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8th World Congress on

# Toxicology and Pharmacology

April 13-15, 2017 Dubai, UAE

# Scientific Tracks & Abstracts

## (Day 1)

# Session:

Day 1 April 13, 2017

## Toxicology and Risk Assessment | Experimental and Toxicologic Pathology | Toxicology Applications | Medicine Development and Safety Testing


**Session Chair**
**Jirova Dagmar**
National Institute of Public Health, Czech Republic

**Session Co-Chair**
**Kristina Kejlova**
National Institute of Public Health, Czech Republic


| Session Introduction | |
|---|---|
| Title: | **Alternatives to animal experimentation** |
| | **Mukul P Pore**, Intox Pvt. Ltd., India |
| Title: | **Cytotoxic agent, oxidative stress, N-acetylcysteine, cell death protection and overlooked chemistry behind** |
| | **Petr Mlejnek**, Palacky University Olomouc, Czech Republic |
| Title: | **Baclofen systemic toxicity: Experimental histopathological and biochemical study** |
| | **Sahar Y Issa**, Alexandria University, Egypt |
| Title: | **Phytotherapy: Transition of tradition to technology with special reference to anti-tuberculosis drugs** |
| | **Sangeeta Shukla**, Jiwaji University, India |

# Session:

## Pharmacology | Applied Pharmacology | Pharmacological Testing | Environmental Pharmacology


**Session Chair**
**Swamy KB**
Universiti Sultan Zainal Abidin, Malaysia

**Session Co-Chair**
**Sahar Y Issa**
Alexandria University, Egypt


| Session Introduction | |
|---|---|
| Title: | **Rate of interaction between antibiotics and nonsteroidal anti-inflammatory drugs in a district hospital in Palestine** |
| | **Yasin I Tayem**, Arabian Gulf University, Bahrain |
| Title: | **A possible role of Oxytocin on spermatogenesis and steroidogenesis in mouse: An approach towards development of precocious puberty** |
| | **Shabana Anjum**, Banaras Hindu University, India |
| Title: | **Natural products as drug leads for neurodegenerative diseases; Alzheimer and dementia** |
| | **Heba Handoussa**, German University in Cairo, Egypt |

Mukul P Pore, Toxicol Open Access 2017, 3:1 (Suppl)
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## Alternatives to animal experimentation

**Mukul P Pore**
Intox Pvt. Ltd., India

Thousands of new chemicals need to be evaluated every year for safety and efficacy. Millions of animals are used to test safety and effectiveness of a wide range of consumer products including drugs, cosmetics, household products, pesticides, industrial chemicals etc. Because of the widespread use of chemicals in everyday life, we are exposed to variety of natural and man-made chemicals. Every day one new chemical is being added. Use of animals in toxicity testing has increased immensely. These animal tests are time intensive and costly. Also there is a growing public criticism for the use of animals. If we do not experiment on animals, how will we derive our discoveries, our cures? Alternate methods therefore are an absolute necessity. There are various good reasons for development and validation of non-animal alternatives and testing strategies for toxicity testing considering all scientific, economic, logistical, ethical and legal aspects. Last decades, significant efforts have been undertaken to develop alternative methods to assess toxicity. A range of non-animal methods are available. These alternative test methods are developed and validated using Reduction, Replacement and Refinement – 3 R's approach. Considerable progress in the development of alternative methods have been made in some fields such as – dermal toxicity, ocular toxicity, reproductive and developmental toxicity, carcinogenicity, hepatotoxicity, neurotoxicity and biological testing. Of these assays, some are scientifically validated while others are still under development. In this presentation, some important alternative assays will discuss in short. Advantages and limitations of these alternate methods will also be discussed.

### Biography

Mukul P Pore is one of the founders and is the Lifetime Director of INTOX Pvt. Ltd. which is a well-known GLP certified contract research organization. He is a Diplomate of the American Board of Toxicology (DABT), European Registered Toxicologist (ERT) and Fellow of Indian Society of Toxicology (FST). He has designed and conducted number of toxicology studies for diverse kind of products - pharmaceuticals, agrochemicals, biotechnology products, specialty chemicals, vaccines, medical devices, industrial chemicals etc., during his experience of over 28 years in regulatory/descriptive toxicology. Since 1996, he has played an important role in establishing and bringing INTOX to international standard and repute. He is an *Ad Hoc* specialist for AAALAC International, USA (2010-2013; 2013-2016; 2016-2019). He is member of many professional bodies/societies including Indian Society of Toxicology (STOX), Chinese Society of Toxicology, Japanese Society of Toxicology (JST), UK Registry of Toxicology and Laboratory Animal Scientists Association of India. He was nominated on 'REACH Expert Committee" as "Expert in the field of Environment, Health and Safety" by Ministry of Chemicals & Fertilizers, Govt. of India (2015). He was nominated as Advisor of Editorial Board of "*Toxicology International*" journal in 2009.

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**Notes:**

Petr Mlejnek, Toxicol Open Access 2017, 3:1 (Suppl)
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## Cytotoxic agent, oxidative stress, N-acetylcysteine, cell death protection and overlooked chemistry behind

**Petr Mlejnek**
Palacky University Olomouc, Czech Republic

**Statement of the Problem:** Many cytotoxic agents induce cell death that is accompanied by Reactive Oxygen Species (ROS) production and by Glutathione (GSH) depletion. Not surprisingly, N-Acetylcysteine (NAC), well known antioxidant and precursor of GSH synthesis, prevents the ROS production, restores GSH level and prevents cells from death. Such effect of NAC is usually used as corroborative evidence that, cell death induced by studied cytotoxic agent is mediated by ROS production and/or by GSH depletion. Detailed analysis of many experimental systems, however, shows that such simple interpretation of results might be misleading. The purpose of this study is to describe the general experimental approach as to how to avoid misinterpretation of the results.

**Methodology:** A detailed LC/MS/MS analysis of the possible interactions between studied cytotoxic agent and NAC within cells and in the growth medium was made.

**Findings:** We studied various compounds that are known to induce ROS production and/or GSH depletion prior to cell death induction and whose cytotoxicity can be abrogated by NAC. LC/MS/MS analysis revealed that NAC covalently bound to these compounds usually by non-enzymatic reaction and converted them into nontoxic compounds: Agent-NAC or agent-2NAC.

**Conclusion & Significance:** NAC is a reactive compound that may directly interact with the studied cytotoxic agent, while converting it into non-cytotoxic compound covalently bound with NAC.

### Recent Publications

- Mlejnek P, Dolezel P and Kosztyu P (2012) P-glycoprotein mediates resistance to A3 adenosine receptor agonist 2-chloro-N6-(3-iodobenzyl)-adenosine-5'-N-methyluronamide in human leukemia cells. J Cell Physiol 227: 676-685.
- Kosztyu P, Dolezel P and Mlejnek P (2013) Can P-glycoprotein mediate resistance to nilotinib in human leukaemia cells? Pharmacol Res 67 (1): 79-83.
- Kosztyu P, Bukvova R, Dolezel P and Mlejnek P (2014) Resistance to daunorubicin, imatinib, or nilotinib depends on expression levels of ABCB1 and ABCG2 in human leukemia cells. Chem Biol Interact 219: 203-210.
- Mlejnek P and Dolezel P (2014) N-acetylcysteine prevents the geldanamycin cytotoxicity by forming geldanamycin-N-acetylcysteine adduct. Chem Biol Interact 220: 248-254.
- Mlejnek P and Dolezel P (2015) Loss of mitochondrial transmembrane potential and glutathione depletion are not sufficient to account for induction of apoptosis by carbonyl cyanide 4-(trifluoromethoxy) phenylhydrazone in human leukemia K562 cells. Chem Biol Interact. 239: 100-110.

### Biography

Petr Mlejnek is currently working as an Associate Professor in Biology and Head of the Department of Anatomy at the Palacky University in Olomouc, Czech Republic. He completed his Master's in Biochemistry from the University of J E Purkyne in Brno, Czech Republic and obtained his PhD degree in Biophysics from the Institute of Biophysics Academy of Science of the Czech Republic in Brno, Czech Republic. He is a member of Scandinavian Society for Cell Toxicology and International Society for the Study of Xenobiotics. Currently, he and his research group are focused on the study of mechanisms of cell death in cancer cells and mechanisms of multidrug resistance in cancer cells.

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# Baclofen systemic toxicity: Experimental histopathological and biochemical study

**Sahar Y Issa[1], Essam M Hafez[2], Asmaa S El-Banna[1], Safaa M Abdel Rahman[3], Maha K AlMazroua[4]** and **Mostafa Abo El-Hamd[2]**
[1]Alexandria University Faculty of Medicine, Egypt
[2]Minia University, Egypt
[3]Central Laboratory, Egypt
[4]Dammam Poison Control Center, KSA

The study was performed on 30 healthy adult male Albino rats divided into four groups with five rats in each control group, and ten rats in either experimental groups (two experimental and two control groups). Five rats (negative control) were kept in a quite non-stressful environment, provided with food ad libitum and free access to water. Normal saline (1 ml) was given orally as placebo in the positive control group (n=5). Experimental group III, Baclofen acute toxicity group (10 rats): Each animal received a single dose of LD50 of Baclofen orally by gavage. It equals 145 mg/kg b wt. The rats were observed for acute toxicity manifestations as well as for LD50 deaths. Group IV, (Baclofen dependent group 10 rats): Each animal received Baclofen (1/10th LD50) in gradually increasing doses for one month. The levels of blood urea nitrogen (BUN), creatinine kinase (CK), alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), gamma-glutamyl transpeptidase (GGT), cardiac troponin I (CTnl), prothrombin time (PT), in both Baclofen treated groups showed significant elevation when compared to controls. There were brain, lung, gastric, hepatic, and renal histopathological changes in Baclofen treated rats whose severity varied between the two experimental groups.

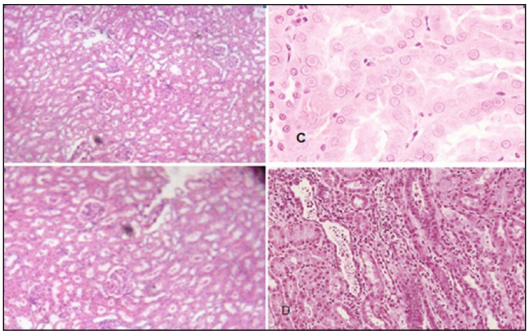


***Figure 1:*** *Renal tissue in different groups*

## Biography

Sahar Y Issa has completed her Doctorate degree in Clinical Toxicology & Forensic Medicine in 2008, from Faculty of Medicine, Alexandria University, Egypt and is a Lecturer of Clinical Toxicology & Forensic Medicine in the same University. She is currently a Consultant Toxicologist, and the Medical Director, supervising Emergency Toxicology, Molecular Toxicology, & Therapeutic Drug Monitoring units in Dammam Poison Control Center, MOH - Saudi Arabia. She has published more than 25 papers in reputed journals and serving as an Editorial Board Member of repute.

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# Phytotherapy: Transition of tradition to technology with special reference to anti-tuberculosis drugs

**Sangeeta Shukla, Neelu Sinha** and **Amita Jaswal**
Jiwaji University, India

**Statement of Problem:** Anti-tuberculosis drug (ATD)-induced hepatotoxicity is a major impediment for the effective treatment of tuberculosis (TB). All first-line anti-TB medications have adverse effects that interrupt the successful completion of TB treatment. This study was planned to investigate the evaluation of the protective role of phytotherapy (*Phyllanthus amarus* (PA) and *Nigella sativa* (NS) and their active principles, Phyllanthin and Thymoquinone) against liver injury caused by ATDs.

**Methodology & Theoretical Orientation:** Rats were treated with ATD for 8 weeks (3 days/week) as given for the treatment of TB. This was followed by phytotherapy for 8 weeks (3 days/week).

**Findings:** Administration of combined ATDs induced hepatotoxicity was evident from a significant elevation in the AST, ALT, ALP, bilirubin, albumin, cholesterol, urea, uric acid, creatinine, LPO and decreased activities of enzymes, i.e., SOD, CAT, GR, GPX and G6PDH in liver. ATD significantly increased TNF-α, IL6, IL10 and DNA damage and showed sharp depletion in CYP2E1 activity as assessed by estimating AH and AND activity. These altered variables were significantly reversed towards normal after treatment with phytotherapy. Histological studies (LM & EM) also supported biochemical findings confirming the effectiveness of therapeutic agents.

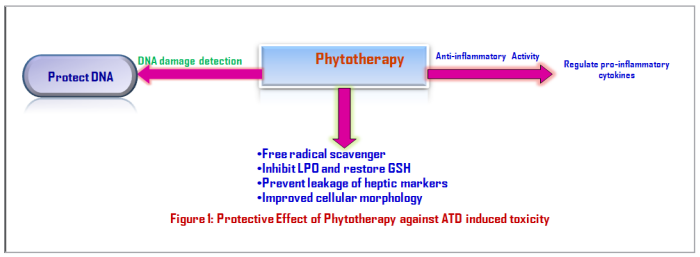

Figure 1: Protective Effect of Phytotherapy against ATD induced toxicity

**Conclusion & Significance:** Results of this study strongly indicated protective effect of phytotherapy and thus, can be expected as promising protective agent in maintenance of normal hepatic function during treatment with ATD.

## Biography

Sangeeta Shukla is Vice Chancellor of Jiwaji University, Gwalior (MP) India. She has wide experience of research in the field of Biochemical Pharmacology, Environmental Toxicology and Reproductive Biology. She has been awarded fellowship from Welcome Trust, Indo-French Government Fellowship UK and many others. She has published 113 papers in SCI journals with good citation indices. She has also edited a book and contributed chapters in books. In recognition of her efforts, she held international positions as Vice President for Asian Continent of International Centers for Trace Element Study for UNESCO, France including Council Member of ISTERH. She has completed 20 major research projects and supervised 21 PhD thesis and many dissertations of MPhil and MSc students.

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## Notes:

Yasin I Tayem et al., Toxicol Open Access 2017, 3:1 (Suppl)
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# Rate of interaction between antibiotics and nonsteroidal anti-inflammatory drugs in a district hospital in Palestine

**Yasin I Tayem[1], Murad I Ibrahim[2], Marwan M Qubaja[2], Omar B Taha[2], Emad A Schedem[2]** and **Riyad K Shraim[3]**
[1]Arabian Gulf University, Bahrain
[2]Al Quds University, Palestine
[3]Beit Jala Hospital, Palestine

**Objectives:** Nonsteroidal anti-inflammatory drugs (NSAIDs) and antibiotics (ATBs) are commonly prescribed together. We aimed to describe the rate of interaction between these two drug groups in ambulatory prescriptions made at a district hospital in Palestine.

**Methods:** In this retrospective, cross-sectional study, we analyzed a random sample of outpatient prescriptions ordered over one year by the outpatient clinics and emergency room in Beit Jala Hospiatal, Bethlehem, Palestine. The orders which contained a combination of NSAIDs and ATBs were analyzed for the rate and significance of drug interactions between these two drug groups.

**Results:** Out of 2208 prescriptions screened, 91 orders contained a combination of NSAIDs and ATBs (4.1%) and were included in the study. Within the included prescriptions, 45 orders harbored potential drug interactions between the two drug groups (49.5%). Regarding the significance of these interactions, none of them was serious. However, 21 orders were rated to have significant interactions (46.7%) while 24 prescriptions had non-significant interactions (53.3%). The most common ATB which was found to cause significant interaction was ciprofloxacin (100%). On the other hand, aspirin was the most important NSAID to cause significant interaction (42.8 %) followed by diclofenac (38.1%).

**Conclusions:** Our data revealed a remarkably high rate of drug interactions between ATBs and NSAIDs. To minimize the potential harm as a result of this interaction, prescribers' awareness of the importance of careful drug selection needs to be reinforced. This should ideally include providing training for physicians on the use of free online drug interaction checkers.

## Biography

Yasin I Tayem received his MD from Al-Quds University School of Medicine, Palestine in 2001 and PhD in Clinical Sciences from the University of London, United Kingdom in 2006. He was an Assistant Professor of Pharmacology at the Al-Quds University from 2006 until 2012. Then he was a Post-doctoral research fellow at the National Institutes of Health (NIH), Maryland, USA. Since, 2013 he has been an Assistant Professor of Pharmacology and Therapeutics at the Arabian Gulf University in Bahrain. He has published more than 17 articles. His research focuses on drug interactions, pharmacology education and language barrier in medical education in the Arab World.

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**Notes:**

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# A possible role of Oxytocin on spermatogenesis and steroidogenesis in mouse: An approach towards development of precocious puberty

**Shabana Anjum, Anuradha** and **Amitabh Krishna**
Banaras Hindu University, India

The aim of this study was to evaluate the effects of Oxytocin (OT) treatment on the testis of mice. OT treatment produced significant changes in the spermatogenic and steroidogenic activity in the pre-pubertal mice. The mice treated with OT showed increased proliferation of germ cells as indicated by increased accumulation of spermatocytes and round spermatids in the seminiferous tubules. Dose-dependent increase in expression of Oxytocin Receptor (OT-R), Proliferating Cell Nuclear Antigen (PCNA) and Androgen Receptor (AR) proteins were observed in the testis of OT treated mice; when compared with the control further supports the role of OT in spermatogenesis. The pre-pubertal mice treated *in vivo* with increasing dose of OT showed significant increase in testosterone synthesis due to stimulatory effects of OT on testicular 3 beta HSD activity and increased expression of Steroidogenic Acute Regulatory protein (StAR) and Luteinizing Hormone (LH-receptor) proteins. Further, the *in vitro* study showed that OT, either alone or together with LH, also promotes testosterone synthesis and StAR level in the testis. The OT treatment also affects testicular expression of BCL-2 protein, which may be important for germ cell proliferation and survival. This study, thus suggests the role of OT in regulating testicular activity of pre-pubertal mice to attain precocious puberty.

## Biography

Shabana Anjum obtained her PhD degree from Banaras Hindu University. She has published 5 papers and book chapters in reputed international journals and has been awarded in National Conference on Society for Reproductive Biology and Comparative Endocrinology. She has presented many papers in national and international conferences.

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# Natural products as drug leads for neurodegenerative diseases; Alzheimer and Dementia

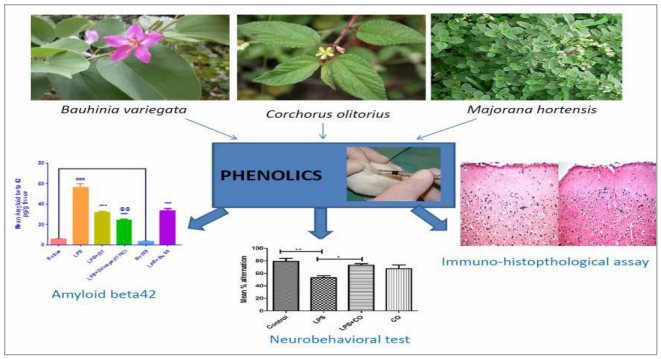
**Heba Handoussa, Reham Wagdy, Alaa Selim, Reham AbdelKader, Nabila Hamdi** and **Nesreen El Sayed**
German University in Cairo, Egypt

**Statement of the Problem:** Alzheimer's disease (AD) and Dementia are multifactorial neurodegenerative disorders driven by various pathogenic events with neuroinflammation and oxidative stress. Phenolics are widely known for their different beneficial characteristics, they could be considered as promising therapeutic agents against neurodegenerative diseases.

**Aim:** The purpose of this study is to evaluate the potential effect of some Egyptian medicinal plants; *Bauhinia variegate (Bv)* and Egyptian Nutraceuticals; *Corchorus olitorius* (Co) & *Majorana hortensis* (Mh) to ameliorate neuroinflammation and amyloidogenesis accompanied by these neurodegenerative diseases.

**Methodology & Theoretical Orientation:** Several parameters were used to evaluate the phenolic content in these medicinal plants; cognitive impairment *via* assessment of neurobehavioral tests, neuroinflammation and oxidative stress which are characteristic features of neurodegenerative diseases.

**Findings:** *Bauhinia variegata* showed significant improvement in neurobehavioral even with the least dose studied; 50 mg/kg in Y-maze through enhancing mean % alternation by 57.55% and reduction in Aβ42 levels was observed with same dose of 39.89% and increment of superoxide-dismutase level by 80% while *Corchorus olitorius & Majorana hortensis* significantly improved recognition memory that was shown to be altered in the LPS group and COX-2 inflammatory markers were reduced by (CO) and (Mh) compared to the LPS group proven by immunohistochemistry investigation.




**Conclusion & Significance:** These findings suggest that phenolics within these medicinal plants may be useful in protection against Dementia and neuroinflammation through enhancement of cognition and limiting neurodegeneration and modulating the proinflammatory pathway.

**Recommendations:** The high edible phenolics intake could be prophylactically protective against several neurodegenerative diseases.

**Recent Publications :**


- Sobeh M, ElHawary E, Labib R, Handoussa H and Ayoub N (2016) Identification of phenolic secondary metabolites from *Schotia brachypetala* Sond. (Fabaceae) and demonstration of their antioxidant activities in *Caenorhabditis elegans*. PeerJ, PubMed 27896020.
- Farag M, Handoussa H, Fekry MI, Wessjohann LA (2016) Metabolite profiling in 18 Saudi date palm fruit cultivars and their antioxidant potential *via* UPLC-qTOF-MS and multivariate data analyses. Food Function 7 (2): 1077-86.
- Handoussa H, Mandour Y, Swilam N Hanafi R and Mahran L (2015) Structural docking studies of COX-II inhibitory activity for quercetin metabolites derived from *Corchorus Olitorius* and *Vitis Vinifera*. International Journal of Food Properties 2377-2384.
- Yara Hassaan Y, Handoussa H, El-Khatib A, Linscheid M, Sayed N and Ayoub N (2014) Evaluation of plant phenolic metabolites as a source of Alzheimer's drug leads biomed research international. Article ID 843263.
- Handoussa H, Hanafi R, Eddiasty I, El-Gendy M, Linscheid M, Mahran L and Ayoub N (2013) *In vitro* and *in vivo* anti-inflammatory and cytotoxic capacities of dietary phenolics isolated from *Corchorus olitorius* and *Vitis vinifera*. Journal of Functional Foods 5 (3): 1204-1216.

## Biography

Heba Handoussa has completed her PhD at German University in Cairo (GUC), Faculty of Pharmacy and Biotechnology. She has a considerable experience in undergraduate teaching where she functions as an Assistant Professor of Pharmaceutical Biology. Her research areas are plant secondary metabolism analysis and familiarity with multiple mass spectrometers and techniques (i.e. GC/MS, LC/MSn). Besides awareness of several spectroscopic techniques to identify, isolate and purify the bioactive phytochemical compounds she is also having responsibilities in postgraduate studies' supervising Bachelor's, Master's and PhD theses in the same field. She has been probing novel bioactive molecules with possible anti-inflammatory, molecular targeted HCC therapy, anticancer, neuroprotective, antidiabetic and other pharmacological activities. She is the main author of several published articles in many reputable scientific journals in the field of Pharmacy and reviewer in number of journals related to the field of Pharmacy.

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# Toxicology and Pharmacology

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## Scientific Tracks & Abstracts

## (Day 2)

# Session:

Day 2 April 14, 2017

## Analytical Toxicology | Genotoxicity | Forensic Toxicology | Food Safety and Environmental Toxicology


**Session Chair**
**Sangeeta Shukla**
Jiwaji University, India

**Session Co-Chair**
**Mukul P Pore**
Intox Pvt. Ltd., India


### Session Introduction

**Title:** Clinical case study: Toxicity of dietary supplement used for weight reduction contaminated with adulterants

**Sahar Y Issa**, Alexandria University, Egypt

**Title:** The role of endothelial biomarkers in breast cancer metastasis

**Maria Walczak**, Jagiellonian University Medical College, Poland

### Young Research Forum

**Title:** Determination of polycyclic aromatic hydrocarbon and its monohydroxilated metabolites in human liver cells using gas chromatography and high performance liquid chromatography with mass spectrometry

**Vincent Lal**, The University of Queensland, Australia

**Title:** Could diagnostic biomarkers be used to predict the response to biologic therapy in Rheumatoid Arthritis?

**Gavrila B I**, University of Medicine and Pharmacy, Romania

**Title:** Protective effects of caffeic acid on Acrylamide induced toxicity in rats

**Sadhana Shrivastava**, Jiwaji University, India

**Title:** 3, 3-Diindolylmethane inhibits RAS/PI3K/AKT signaling through GPR30 abrogate cell proliferation by BPA induced female Sprague Dawley rats

**S Thilagavathi**, Annamalai University, India

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# Clinical case study: Toxicity of dietary supplement used for weight reduction contaminated with adulterants

**Sahar Y Issa**[1,2] **Maha K Al-Mazroua**[1], **Essam M Hafez**[1,3], **Mohammed G Saad**[4], **Asmaa S El-Banna**[1] and **Heba A Hussain**[1]
[1]Dammam Poison Control Center, KSA
[2]Alexandria University Faculty of Medicine, Egypt
[3]Minia University, Egypt
[4]King Fahad Specialist Hospital-Dammam, Saudi Arabia

Nowadays, dietary supplements' consumption, especially those of plant origin, has been gaining more popularity among consumers owing to misbelieve that they are natural products posing no risks to human health. In many regions of the world including the European Union and the United States, dietary supplements are legally considered as special categories of food, thus are not popularly being submitted to any safety assessment prior to their commercialization. Among the safety issues, comes adulteration by the illegal addition of pharmaceutical substances or their analogues, since unscrupulous producers can falsify these products to provide for quick effects and to increase their profits and sales. This case study is about one product used locally as a dietary supplement, and was marketed for weight loss, muscle building, lead to several health complications in one user, who presented with renal impairment and also describes about several conventional and advanced analytical techniques used to detect and identify amphetamine-like adulterants in the dietary supplement.

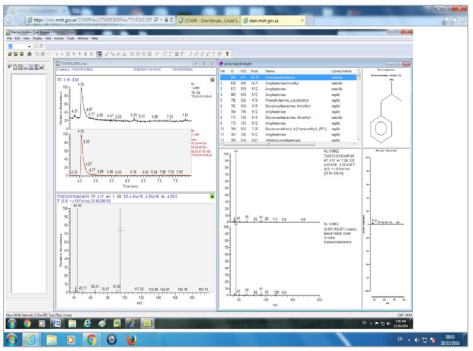

***Figure 1:*** *Amphetamine gas chromatography mass spectrometer GC-MS–QP 2010, Shimadzu*

## Biography

Sahar Y Issa has completed her Doctorate degree in Clinical Toxicology & Forensic Medicine in 2008, from Faculty of Medicine, Alexandria University, Egypt and is a Lecturer of Clinical Toxicology & Forensic Medicine in the same university. She is currently a Consultant Toxicologist, and the Medical Director, supervising Emergency Toxicology, Molecular Toxicology and Therapeutic Drug Monitoring units in Dammam Poison Control Center, MOH - Saudi Arabia. She has published more than 25 papers in reputed journals and serving as an Editorial Board Member of repute.

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# The role of endothelial biomarkers in breast cancer metastasis

**Maria Walczak**
Jagiellonian University, Poland

**Statement of the Problem:** Metastatic cancers are the main cause of cancer-related death in the world. For this reason identification of novel treatment targets is warranted. Study of breast cancer metastasis is limited due to poor knowledge in progression of breast tumor and varied heterogeneity. Breast cancer metastasis is a complicated process in which each step is modulated by a complex network of signaling pathways. In recent years attention is paid to the significance of vascular endothelium in cancer metastasis and abundant evidence suggests that endothelial inflammation plays an important pathogenetic role in the development of metastasis. The purpose of this study was to describe changes in endothelium in mouse model of 4T1 metastatic breast cancer at various stages of disease progression with the use of the multi-protein panel of endothelial biomarkers.

**Methodology & Theoretical Orientation:** The panel contains proteins of glycocalyx disruption: syndecan-1 (SDC-1) and endocan (ESM-1); pro-inflammatory molecules: soluble intercellular adhesion molecule 1 (sICAM-1), soluble vascular cell adhesion molecule 1 (sVCAM-1) and soluble form of E-selectin (sE-sel); pro-thrombotic molecule: von Willebrand factor (vWF); fibrinolytic molecules: plasminogen activator inhibitor 1 (PAI-1) and tissue plasminogen activator (t-PA); pro-angiogenic molecules: the soluble form of the fms-like tyrosine kinase 1 (sFlt-1), angiopoietin 2 (Angpt-2) and adrenomedullin (ADM), and protein secreted by adipocytes - adiponectin (ADN). The biomarkers were determined using the liquid chromatography/mass spectrometry-multiple reaction monitoring-based method (LC/MS-MRM).

**Findings:** Some of these proteins altered during breast cancer progression. Using a panel of selected molecules was enabled to identify endothelial biomarkers for early and late metastatic phase.

**Conclusion & Significance:** Endothelial dysfunction in cancer confirms the hypothesis that condition of endothelium is a key step for disease development. The simultaneous analysis of many biomarkers in one sample enables for multidimensional screening of endothelial function in mouse 4T1 breast cancer.

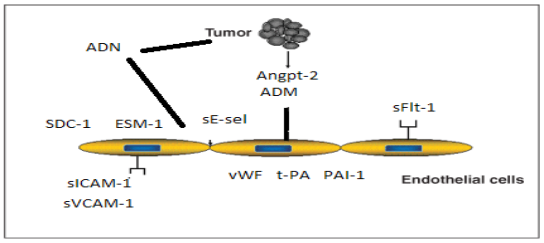


Figure 1. Endothelial biomarkers involved in breast cancer metastasis.

## Biography

Maria Walczak has graduated from the Faculty of Pharmacy, Medical Academy in Krakow. She has obtained her PhD degree from the Faculty of Pharmacy, Jagiellonian University Medical College (UJ CM), Krakow in 2001 and habilitation thesis in Pharmacokinetics in 2014. Since 2001, she worked at the Department of Pharmacokinetics and Physical Pharmacy UJ CM as a Lecturer, since 2010 at the Jagiellonian Centre for Experimental Therapeutics (JCET) as a Manager of the Laboratory of Analytics and Pharmacokinetics, and since 2015 as a Head of Chair at Department of Toxicology, Faculty of Pharmacy UJ CM. Her scientific work refers to pharmacokinetic and toxicokinetic profiling, metabolite screening, assessment of protein binding of bioactive compounds and pharmacology of endothelium. She is keen in bioanalysis of novel compounds and biomarkers related to cancer metastasis using LC/MS/MS and CE techniques. She is a specialist in clinical pharmacy issues.

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## (Day 2)

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http://dx.doi.org/10.4172/2476-2067.C1.002

8th World Congress on
# Toxicology and Pharmacology

April 13-15, 2017 Dubai, UAE

## *Swamy K B*

*Universiti Sultan Zainal Abidin, Malaysia*

## The latest trends of IQ and brain size and effects of life style and environmental factors on cranial capacity

**Introduction:** Intelligence quotient (IQ) is widely used to assess different aspects of mental ability. Development in mental ability initiates from conception and continues through adulthood. Various environmental factors affect IQ.

**Objectives:** The aim of this study was to assess the correlation between IQ and environmental characteristics on cranial capacity in children and adolescents in Malaysia.

**Methods & Materials:** This cross sectional study was performed on primary and secondary school students in Kuala Terengganu, Malaysia. Students, who were aged between 6 to 16 years and did not have any mental or physical disabilities, participated in this study. Measurements including weight, height, body mass index and cephalometry were performed for each subject. The Wechsler Abbreviated Scale for Intelligence- Second Edition (WASI-II) questionnaire was used for each subject to evaluate the subtests of IQ. A total of 419 subjects with the mean age of 12.51 ± 2.82 years had participated in this study.

**Results:** Boys were taller ($p=0.04$), had higher IQ ($p=0.01$) and cranial capacity ($p<0.001$) as well as block design score ($p=0.02$) when compared with girls. There was a significant mean effect for age ($p=0.03$), gender ($p=0.04$), paternal education ($p=0.04$), family income and block design ($p=0.03$) on cranial capacity.

**Conclusions:** This study revealed different patterns of brain growth, function and IQ amongst male and female subjects as well as defining the environmental factors that can affect cranial capacity and that the IQ and cranial capacity may be improved by tuning up the lifestyles and economic conditions of the families in developing countries. (It is an original research conducted in Malaysia)

### Biography

Swamy K B has been awarded PhD by Andhra University, his Master's Degree MS (in Clinical Anatomy) from Andhra Medical College, D M C h (Maternal & Child Health) from IGNOU, New Delhi, his Medical Degree (MBBS) in 1976, from SV University, India. He has expertise in multi medical disciplines, Human Genetics, Reproductive Health & Developmental Anatomy and in Herbal Medicine. He has been the genetic counsellor for many Medical institutions. He possess prestigious grants FRGS,URGS from Malaysia, he has conducted researches on Herbal Medicine and Diabetes, "Brain size and Intelligence Quotient (IQ)", He has been the former founder Anatomist, Professor and Head for many Medical Schools in India as well as in Malaysia. He is an International Editorial Board Member for many reputed journals like Anatomical Society of India (ASI). Recently he has been unanimously elected as an Executive Board Member for ASI and an Organizing Committee Member for the upcoming 8th World Congress on Toxicology at Dubai, UAE "9th Euro-Global Summit to be held at Paris and 11th International Congress on Toxicology and Risk Management to be held at October 9th -11th, 2017 in London, UK.

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## Young Research Forum

## (Day 2)

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# Determination of polycyclic aromatic hydrocarbon and its monohydroxilated metabolites in human liver cells using gas chromatography and high performance liquid chromatography with mass spectrometry

**Vincent Lal**[1], **Cheng Peng**[1], **Mary T Fletcher**[1], **Stephen T Were**[2] and **Jack C Ng**[1]
[1]The University of Queensland, Australia
[2]Biosecurity Queensland, Australia

Human cell-based models can provide important information on exposure and risk from chemical contaminants. Measurement of the amount of chemical contaminant entering the cells and how effectively it is metabolised and removed can be useful towards our understanding of chemical health risk assessment. The aim for our study is to quantify intracellular uptake and metabolism of polycyclic aromatic hydrocarbons (PAHs) in a human liver carcinoma cell line (HepG2 cells) exposed to environmentally relevant concentrations of the pure model compound and contaminated soils. A number of PAH and their monohydroxilated metabolites, including 3-hydroxybenzo[a]pyrene, 1-naphthol and 1-hydroxypyrene were found in human liver cells following exposure. Biotransformation of PAHs in human liver cells increased with increasing dose. Cell exposure close to 0 h and to 24 h contact times was also investigated, both at low and high dosage. Benzo[a]pyrene was found to be toxic to cells; however, remaining PAHs in this study did not cause any significant changes in cell viability (or cytotoxicity) and their ability to recover. Chemical characterisation of PAHs and its metabolites was done using high performance liquid chromatography coupled to a high resolution mass spectrometer (HPLC-HRMS) and gas chromatography with mass spectrometry (GCMS). The ability to quantify chemical uptake and fate using human cell line based models will contribute to a more refined chemical risk assessment.

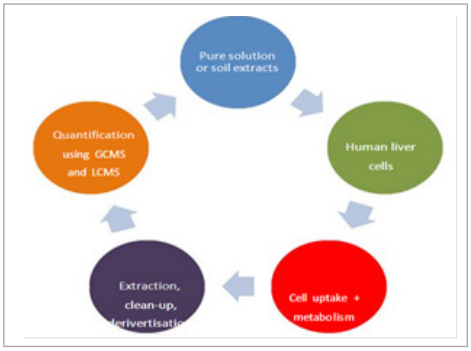


***Figure 1:*** *Quantification of PAHs uptake and metabolism in human liver cells (HepG2) using Gas Chromatography and Liquid Chromatography with Mass Spectrometry*

## Recent Publications

- Peng C, Muthusamy S, Xia Q, Lal V, Denison M S and Ng J C (2015) Micronucleus formation by single and mixed heavy metals/loids and PAH compounds in HepG2 cells. Mutagenesis. 30 (5): 593-602.

## Biography

Vincent Lal has his expertise in Environmental and Analytical Toxicology and passion in improving human health and wellbeing. His work is based on chemical risk assessment using *in vitro* technologies. He has several years of research, teaching, consultancy and administration experience in commercial and education institutions.

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# Could diagnostic biomarkers be used to predict the response to biologic therapy in Rheumatoid Arthritis?

**Gavrilă B I[1], Claudia Ciofu[1], Carina Mihai[1], Bojincă M[1], Stoica V[1], Gabriela Udrea[1], Ciotaru D[2], Mihaela Surcel[2], Adrina Munteanu[2], Ursaciuc C[2]** and **Eugenia Panaitescu[1]**
[1]Carol Davila University of Medicine and Pharmacy, Romania
[2]INCD, Romania

**Background:** Biologic therapies have revolutionized the treatment of Rheumatoid Arthritis (RA). Despite these advances, 20-40% of the patients are declared nonresponders to at least one of the therapies. The patient exposure to the potential side effects and high costs requires the discovery of a biomarker that could identify those who can benefit from the pretreatment of a certain therapy. We proposed to test the predictive role for the response to biologic therapy of diagnostic biomarkers used in RA: rheumatoid factor (RF) isotypes IgM and IgA, anti-cyclic citrullinated peptide (anti-CCP) and auto-antibodies against mutated citrullinated vimentin (anti-MCV). We also followed the evolution of serum levels of these biomarkers under biologic therapy.

**Methods:** Prospective and observational study including 64 patients followed 12 months with active RA, uncontrolled by conventional synthetic DMARDs or declared non-responders to one of the biologic DMARDs.

**Results:** Lower baseline titres of RF type Ig M (51.36±95.359 U/ml, p=0.01629), Ig A (22.45±61.256 U/ml, p=0.03336) and anti-CCP (60.82±26.331ng/ml, p=0.00011) had predictive value for achieving a good EULAR response at 6 months. Regarding anti-MCV baseline titres, there were no differences between groups at 6 months (p=0.45914) or at 12 months (p=0.11354). Grouping patients in 2 categories (responders/non-responders), we identified significant differences between groups only for anti-CCP and response at 6 months (responders 96.04±50.355ng/ml, non-responders 146.16±41.68ng/ml, p=0.02834). For the EULAR response at 12 months, lower baseline titres for RF type Ig M (92.93±120.22 U/ml, p=0.01032) and Ig A (49.96±98.08 U/ml, p=0.00247) had predictive value for achieving a good response at 12 months. We didn't obtain other information grouping patients in 2 categories. Regarding the evolution of serum levels, we noticed a reduction for all four biomarkers tested, statistically significant at 6 and / or 12 months from baseline.

**Conclusion:** Besides from their diagnostic role, these biomarkers could be used for other purposes in Rheumatoid Arthritis.

## Biography

Gavrilă B I completed his PhD in 2016 from University of Medicine and Pharmacy, Bucharest (Romania). Currently, he is working as an Assistant Professor at Department of Internal Medicine and Rheumatology, Bucharest.

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**Notes:**

Sadhana Shrivastava et al., Toxicol Open Access 2017, 3:1 (Suppl)
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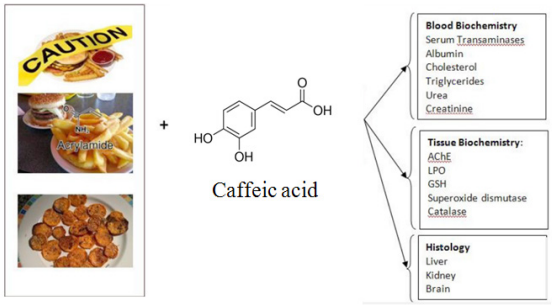
## Protective effects of caffeic acid on Acrylamide induced toxicity in rats

**Sadhana Shrivastava, Chhavi Uthra** and **Sangeeta Shukla**
Jiwaji University, India

**Statement of Problem:** Studies concerning toxicity of Acrylamide and its metabolite - glicydamide showed neurotoxic and genotoxic effect. Acrylamide (AA) is a synthetic chemical compound which is used in industry plastics, paints, cellulose-paper, cosmetic industries and its forms in some starchy foods during high-temperature cooking. Caffeic acid is a hydroxycinnamic acid found in barley grain and is an active antioxidant which scavenges free radicals. The present investigation was planned to investigate the therapeutic effect by caffeic acid against AA.

**Methodology & Theoretical Orientation:** AA was administered at the dose of 19.13 mg/kg, p.o. for 28 days to albino rats followed by therapy with 20 mg/kg, p.o. of caffeic acid for 7 days.

**Findings:** Significant increase in serum albumin, bilirubin, triglyceride, cholesterol, SALP, LDH, GGT, ALAD, ALAS was noted, as compared to the control group. Urea and creatinine was also increased, which indicated renal damage. Activity of acetylcholisterase and antioxidant defense system enzymes such as glutathione reductase (GR), glutathione peroxidase (GPx) and glutathione-S-transferase (GST) were decreased in all tissues significantly after AA administration. Histopathological observation also supported biochemical studies as AA caused degeneration in the hepatocytes, hypercellularity in glomeruli and hypertrophy in epithelial cells and disorganization in the neurons.




**Conclusion & Significance:** This study has shown that caffeic acid protects against AA toxicity.

### Biography

Sadhana Shrivastava has completed her PhD and Post-doctoral studies from Jiwaji University. She is currently working as a Scientist in DHR funded project. She has published more than 45 papers in reputed journals and books. She has been awarded many national awards and fellowships.

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## 3, 3-Diindolylmethane inhibits RAS/PI3K/AKT signaling through GPR30 abrogate cell proliferation by BPA induced female Sprague Dawley rats

**S Thilagavathi** and **P Pugalendhi**
Annamalai University, India

The present study was aimed to evaluate the antiestrogenic effect of 3, 3 –diindolylmethane (DIM) on bisphenol A (BPA) induced alteration in estrogen signaling pathway in mammary glands of female Sprague-Dawley rats. BPA (10 µg/kg/bw) administered rat mammary tissues western blot analysis shows an over expression of GPR30, Ras, Src, PI3K and Akt proteins and immunohistochemical analysis indicates an over expression of PCNA and no significant changes in ERs. Further, oral administration of DIM (5 mg/ kg/bw) to BPA treated rats alternative days for the period of 12 weeks reveals that significant decrease in the expression pattern of GPR30, Src, Ras, PI3K, Akt and PCNA as compared to BPA alone treated rats. The results of our study demonstrate that BPA induces rapid action via the over expression of proteins in nongenomic estrogen signaling pathway. Oral administration of DIM to BPA treated group inhibits rapid action of BPA by modulating the proteins of nongenomic estrogen signaling pathway.

**Recent Publications :**

- Thangarasu Rajakumar, Pachaiappan Pugalendhi, Subbaiyan Thilagavathi (2015) Dose response chemopreventive potential of allyl isothiocyanate against 7,12-dimethylbenz(a)anthracene induced mammary carcinogenesis in female Sprague-Dawley rats. Chemico-Biological Interactions 231: 35–43.

**Biography**

S Thilagavathi is a PhD Research Scholar working on Cancer Biology of in vivo model.

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## Scientific Tracks & Abstracts

## (Day 3)

# Session:

Day 3 April 15, 2017

## Food Safety and Environmental Toxicology | Medical and Clinical Toxicology | Toxicology Testing


**Session Chair**
**Petr Mlejnek**
Palacky University Olomouc, Czech Republic

**Session Co-Chair**
**Maria Walczak**
Jagiellonian University, Poland


### Session Introduction

**Title:** **Characterization, cytotoxicity and genotoxicity of landfill leachates: A comparative assessment between landfills throughout Lebanon**

**Christian Khalil,** Lebanese American University, Lebanon

**Title:** **Assessment of *in vivo* antimalarial activity of arteether and garlic oil combination**

**Vathsala PG,** Indian Institute of Science, India

**Title:** **The impact of extremely low frequency-electromagnetic fields and light at night (LAN) on estradiol (E2) levels, oxidative stress and DNA configuration in female night shift workers**

**Ravindra Tiwari,** Bhavan's New Science College, India

### Young Research Forum

**Title:** **Acetaminophen induced hepatotoxicity: Preventive effect of gold nanoparticles**

**Mohd Salim Reshi,** Jiwaji University, India

**Title:** **Multi-residue analysis (Gc-Ecd) of some organochlorine pesticides in commercial broiler meat marketed in Shivamogga city, Karnataka state**

**Lokesh L V,** Veterinary College, India

**Title:** **Mitigation of Acrylamide induced toxicity by quercetin in rats**

**Chhavi Uthra,** Jiwaji University, India

**Title:** **Mass spectrometric imaging of rhizomes of *Curculigo orchioides* and their bioactivities**

**Deepa Yadav,** Jiwaji University, India

**Title:** **Effect of low-intensity 900 MHz frequency electromagnetic radiation on rat brain redox status and cholinesterase activity linked to working memory**

**Samta Sharma,** Jiwaji University, India

**Title:** **Evaluation of *in vitro* degradation rate of hyaluronic acid-based hydrogel cross-linked with 1, 4-butanediol diglycidyl ether (BDDE) using RP-HPLC and UV-Vis spectroscopy**

**Mohammed Al-Sibani,** University Halle-Wittenberg, Germany

Christian Khalil et al., Toxicol Open Access 2017, 3:1 (Suppl)
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# Characterization, cytotoxicity and genotoxicity of landfill leachates: A comparative assessment between landfills throughout Lebanon

**Christian Khalil, Rony Khnayzer** and **Cynthia El Hajjeh**
Lebanese American University, Lebanon

**Statement of the Problem:** Lebanon has been witnessing a waste crisis in the last few years due to the closure of a main landfill in Naameh as it exceeded storage capacity. The municipal waste crisis was years in the making because of the absence of a clear national municipal waste minimization, recycling and disposal strategies with the preferred option being landfills throughout the country. The disposition of municipal, medical, industrial and all wastes into landfills helped in short term waste disposal but created a new challenge in the form of leachates. The purpose of this study was to assess the toxicological and health impacts of leachates exposure by investigating a number of regulated and unregulated landfills scattered throughout the country.

**Methodology & Theoretical Orientation:** The study consisted of sampling leachates from numerous sites scattered throughout the country. Some of the leachates at some sites were subjected to biological treatment prior to disposal into the natural environment while in other sites they were disposed without any treatment. The leachates were collected by our team and subjected to chemical characterization using Gas Chromatography-Mass Spectrometry GC/MS and toxicological assessment using cytotoxicity and genotoxicity assays.

**Findings:** The study indicated significant high concentrations of Cadmium, Chromium, Copper, Aluminum, Manganese, Potassium, Sodium Nickel and Calcium in comparison to a previous study undertaken on the municipal wastes in Lebanon and published data from worldwide landfills. The leachates also posed significant toxicological and genotoxicological risks as identified by the *in vitro* assays conducted using human derived cells.


**Conclusion & Significance:** This study provided qualitative and quantitative knowledge of the volatile and semi-volatile compounds in leachates from numerous sites across Lebanon. Molecules related to cosmetics, medicines, pharmaceuticals, agri- food repellents, plastics were reported in the study. A significant toxic and genotoxic risks can be experimentally revealed by the identification of DEHA, Phthalic acid, mono-(2-ethylhexyl) ester and Tributylamine in untreated leachates dumped into the natural environment. Recommendations are made for biological treatment of leachates prior to disposal into the natural environment.

**Recent Publications :**

- Khalil C (2015) *In vitro* UVB induced cellular damage assessment using primary human skin derived cells. MOJ Toxicology. 1 (4): 20- 28.
- Y Siti Hajar, A Intasiri, C Winder and C Khalil (2013) *In vitro* cytotoxicity of mild steel and stainless steel welding fumes using human-derived cells. Health. 4 (2): 20-36.
- Ghauri B, Manshaa M and Khalil C (2012) Characterization of cytotoxicity of airborne particulates from urban areas of Lahore. Journal of Environmental Sciences 24 (11): 2028–2034.
- Soni B, Visavadiya N P, Dalwadi N, Madamwar D, Winder C and Khalil C (2010) Purified c-phycoerythrin: Safety studies in rats and protective role against permanganate mediated fibroblast-DNA damage. Journal of Applied Toxicology. 30: 542–550.

## Biography

Christian Khalil is a Professor of Environmental Toxicology. He is currently affiliated with Lebanese American University (LAU) in Lebanon. His other affiliations include the Faculty of Built Environment and Institute of Environmental Studies, at the University of New South Wales (UNSW), School of Business at Australian Catholic University (ACU) in Australia. He is also the Director of International Environmental Services (IES)- training and consulting organization based in Sydney, Australia. He has a proven record of research by leading a number of research projects in the environmental toxicology arena. He enjoys a strong experience in consulting government and industry on toxicological and pollution matters. He has numerous publications in his areas of interests like environmental toxicology, management systems, environmental sustainability, work health and safety (WHS) and environmental pollution.

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# Assessment of *in vivo* antimalarial activity of arteether and garlic oil combination therapy

**Vathsala P G**
Indian Institute of Science, India

Garlic (*Allium sativum*) is one of the popular herbal medicines used worldwide to reduce various risk factors associated with several diseases. Garlic contains a variety of effective compounds that exhibit anticoagulant, antioxidant, antibiotic, hypocholesterolaemic and hypoglycaemic as well as hypotensive activities. To evaluate antimalarial activity of garlic pearl oil and artemisinin in combination therapy, commercially available α-β arteether (E MAL™) and garlic pearl oil were tested for its antimalarial activity in *Plasmodium berghei*-infected mouse model. This study demonstrates, for the first time, the *in vivo* antimalarial activity of arteether and garlic pearl either as individual molecules or in combination at various dosage levels in *Plasmodium berghei*-infected mouse model of malaria. After 72 h (day 3) when the parasitemia was about 2-4%, infected mice were treated with single dose intramuscular injection of 750 µg of arteether in combination with three 100 µL oral doses of garlic pearl on day 3, day 4 and day 5 and showed 100% protection against malaria. Giemsa stained blood pictures showed inhibition of parasitemia in combination drug treated animals and the protection during recrudescence interval at arteether monotherapy. This approach shows that arteether and garlic pearl oil combination therapy gives complete protection in P. berghei-infected mice. There is a potential to decrease the dose of artemisinin and in developing low-cost antimalarial drug therapies and for the first time garlic appears to be an ideal antimalarial molecule especially for use in artemisinin combination therapy.

## Biography

Vathsala P G has been working on combination therapy for malaria for more than two decades and completed her PhD from Indian Institute of Science. She is currently serving in Biology Division of Undergraduate Programme along with research activity. She has published 10 papers in reputed journals on antimalarial drugs.

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**Notes:**

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# The impact of extremely low frequency-electromagnetic fields and light at night (LAN) on estradiol (E2) levels, oxidative stress and DNA configuration in female night shift workers

**Tiwari R**[1], **Surender V**[1], **Bhargava SC**[2], **Ahuja YR**[3] and **Kavitha Varak**[1]
[1]Bhavan's New Science College, India
[2]Sree Nidhi Institute of Science and Technology, India
[3]Vasavi Medical and Research Centre, India

Every living being on this planet is tuned into the earth's electromagnetic fields (EMFs) and uses them for various pur¬poses. Human bodies are essentially very sensitive electromagnetic systems; they also emanate electromagnetic fields around. Since last four decades the effects of electromagnetic fields on biological systems have been extensively investigated. The reports are controversial and inconclusive as well. There is hardly any study on estrogen hormone which plays a vital role in sustaining the homeostatic mechanism pertaining to DNA integrity. The aim of the study is to assess the effect of estrogen hormone on exposure to electromagnetic fields and light at night (LAN). Other parameters like oxidative stress and DNA damage and DNA integrity are also included in the present study to rule out the controversy prevailing regarding the influence of EMFs and LAN on the risk of breast cancer. Blood samples from 400 night shift working women were collected at 8 am and the serum was analyzed for estradiol hormone level by chemiluminescence immunoassay (CLIA) method. DNA damage was studied in exposed and control subjects using single cell gell electrophoresis. Oxidative stress was estimated by measuring levels of plasma malonyl dialdehyde (MDA) and serum nitric oxide (NO). The analysis showed significant increase ($p<0.0001$) in estradiol hormone level in exposed, when compared to controls. There was a significant increase in DNA damage ($p<0.05$). The plasma MDA levels also demonstrated the same observation. Our findings lead us to summarize that electromagnetic fields and light at night (LAN) elevated the estrogen levels, which suggest that these increased levels and the DNA and oxidative stress could possibly be the risk factors in urbanized night shift female workers.

## Biography

Ravindra Tiwari has completed her Ph.D in 1987 from Osmania University. She has 38 years of experience in research, evaluation, teaching and administration in education institutions. She has memberships in Red Cross Society, Nirdosh Social Service Organization and MASI (Microwave Association Society of India). She is a Research Supervisor at Osmania University & JNTUH. She is currently working as a Principal at GIET, India.

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# Acetaminophen induced hepatotoxicity: Preventive effect of gold nanoparticles

**Mohd Salim Reshi** and **Sangeeta Shukla**
Jiwaji University, India

**Statement of the problem:** Gold nanoparticles (AuNPs) exhibit amazing physical, chemical and biological properties and have been widely used in medical applications like bio-imaging, drug delivery and photonics. The present study was aimed to evaluate the therapeutic effect of AuNPs to protect the hepatotoxicity induced by Acetaminophen (APAP).

**Methodology & Theoretical Orientation:** Female Albino rats of *Wistar* strain were administered with APAP at a dose of 20 mg/kg p.o (5 days/week for 4 weeks). Animals were treated with AuNPs at a dose of 100 µg/kg p.o. and silymarin at a dose of 50 mg/kg p.o. for 2 days/week for 4 weeks.

**Findings:** APAP induced significant rise in hepatospecific markers which indicated the hepatocellular damage. APAP administration exhibited substantial oxidative stress, regulation of proinflamatory cytokines and cellular DNA damage. Biochemical analysis of antioxidant enzymes revealed significantly declined activities due to increased oxidative stress in APAP exposed rats. Treatment with AuNPs significantly ameliorated the APAP induced liver injury, oxidative stress and DNA damage, which can adversely affect the normal cellular functioning in rats. Our biochemical investigations were also supported by histological studies. The efficacy of AuNPs were comparable to the standard drug silymarin, data indicated a positive effect.

**Conclusion & Significance:** It is concluded that AuNPs showed remarkable amelioration against APAP induced toxicity. Thus it is concluded that AuNPs can be used for the development of hepatoprotective drug after further preclinical and clinical studies, which may raise a hope for the patients with hepatic disorders.

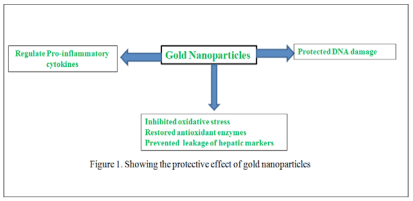


***Figure (1):*** *Showing the protective effect of gold nanoparticles against APAP toxicity*

## Biography

Mohd Salim Reshi completed his PhD from School of Studies in Zoology, Jiwaji University, Gwalior. He was awarded with JRF and SRF from UGC, New Delhi, India. He has been awarded MP Young Scientist award and many other awards in several conferences and symposia. He is working on nanoparticles in hepatoprotection and cancer prevention. His areas of research interest are Pharmacology, Toxicology, Hepatoprotection, Nanomedicine and Cancer Prevention.

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**Notes:**

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# Multi-residue analysis (GC-ECD) of some organochlorine pesticides in commercial broiler meat marketed in Shivamogga city, Karnataka state

**Lokesha L V[1], Jagadeesh S Sanganal[2], Yogesh Gowda S[2], Shekhar[2], Shridhar N B[2], Prakash N[1], Prashant kumar Waghe[1], H D Narayanaswamy[2]** and **Girish Kumar V[3]**
[1]Veterinary College, Shivamogga, India
[2]Veterinary College, Bengaluru, India
[3]Karnataka Veterinary, Animal & Fisheries Sciences University, India

Organochlorine (OC) insecticides are among the most important organotoxins and make a large group of pesticides. Physicochemical properties of these toxins, especially their lipophilicity, facilitate the absorption and storage of these toxins in the meat thus possessing public health threat to humans. The presence of these toxins in broiler meat can be a quantitative and qualitative index for the presence of these toxins in animal bodies, which is attributed to waste water of irrigation after spraying the crops, contaminated animal feeds with pesticides, and polluted air are the potential sources of residues in animal products. Fifty (50) broiler meat samples were collected from different retail outlets of Bengaluru city, Karnataka state, in ice cold conditions and later stored under -20oC until analysis. All the samples were subjected to Gas Chromatograph attached to Electron Capture Detector (GC-ECD, VARIAN make) screening and quantification of OC pesticides *viz*; Alachlor, Aldrin, Alpha-BHC, Beta-BHC, Dieldrin, Delta-BHC, o,p-DDE, p,p-DDE, o,p-DDD, p,p-DDD, o,p-DDT, p,p-DDT, Endosulfan-I, Endosulfan-II, Endosulfan Sulphate and Lindane (all the standards were procured from Merck). Extraction was undertaken by blending 50 g of meat sample with 50 g sodium sulphate anhydrous, 120 ml of n-hexane, 120 ml acetone for 15 mins, extract was washed with distilled water and sample moisture is dried by sodium sulphate anahydrous, partitioning was done with 25 ml petroleum ether, 10 ml acetonitrile and 15 ml n-hexane shaken vigorously for two minutes; sample cleanup was done with florisil column. The reconstituted samples (using n-hexane) (Merck chem) were injected to Gas Chromatograph–Electron Capture Detector (GC-ECD). The present study reveals that, among the 50 chicken samples subjected for analysis, 60% (15/50), 32% (8/50), 28% (7/50), 20% (5/50) and 16% (4/50) of samples were contaminated with DDTs, Delta-BHC, Dieldrin, Aldrin and Alachlor, respectively. DDT metabolites, Delta-BHC were the most frequently detected OC pesticides. The detected levels of the pesticides were below the levels of MRL (according to Export Council of India notification for fresh poultry meat).

## Biography

Lokesha L V has completed his MVSc from Karnataka Veterinary Animal & Fisheries Sciences University, Bidar, Karnataka, India. He worked on Plant Toxicology, "Toxicity studies of *Ficus amplissima* in rabbits & rats". He has joined Karnataka Veterinary Animal & Fisheries Sciences University as Assistant Professor, in the year 2011. Presently, he is pursuing his PhD degree programme from Veterinary College, Bengaluru and working on Residue Toxicology. He has been associated with organizing two International Workshops on Comprehensive Toxicology-2015 and International Seminar on Leachables, Extractables & Residual Solvents, as Treasurer. Further, he handled two university funded research projects, published 6 research papers in both national and international journals. He was awarded with various awards, bagged first place for oral presentation in National Seminar on Ethnopharmacology, Department of Pharmacology and Toxicology, College of Veterinary and Animal Sciences, Kerala and also bagged best poster award at 36th Annual Conference of Society of Toxicology (India) 2016 , held at Amity University, Utter Pradesh.

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**Notes:**

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# Mitigation of Acrylamide induced toxicity by quercetin in rats

**Chhavi Uthra, Sadhana Shrivastava** and **Sangeeta Shukla**
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**Statement of the Problem:** Acrylamide (AA), a neurotoxicant is produced in carbohydrate rich food products cooked at high temperature. Quercetin (QE) is a flavonoid, found in plants with medicinal properties. The present study was designed to investigate protective effects of QE against AA induced toxicity in rats.

**Methodology & Theoretical Orientation:** Female rats were exposed to AA at dose of 19.13 mg/kg p.o. for 28 days followed by the therapy of QE at the dose of 20 mg/kg p.o. for 07 days.

**Findings:** AA intoxication caused a significant elevation in serum transaminases, urea, uric acid, creatinine, lipid profile, bilirubin and decline in blood ALAD, haemoglobin, AChE activity in brain, GR and GPx in liver, kidney and brain. AA exposure depicts the alterations in AH and AND enzymatic activity, MLPO, inflammatory cytokines, DNA damage and histopathology. Treatment with QE significantly recouped all the altered variables towards normal.

**Conclusion & Significance:** Thus, it can be concluded that QE exhibits antioxidant property against AA mediated cellular insult.

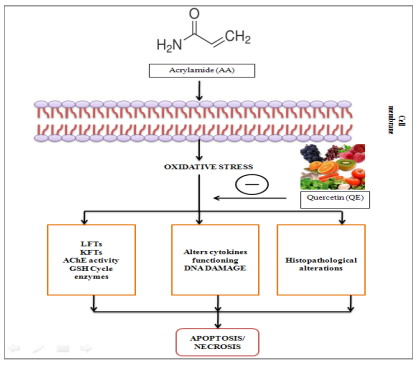


***Figure (1):*** *Showing protective effect of quercetin against Acrylamide toxicity.*

## Biography

Chhavi Uthra is pursuing her PhD (Zoology) at School of Studies, Jiwaji University, Gwalior. She was awarded with JRF and SRF (UGC Meritorious Fellowship), New Delhi. She is working with polyphenols against Acrylamide intoxication. Her areas of research interest are Pharmacology, Toxicology and Hepatoprotection.

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# Mass spectrometric imaging of rhizomes of *Curculigo orchioides* and their bioactivities

**Deepa Yadav** and **Sangeeta Shukla**
Jiwaji University, India

**Statement of the Problem:** Medicinal plants provide a wide range of secondary metabolites and play important role in the treatment of serious disorders. Plants facilitate healing that is potent, profound and life affirming. The present study was aimed to determine the secondary metabolites, antibacterial activity and anti-proliferative activity of *Curculigo orchioides*.

**Methodology & Theoretical Orientation:** The secondary metabolites of *Curculigo orchioides* were identified by gas chromatography-mass spectrometry (GC-MS). Antibacterial activity was determined against bacterial strains *Escherichia coli, Pseudomonas aeruginosa, Streptococcus pyogenes* and *Staphylococcus* aureus and antiproliferative activity was evaluated against hepatocellular carcinoma (HepG2 cell line).

**Findings:** GC-MS analysis of alcoholic extract revealed the presence of pharmacologically active compounds like d-Lyxo-d-manno-nononic-1,4-lactone; 3',8,8'-Trimethoxy-3-piperidyl-2,2'-binaphthalene-1,1',4,4'-tetrone; 7-Methyl-Z-tetradecen-1-ol acetate; Paromomycin; Geranyl isovalerate; tert-Hexadecanethiol; 1,2-Propanediol, 3-(tetradecyloxy); n-Hexadecanoic acid; 9-Octadecenoic acid, (2-phenyl-1,3-dioxolan-4-yl)methyl ester, trans and 2H-Cyclohepta[b] furan-2-one and 6-[1-(acetyloxy)-3-oxobutyl] -3,3a,4,7,8,8a-hexahydro-7-methyl-3-methylene. Alcoholic extract of *Curculigo orchioides* showed significant activity against bacterial pathogens and HepG2 cell lines.

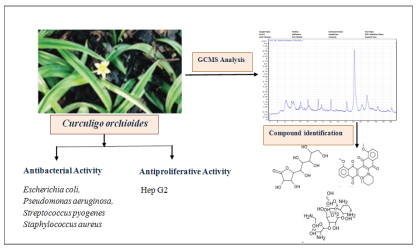


***Figure (1):*** *Showing identified phytoconstituents and their bioactivities.*

**Conclusion & Significance:** The data obtained from GC-MS can be used to study the therapeutic efficacy of secondary metabolites, while alcoholic extract showed significant antibacterial and anti-proliferative activity.

## Biography

Deepa Yadav is pursuing her PhD from School of Studies in Zoology, Jiwaji University, Gwalior, Madhya Pradesh. She was awarded with JRF of MPCST, Bhopal, Madhya Pradesh. She has been awarded for best paper presentation by UGC-CRO Bhopal. She has published a book entitled *Studies on T Cell Signalling Mechanisms*. Her areas of research interest include Molecular Immunology, Pharmacology, Toxicology and Cancer Prevention.

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# Effect of low-intensity 900 MHz frequency electromagnetic radiation on rat brain redox status and cholinesterase activity linked to working memory

**Samta Sharma** and **Sangeeta Shukla**
Jiwaji University, India

**Statement of the Problem:** Behavioural impairments are the most empirical consequence of long-term mobile uses, but the underlying causes are still poorly understood. Until now no study has been proposed to investigate the underlying causes of behavioural effects induced by microwave exposure. Thus, the present study was undertaken to determine the influence of microwave radiation on redox status, oxidative stress, cholinesterase activity, DNA damage and cognitive alterations in rat brain.

**Methodology & Theoretical Orientation:** The study was carried out on 24 male Wistar rats, randomly divided into four groups (n=6 in each group): Group I consisted of sham exposed (control) rats, group II, III and IV consisted of rats exposed to microwave radiation (900 MHz) at different time duration 1h, 2h and 4h respectively (5 days/week). Rats were sacrificed and decapitated to isolate.

**Findings:** Microwave exposure resulted in a time dependent significant increase in oxidative stress markers viz. malondialdehyde (MDA) and catalase (CAT) in microwave exposed groups in comparison to sham exposed group ($p<0.05$). But, the levels of superoxide dismutase (SOD) were found significantly decreased in microwave exposed groups ($p<0.05$). A significant alteration in redox status was observed in microwave exposed animals ($p<0.05$). Furthermore, significant depletion in cholinesterase activity and DNA damage was also observed in microwave exposed groups as compared to their corresponding values in sham exposed group ($p<0.05$).

**Results:** In conclusion, the present study suggests that microwave radiation induces oxidative stress, depleted redox status, DNA damage and reduces working memory in brain by exerting a time dependent effect.

## Biography

Samta Sharma is a Research Associate in an ICMR funded project. She has completed her Doctorate in Life Sciences. She has published scientific paper and a book, also has got awards in conferences.

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# Evaluation of *in vitro* degradation rate of hyaluronic acid-based hydrogel cross-linked with 1, 4-butanediol diglycidyl ether (BDDE) using RP-HPLC and UV-Vis spectroscopy

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[2]University of Nizwa, Oman

A hyaluronic acid (HA) was cross-linked with 1, 4-butanediol diglycidyl ether to produce nine BDDE-HA hydrogels. The degradation rates of six hydrogels were evaluated by HPLC and UV-Visible spectroscopy. The percentage amount of N-acetyl glucosamine (NAG) obtained after one-day enzymatic digestion to the total amount obtained after complete digestion was an indicative of the degradation rate of each hydrogel. The results were calculated with 95% confidence interval and showed (62.6%±12.3 w/w), precision value % R.S.D=7.95, average recovery=81.0%, LOD=6.4 µg/ml for HPLC and (63.3±13.9 w/w), precision value %R.S.D=8.83, average recovery=83.1%, LOD=5.4 µg/ml for UV method. The two methods showed also good linearity with correlation coefficients (R2) of 0.998 and 0.9995 for HPLC and UV method, respectively. For a comparison purpose, the other three hydrogels were rated using the conventional weight loss method which showed relatively higher degradation rates with an average of (73.4%±5.7 w/w), %R.S.D=3.13. Statistical analysis revealed that there was no significant difference between HPLC and UV-Visible methods, however, these values differed significantly ($p<0.05$) from the value obtained from the weight loss method.

## Biography

Mohammed Al Sibani has completed his Master's degree in 2008 from Huddersfield University, UK in the field of Analytical Chemistry. Currently, he is a PhD candidate since July 2013 at the Department of Pharmacy, University of Halle-Wittenberg, Germany and his thesis topic is related to the enhancement of stability and viscoelastic properties of HA dermal fillers cross-linked with BDDE. He has worked as an Analysis and Application Technician in mass spectrometry lab at Nizwa University for the last 6 years.

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