963, 965, 983, 984,	NIZK, Sällilä: Rizkh Shorino:	11+ 877 887 887 888
	985	Romeih Fhah	353
		Roshdy Nagwa.	705
n		Rostom Vesmin.	841
K		avolutity i astititi.	071

R

S

\sim		Selim, Laila:	617, 746, 753, 769, 777
	1062 1065	Seloma, Yousria:	1237
Saber, Magdi:	1062, 1065	Senousy, Amira:	1012
Sabet, Salwa:	12, 306, 307, 308, 309	Serror, Mohammed:	556
Sabri, Mostafa:	203, 208	Seyam, Reham:	822
Sabry, Nirmeen:	894, 896	Shaaban, Mohamed:	76, 77, 113
Sabry, Omar:	1005	Shaarawy, Mohammed:	829
Sadik, Nermin:	886, 889	Shabana, Amro:	1078
Safar, Marwa:	1043	Shady, Hoda:	262
Safar, Zeinab:	532	Shady, Omayma:	743
Safwat, Maheera:	892	Shafik, Hanan:	1060
Said, Kareem:	313, 316, 319, 320, 1152,	Shahat, Mahmoud:	1127, 1268
	1153, 1154	Shahba, Mohamed:	1131
Sakr, Ahmed:	488, 502	Shaheen, Amira:	880, 887, 892
Sakr, Amina:	509	Shaheen, Iman Abdel	612, 619, 626, 629, 637
Sakr, Mony:	1078	Mohsen:	
Salah, Ahmed:	14, 18	Shaheen, Mohamed:	788
Salah, Doaa:	819	Shahin, Amira:	812
Salah, Salwa:	1001	Shahin, Nancy:	881
Salam, Amina:	767	Shahin, Walaa:	761
Salama, Dena:	648	Shaker, Dalia:	733
Salama, Dina:	1120	Shaker, Olfat:	688 701 706 773 890
Salama, Maha:	1007, 1018, 1019	Shalaby Emad:	25 1167 1168
Salama, Rabab:	620	Shalash, Ahmed:	473
Salama, Walid:	187, 189, 190	Shamloul Reham	714
Saleem, Sahar:	660, 661, 664, 665, 666	Shamma Rehah:	969
Saleh, Doaa:	763, 800, 801, 804, 805	Shanah Sanaa.	25
Saleh, Fatma:	146	Sharawi Amr A R·	567 572
Saleh, Hazem:	443	Shash, Vehia:	543
Saleh, Mahmoud:	42, 65, 82	Shauruh El-Saved	178 182
Saleh, Mohammed:	462	Shawali Ahmad:	144 146
Saleh, Nadia:	647	Shawky Doga.	511
Saleh, Nesma:	1109	Shawky, Doua. Shawky Sara:	1185
Saleh, Noha:	14, 19, 20, 21	Shehah Gaher	794
Saleh, Said:	145	Shehah Hanv	673 675 677
Saleh, Wael:	724	Shehab, Mary:	38 98
Salem, Fadia:	769	Shehata Mohamed:	131
Salem, Hamed:	552, 563	Shehata Mostafa	845 857
Salem, Hesham:	1040	Shenawey.	1241
Salem, Hosni:	814, 820	Abdelbameed:	1271
Salem, Khaled:	741	Sherif Omayma:	96
Salem, Maissa:	833, 838, 853, 863	Sherif Sherif	172
Salem, Salem:	1056, 1064, 1065	Sheta Eldessouky:	172 A15
Salit, Mohamed:	763	Sheta Sahar	797
Samer, Mohamed:	341	Shiba Hala	629
Samir, Rania:	1118	Shibl Mohamed:	124
Samy, Reda:	1240	Shokir Fissa	530
Sanad, Manar M.:	339	Shoukri Ramia.	980
Sawires, Happy:	793	Shoukry Ahmed.	815 818 810
Sayed, Ahmed:	615	Shouman Ahmad.	815 818 810
Sayed, Rabab:	1040	Shouman, Annieu: Shouman, Samia A	66 1076 1097 1090
Sayed, Riham:	1008, 1023, 1028	Shousha Handi	676 683 1050
Seddiek, Hanan:	798	Shousha, Hellu:	070,005,1050
·			

Seif, Walaa: Seliem, Zeinab:

265

786

492

329

1171

9, 12, 309

350, 351

914, 917

97, 101, 130

717, 721, 724

1231, 1232

443, 1174 676, 683

370, 371, 372, 373, 374,

834, 841, 857, 862

Shresher, Mohamed: 1062 Shuaib, Doaa: 582 Soaida, Sherif: 819 Sobih, Alaa: 776 Soliman, Ahmed M.: 485, 1182, 1183 Soliman, Amira: 1274, 1275 Soliman, Fathy: 1007, 1018 Soliman, Manar: 339 Soliman, Mohamed: 874 Sulaiman, Rania: 878 Suloma, Ashraf: 349 Sweilam, Nasser: 199, 204, 205, 214, 215, 229, 233 Swidsn, Amal: 1272

1100, 1103

698, 699, 704, 705, 707,

1063, 1064, 1065

186, 192, 193

330, 331, 333

42, 147

701

478 1175

32

418

974

734

T

Tadros, Mina: Taha, Fatma: Taha, Fatma: Taha, Manar: Taher, Amany: Talaat, Neveen: Tammam, Reham: Tawfic, Shereen: Tawfik, Mohamed: Tayeb, Tarek: Tharwat, Nagwa: Torad, Faisal:

Tadros, Chahir:

W

Wadid, Magdy:	62, 89, 128
Wahab, Mohamed:	2, 3, 8
Wahba, Amr:	722
Wahed, Manal:	569, 572
Wanas, M.:	5
Wanas, Prof.:	4,7
Wilson, Manal:	780
Wissa, Marian:	611

Y

Yamany, Samar:	1016
Yassin, Aymen:	900, 915, 917
Yassin, Nadia:	798
Yehia, Azza:	881
Yehia, Soad:	1000

Younis, Mohamed: Yousef, Mamdouh: Yousef, Mohammad: Yousif, Ahmed: Yousif, Tamer: Youssef, Helmy Mohamad: Youssef, Mohamed: Youssef, Mohamed: Youssef, Mohamed: Youssef, Naglaa: Youssef, Tarek: Yusuf, Mohammed:

Z

Zaazaa, Hala:	832, 839, 84
	863, 866
Zaghloul, Ashraf:	1078
Zakhary, Nadia:	1077, 1086
Zaki, Abdel:	172
Zaki, Hala:	882, 1034, 1
	1046, 1047
Zaki, Naglaa:	651
Zaki, Sherif:	583, 584, 58
Zamil, S.:	819
Zawilla, Nermin:	733, 734
Zayed, Mohamed:	86
Zayed, Mohamed:	534
Zayed, Naglaa:	601
Zayed, Rania:	630
Zeeneldin, Ahmed:	1062, 1063,
Zeineldin, Hatem:	458, 459, 46
Zekri, Abdelrahman:	1073, 1074,
	1079, 1080,
	1083, 1084,
Zwam, Hamdy:	606

339, 840, 848, 852,
366
1086
1034, 1038, 1039,
1047
584, 587
734
1063, 1064, 1065
459, 461, 464, 466
1074, 1075, 1078,
1080, 1081, 1082,
1084, 1085

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