Video Presentation
December 03, 2018

Toxicology 2018 & Recycling 2018





Joint Event

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Kiran Dubey, Toxicology 2018 & Recycling 2018, Volume 2
DOI: 10.4066/2630-4570-C1-003

Abating the aches with NSAIDs: Aching matters for the heart

Kiran Dubey
Jamia Hamdard University, India

The potential adverse cardiovascular events reported with selective COX-2 inhibitors (coxibs) led to the withdrawal of most blockbuster molecules viz. rofecoxib and valdecoxib from the market. Etoricoxib and nimesulide were never approved in many countries. The US FDA had decided, however that celecoxib should remain in the market after concluding that the benefits of celecoxib outweigh the potential risks. An increased risk of myocardial infarction has also been associated with the use of non-selective non-steroidal anti-inflammatory drugs (ns NSAIDs) such as diclofenac sodium and naproxen in some observational clinical and experimental studies. Subsequently, the FDA labeled all COX-2 selective and ns NSAIDs as increasing the cardiovascular risk and raised an alert for practitioners while treating patients with the established ischemic disease. The cardiovascular risk appears to be a class effect of coxibs and adverse events were also reported with celecoxib, leaving physicians in a dilemma for treating arthritic population at underlying risk of cardiovascular disease. The strategies to mitigate the cardiovascular events appear to use the low doses of coxibs for short duration or concurrent administration of aspirin. However, most patients with arthritis require chronic therapy and it is unclear whether aspirin mitigates or abolishes NSAIDs-related risk. Alternate approaches may be to use nitric oxide donor NO-NSAIDs, dual COX/LOX inhibitors or anti-TNF therapy. Despite the unprecedented advances in drug discovery, it remains a major challenge for the pharma industry to discover aching remedies that don't ache the heart as well.

Speaker Biography

Kiran Dubey is currently associated with Jamia Hamdard as a Senior Assistant Professor in the Department of Pharmacology, School of Pharmaceutical Education and Research, New Delhi. She has also served in the Medical Information Department of Ranbaxy Laboratories, Systopic Laboratories, Dee Pharma Ltd and Skin Institute and School of Dermatology. Her areas of research include cardiovascular safety profile of NSAIDs, diabetes and related complications. She has guided twenty-six post graduate students and three Ph.D. students in the field of Pharmacology and Pharmacy Practice, published articles and has been reviewer for International and National journals of repute.

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Notes:

Ayanthi Navaratne, Toxicology 2018 & Recycling 2018, Volume 2
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Chemical characterization and Toxicity of POEA – 15, surfactant of commercial glyphosate (Round up) and effect of round up on heavy metals in Paddy Soil

Ayanthi Navaratne
Peradeniya University, Sri Lanka

Use of commercial glyphosate, round up has been a very controversial issue over the recent past in Sri Lanka due to the hypothesis that it causes the chronic kidney disease of unknown etiology (CKDu) prevalent in Sri Lanka. Consequently, round up was banned in Sri Lanka in 2015 although it was re permitted to use in tea and rubber cultivation in 2018. In this study we report two main findings: First, chemical characterization and toxicity studies of POEA 15, surfactant of Round up available in Sri Lanka. Main surfactant of round up was confirmed to be POEA-15 with an authentic sample. Toxicity studies conducted with animal experiments (with rats) and cell lines (Hamster kidney) clearly indicated that it is a nephrotoxin (at very low concentrations). Second, in order to study the effect of Round up for the behavior of heavy metals in rice fields, a detailed study of adsorption and desorption of heavy metals on paddy soil and the kinetics of these processes were investigated. According to the studies performed with paddy soil after application of Round up, reduced the adsorption and desorption of Cd (II) on soil in comparison to the other heavy metal cations. Furthermore, this research also indicated that the soil to grain (rice) transfer factor was highest for Cd (II). Therefore, our investigation concluded that POEA -15 is a possible nephrotoxin and, in the presence of commercial glyphosate, round up increases the available concentration of Cd (II) in water phase. Having the highest transfer factor (soil to grain), there is a possibility of contamination of rice grain with Cd (II).

Speaker Biography

Ayanthi Navaratne obtained her B. Sc in Chemistry (Honors) from University of Peradeniya Sri Lanka in 1984 and her MS and PhD in 1989 and 1992 respectively from University of Hawaii at Manoa, USA in Analytical Chemistry. Currently she is a professor in Chemistry at the University of Peradeniya and was the Head of the Department of Chemistry from 2005 to 2018. She is a Fellow of National Academy of Science, Sri Lanka (FNASS). She has trained about 40 postgraduate students and produced many publications in refereed journals during her carrier.

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Notes:

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Brian Sulaiman, Toxicology 2018 & Recycling 2018, Volume 2
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Nanotechnology for the manufacture of affordable housing, furniture and irrigation products from EOL waste tyres

Brian Sulaiman
Dena Nano Ltd, UK

DENA Family of Companies was established over 28 years ago in 1990 by Brian Sulaiman, M. Auslmm to work in the field of advanced Nano- technology. The Company utilises a patented Reactor that modifies particles to achieve dramatic improvements in productivity, quality and profitability, with a diverse range of applications from pharmaceuticals to inks and more recently, in the eco-products arena for converting waste tyres in to high value and durable construction products. We have worked with Clients from different backgrounds include Glaxo Smith-Kline, ICI, CIBA, BP, Boots, BASF, 3M, Crown, Akzo Nobel, Astra Zeneca and many more, with Joint Venture projects world-wide exceeding sales in 2010 of £500M. DENA Nano-Wood Ltd has developed an End of Life (EOL) tyre recycling technology that creates a range of high value and durable construction eco-products whilst using zero emissions and zero waste. As the tyres are available worldwide for a fraction of price compared to virgin rubber, the raw materials cost is negative and there is also steel and fibre that can be reclaimed and sold off to provide an additional income. Whilst tyre crumbing is established, the material forming technology is completely new and has no competitors as it is proprietary and covered by several International Patents since 1991. DENA Nano- Wood Ltd uses a unique process to produce these materials using micronized rubber and a special Nano-particle composite. The resulting material has an almost endless range of final products, all of which are infinitely recyclable using the same processes that created them in the first place. These range from super-strength and durable 'wood replacement' to special porous irrigation hose.

Speaker Biography

Brian Sulaiman gained his Doctorate from Leeds University in England and has since become a renowned expert in the field of Nano-metrics, having won several awards for Environmental Innovation. He invented the Nanometric Processing Reactor and founded Dena Technology in the mid-90s which was used to commercialise. Sulaiman's patented engineering accomplishments. Sulaiman brings a wealth of expertise in engineering technology to any project. Whilst working as a University Lecturer Sulaiman was approached by an American firm who specialised in electronics who wanted him to work for them on solving a problem they had with defective microchips. During his time with them the idea for the Nanometric Process came to him during a walk on the seashore when he noticed that a rock was dispersing fine droplets of water. This gave him his initial idea for what would be the Dena Nano-Technology Reactor.

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Notes:

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Eliane Candiani Arantes, Toxicology 2018 & Recycling 2018, Volume 2
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Vascular endothelial growth factor from *Crotalus durissus collilineatus* venom: Structure and angiogenic properties

Eliane Candiani Arantes
University of Sao Paulo, Brazil

Snake venoms display important pharmacological activities, since they present a variety of components including the vascular endothelial growth factors (VEGFs). Although VEGF have already been identified by omics analysis in the *Crotalus durissus collilineatus* (Cdc) venom, it was not isolated so far. VEGFs are non-enzymatic homodimers of 20-30 kDa, which regulates angiogenesis by inducing proliferation, migration and permeability of endothelial cells. However, their role in the envenoming pathophysiology is not yet elucidated. In the present study, a new VEGF from Cdc venom was isolated and its structure and angiogenic properties were partially determined. Cdc venom was fractionated by reversed phase FPLC (Fast Protein Liquid Chromatography) and all the fractions collected were submitted to an ELISA assay for VEGF identification. Fraction 24 (positive for VEGF) was submitted to an anion exchange chromatography (HiTrap QXL column) and the CdcVEGF was purified. It was reduced, alkylated with iodoacetamide, digested with tripsin, and submitted to mass spectrometry analysis (ESI-QTOF and PMF), in order to determine its primary structure. It showed a molecular mass of 25.705 kDa. An angiogenesis in vitro assay by the induction of tube formation in Matrigel® by HUVECs cells was performed, showing that CdcVEGF induced a tube formation even more significant than the positive control (bFGF). This work was pioneer on the isolation and partial characterization of a new VEGF from Cdc venom.

Speaker Biography

Eliane Candiani Arantes is Full Professor of School of Pharmaceutical Sciences, University of São Paulo (USP), a CNPq grantee of research productivity fellowship - Level 1. Graduated in Pharmacy (1979) and Pharmacy-Biochemistry (1980) by the School of Pharmacy and Dentistry of Ribeirão Preto, USP. She obtained the Master's and Doctor's degrees in Sciences, Biochemistry area, at the Medical School of Ribeirão Preto of USP, and developed a Post-doctorate training (2012) at University of Liège, Faculty of Sciences, Mass Spectrometry Laboratory. She has 110 publications that have been cited over 2500 times, her publication H-index is 32 and has been serving as an editorial board member of Journal of Venomous Animals and Toxins Including Tropical Diseases.

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Notes:

Suely Vilela, Toxicology 2018 & Recycling 2018, Volume 2
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Anti-inflammatory properties of Crotoxin, the major component of the South American rattlesnake *Crotalus durissus terrificus*, in murine model of Endotoxemia

Suely Vilela
University of Sao Paulo, Brazil

Crotoxin (CTX) isolated from the venom of the South American rattlesnake *Crotalus durissus terrificus* have been reported to present anti-inflammatory and immunosuppressive properties, mediated by the production of the anti-inflammatory lipid mediator Lipoxin A4 (LXA4). Therefore, here we describe the capacity of CTX to modulate the inflammatory response in endotoxemia model induced by LPS in mice. Swiss male mice were administrated with CTX (30μg/Kg, s.c.) or saline, and after 2 hours with LPS (15mg/Kg, i.p.). After 6 hours of LPS administration, serum and lungs were collected for inflammatory and organ damage biomarkers quantification. CTX was responsible for a significant reduction of the serum inflammatory mediators TNF-α and IL-6, as well as lung mieloperoxidase (MPO) as indicative of lung neutrophil accumulation. The levels of heart and liver damage biomarkers creatine kinase Mb (CK-Mb) and aspartate aminotransferase (AST), respectively, were also decreased. When animals were pretreated with Boc-2 (10μg/Kg), an antagonist of the LXA4 receptor FPR (formyl peptide receptor), the anti-inflammatory and organ damage prevention induced by CTX (as observed by the decrase in TNF-α, IL-6, MPO, CK-Mb and AST) were drastically reduced. In conclusion, the results in the present work show that CTX is capable of ameliorate the inflammatory signs of endotoxemia induced by LPS, as well as the organ damages associated with this event. Also, the anti-inflammatory effect of CTX is associated with FPR possibly via LXA4 production. These results strongly indicates CTX as a potential candidate as an immunotherapeutical agent.

Speaker Biography

Suely Vilela, former president of the University of São Paulo (2005-2009), is a Full Professor of the Faculty of Pharmaceutical Sciences of Ribeirão Preto- University of São Paulo (FCFRP-USP), a CNPq grantee of research productivity fellowship - Level 1. Graduated in Pharmacy (1974) and Pharmacy-Biochemistry (1975) by the School of Pharmacy and Dentistry of Ribeirão Preto, University of São Paulo. She obtained the Master's and Doctor's degrees in Sciences, Biochemistry area, at the Medical School of Ribeirão Preto of USP, where she also developed a Post-doctorate training (1990). She has over 114 publications in international scientific journals. Her currently publication H-index is 28. Currently she is a member of the editorial board of the Journal of Venomous Animals Including Tropical Disease (JVATiD – BioMed Central). Her scientific area concerns in Animal Toxins and Venoms, including scorpion and snake venoms, working on biological, biochemical and biophysical properties of toxins.

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Notes:

Ghofran Al-Qudaihi, Toxicology 2018 & Recycling 2018, Volume 2
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Genotoxicity induced by different brands of e-cigarette liquids

Ghofran Al-Qudaihi
King Faisal Specialist Hospital & Research Centre, Saudi Arabia

Recent studies have shown that e-cigarettes contain carcinogenic compounds and nicotine that makes their long-term safety questionable; however findings on their genotoxic behaviour are still limited. We used in vitro single-cell gel electrophoresis (comet) and micronucleus (MN) assays with human lymphoblastoid TK6 cells to examine the genotoxicity of different brands of e-cigarette refill liquids collected from local e-cigarette smokers. As indicated in the label, these refills contain 1 to 8 mg nicotine. We tested nicotine content in these refills by Gas Chromatography/Mass Spectrometry and the range was between 0.5 to 10.4 mg with poor correlation (r=0.283, p=0.019). Six refills had nicotine ≥2 folds the label. Human lymphoblastoid TK6 cells were exposed overnight to 20 µl of e-cigarette liquids, and nicotine (4 mg). Negative (untreated cells) and positive controls (cells treated with 100 mM H2O2) displayed respectively the absence and presence of DNA damage. 14 samples induced ≥5 folds strand breaks in DNA as depicted by tail moment higher than the negative control. Nicotine in these samples was in the range of 0.96 to 10.4 mg. We exposed 23 refills that showed no positive response for 3 hours to metabolic activation (liver microsomal S9 fraction from Wistar rats). The introduction of S9 mix made significant increase in DNA damage ($p<0.001$). Out of 23 refills, ≥5 folds increase in TM was observed in 13 refills. Chromosome breakage expressed as MN frequency ≥3 folds higher than in untreated cells was found in 20 refills out of 63 tested (31.7%) that contains nicotine in the range between 1.3 to 9.6 mg. There was significant positive correlation between TM and MN (r=0.284, p=0.021). An evidence of positive relationship was seen between nicotine and MN (r=0.212, p=0.095) but not with TM. Our results suggest that some other ingredients with mutagenic/genotoxic properties in e-cigarette refill liquids might have induced DNA damage. Further investigation is required confirming our observation.

Speaker Biography

Ghofran Al-Qudaihi was awarded her PhD degree in 2011 by Newcastle University, United Kingdom. In 2014, she joined the Environmental Health Program at the King Faisal Specialist Hospital & Research Centre. Currently her research interests are directed towards the identification of genotoxic chemicals present in everyday life and the environment.

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Notes:

Prerna Sharma, Toxicology 2018 & Recycling 2018, Volume 2
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Pharmacological effects in species of genus "*Ocimum*"

Prerna Sharma
Uttrakhand Technical University, India

In the present investigation, an attempt has been made to congregate the botanical, phytochemical, ethnomedicinal, pharmacological and toxicological information on *Ocimum sanctum Linn*. (OS, Tulsi), a medicinal herb used in the indigenous system of medicine. The roots, leaves and seeds of Tulsi possess several medicinal properties. Ayurvedic texts categorise as stimulant, aromatic and antipyretic. It has a wide range of action on the human body mainly as a cough alleviator, a sweat-inducer and a mitigator of indigestion and anorexia. *Ocimum sanctum* has a variety of biological / pharmacological activities such as antibacterial, antiviral, antifungal, antiprotozoal, antimalarial, anthelmentic, antidiarrhoeal, analgesic, antipyretic, anti-inflammatory, antiallergic, antihypertensive, cardioprotective, central nervous system (CNS) depressant, memory enhancer, antihypercholesterolaemic, hepatoprotective, antidiabetic, antiasthmatic, antithyroid, antioxidant, anticancer, immunomodulatory, antifertility, antiulcer, antiarthritic, apoptogenic / antistress, anticataract, antileucodermal and anticoagulant activities. *Ocimum sanctum* to know its proper usage as this herb is seemed to be highly valuable, possessing many pharmacological / medicinal properties.

Speaker Biography

Prerna Sharma's field of specialization is Pharmacognosy and she completed her master in Pharmaceutical sciences (2012) honour with gold medallist / appreciation in RITS ,Sirsa, India and recently she is pursuing her PhD from last three years at the Uttarakhand Technical University, Dehradun, India she has over 4 years of experience in pharmaceutical sciences, her field of expertise is standardisation of herbal plants/ herbal formulation. Her research area includes pharmacognostical & phytochemical investigation of Indian medicinal plants, she has 03 research/review publication national/international journals of repute to her credit and delegated more than 10 National/international conferences / workshops. She is a life member of professional bodies like association of pharmaceutical teachers of India (APTI).

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Notes:

Rimpi Arora, Toxicology 2018 & Recycling 2018, Volume 2
DOI: 10.4066/2630-4570-C1-003

Embelin modulates central neurotransmitters and attenuates streptozotocin induced cognitive impairment and biochemical abnormalities in Rats

Rimpi Arora
IFS College of Pharmacy, India

Embelin, the main active constituent of Embelia ribes, has been reported to possess various pharmacological actions, including anti-inflammatory, antioxidant, anticonvulsant and neuroprotective. The present study was design to investigate neuroprotective mechanisms and therapeutic potential of embelin against intracerebroventricular streptozotocin (ICV-STZ) induced experimental sporadic dementia in rats. STZ was infused bilaterally at the dose of (3 mg/ kg/1µl/1min) ICV on day 1st and 3rd. Spatial and non-spatial memory was evaluated using Morris water maze and object recognition task in rats. Embelin (2.5, 5 and 10 mg/kg i.p.) was administrated for 14 days from 7th day onwards after 1st ICV-STZ infusion in rats. On day 22 rats were sacrificed and hippocampal brain regions were used to identify biochemical, neurochemical and neuroinflammatory alterations. STZ infused rats showed significant learning and memory deficit which was associated with increase in oxidative stress (lipid peroxidation and nitrite), compromised antioxidant defense (reduced glutathione), neurotransmitter alterations (AChE, dopamine, noradrenaline, 5-hydoxytryptamine, Gama amino butyric acid and glutamate) and elevation in neuroinflammatory cytokine (IL-1 β, IL-6 and TNF- α) levels. Embelin dose dependently attenuated STZ-induced cognitive deficit and biochemical alterations and restored hippocampal neurochemical levels. The observed protective effect might be attributed to the antioxidant and anti-inflammatory potential of embelin and its ability to restore hippocampal neurochemistry. Thus, the outcomes of the current study suggest therapeutic potential of embelin in cognitive disorders such as SAD.

Speaker Biography

Rimpi Arora pursued B pharm from SBS College of Pharmacy, Patti Punjab, (Year 2003-2006). She pursued her M pharm from IFS College of Pharmacy, Moga Punjab (Year 2007-2009) and her D pharm from SBS College of Pharmacy, Patti Punjab (Year 2001-2003). Her Field of Specialization is Neuropharmacology and Neurobiology.

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Notes:

Jakub Klimko, Toxicology 2018 & Recycling 2018, Volume 2
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Recovery of the gold from electronic waste

Jakub Klimko
Technical University of Košice, Slovakia

Production of waste of electric and electronic equipment (WEEE) increases every year and this rare secondary raw material contains a large number of precious metals. This work describes the processing of used processors on personal computers for the purpose of gold recovery. In the paper there are described individual types of processors, methods of separation of gold coated contacts, and conditions of hydro metallurgic processing of separated contacts in order to separate the gold.

Speaker Biography

Jakub Klimko has been studying at the Institute of Recycling Technologies, Faculty of Materials, Metallurgy and Recycling at Technical University of Kosice since 2011. During his studies, he attended a scientific conference three times, of which he was awarded twice for a high contribution to the conference. In 2016 he began his 4-year PhD study at same study program. The study focuses on the waste of end of life products such as batteries, WEEE and others.

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Notes:

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Satyake Bakshi, Toxicology 2018 & Recycling 2018, Volume 2
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A Python based imaging algorithm to identify necrotic zone for Erythematous Skin Lesions

Satyake Bakshi
Carleton University, Canada

Ruxolitinib which is a JAK-2 inhibitor is an approved drug used for the treatment of myeloproliferative fibrosis. It is seen that usage of this drug is not without effects. It is normally accompanied by exudates on the lips or ulcers. In severe cases the prolonged use of this drug can lead to necrolysis of the epidermis. Most of the reactions are accompanied by a darker necrotic portion. Doctors often need to find the necrotic portion of a major erythematous lesion to assess the extent of damage. In the case of multiple such lesions it is often very time consuming to note the extent of damage for each lesion. Most detection algorithms are system and processor heavy when it comes to image detection programs as they require a much powerful system i.e. CT images, MRI systems etc. in which the analysis is to be done. So, a python-based script has been designed which would run in most systems and can be ported to other platforms i.e. UNIX or WINDOWS. The purpose of this algorithm is to specifically identify and automatically highlight the necrotic portion of such lesions in one pass. The colour and nature of such lesions is determined by analysing the individual pixel values around the necrotic portion. The algorithm is designed based on the open cv 2.4.13 framework of python. Supporting packages of NumPy and Pandas which are numerical packages typically used for complex mathematical calculations has been used. NumPy has been used to generate the contour points concerning the darker potion of the lesion. The Jupyter compiler has been used to carry out the analysis. For this algorithm to work an image of the lesion has been taken and converted to grayscale and post thresholding by OTSU's method contours are approximated depending on the threshold generated. Contours are the surface profile is roughly visualized by making use of the canny edge detection algorithm which is pre-loaded on to the open cv framework. Contours identify a specific or entire boundary of the object to be separated. After the contours are generated the best possible set of points which represent the idle location of the necrotic tissue are taken and is drawn over the image. The contours can be either drawn directly or approximated over the image. From the observation it is seen the later yields near-perfect identification of the necrotic portions of the lesion. This could be implemented along with other imaging modalities for better identification. Future applications of this could include the use of artificial neural networks for faster detection time.

Speaker Biography

Satyake Bakshi has completed his Bachelor of Technology from Vellore Institute of Technology, India at the age of 22. He is currently pursuing his master's degree at Carleton University, Canada. His area of interest is in rehabilitation engineering and medical image processing.

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Pattern of ocular toxicity in patients on Antipsychotic Drug Therapy at Alexandria Main University Hospital

Wafaa Mohammed Elsehly
Alexandria University, Egypt

Schizophrenia is a mental disorder characterized by abnormal social behaviour and failure to understand what is real. The eye is supposed to be the second organ to manifest drug toxicity following liver. This study aimed to assess the possibility of occurrence of ocular toxic effects of antipsychotic drugs, evaluate intraocular pressure of chronic psychotic patients treated with antipsychotic medications, and relate ocular toxic effects in patients treated with a variety of antipsychotics to duration of treatment and to detect early ocular toxic effects for early intervention. The present study conducted on 100 chronic adult psychotic patients out of them 78% males and 22% females attending EL- HADDRA University Hospital treated with antipsychotic drugs for a period more than six months. In this study 70% of the patients were treated by both typical and atypical antipsychotic drugs, 16% of them received only atypical antipsychotics and the least percentage was on typical antipsychotics (14%). 2% of cases show conjunctival pigmentations whom treated with typical antipsychotics alone 4% of cases only suffered from corneal opacity, all of them treated with typical antipsychotics alone. There was a significant relation between lens opacity and duration of treatment with typical antipsychotics alone. There was a significant correlation between duration of treatment with antipsychotics and IOP for both eyes and a significant difference between different duration categories of treatment with antipsychotics regarding to IOP in both eyes, it was highest with duration more than 25 years. Most of the cases have free fundus and only (2%) of them who treated with typical antipsychotics alone have abnormality. So increased cup disc ratio occurs only with typical antipsychotic. It was concluded that ocular toxicity was manifested mainly with typical antipsychotics that affected by duration of treatment. The incidence of toxicity decreased with combination of typical and atypical.

Speaker Biography

Wafaa Mohammed Elsehly has completed her PhD at the age of 34 years from Alexandria University, EGYPT. She is a Professor of Forensic Medicine and clinical toxicology in Armed Faculty of Medicine Ministry of defense .she is the Director of Quality Assurance Unit in Faculty of medicine Alexandria University. She has many publications, and actively participated in many international conferences. She contributed writing many books in forensic medicine and toxicology, ethics, and nursing. She attended more than 50 workshops in different fields. She was included in the 2009 Edition of Who's Who in the World. She is a reviewer in many scientific journals.

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Notes:

Accepted Abstracts

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The Disposal of radioactive wastes in the Metropolitan St. Louis Area: The development of contamination pathways and the impact on the Environmental and Health Legacy

Denise De Garmo
Southern Illinois University Edwardsville, USA

Dating back to the beginning of the "Atomic Age," 2.5 million cubic yards of radioactive wastes have been dispersed throughout the St. Louis and Metro-East area located in the Midwest United States. This waste resulted from atomic weapons work carried out by Mallinckrodt Chemical Works for the U.S. government under secret contract. Between 1942 and 1966, over 300,000 tons of uranium had been processed in the downtown St. Louis and Weldon Spring plants located in Missouri, US. Until the release of DeGarmo's seminal research on this topic, only bits and pieces regarding the atomic legacy of St. Louis could be found on a few internet sites and historical accounts of the Manhattan Project. Even more important was the absence of a comprehensive analyses of the health and environmental legacies left behind as a result of atomic work in the region. The findings detailed in this book have been used by experts across the United States in their work regarding the environmental and health legacies of nuclear weapons development. This presentation will not only discuss tools that can be used for pathway development regarding radiological and chemical contamination, it will also provide insight on how to connect those pathways to associated diseases.

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A proposal for expansion of current guidelines for the genotoxicity testing of new drugs: The case of BIA 10-2474, a novel fatty acid amide hydrolase inhibitor

Peter Pressman
The Daedalus Foundation, USA

The genotoxicity of 3-(1-(cyclohexyl(methyl)carbamoyl)-lH-imidazol-4-yl)pyridine 1-oxide, BIA 10-2474, a novel fatty acid amide hydrolase (FAAH) inhibitor developed by BIAL for treatment of medical conditions in which there is an advantage in enhancing the level of endogenous anandamide (AEA) and tonically increasing the drive of the endocannabinoid system, was evaluated for its genotoxicity. Studies included the Ames (*Salmonella typhimurium*) reverse mutation test, the *Escherichia coli* WP2uvrA test, an in vitro chromosome damage assay in human lymphocytes, and an in vivo micronucleus test in mice. All results were negative. Despite standard comprehensive and meticulous toxicological evaluation, apparent and catastrophic neurotoxicity in the first-in-human phase 1 study in 2016 resulted in cessation of the trial. While the mechanism underlying the adverse events remains ill-defined, there is rationale for expansion of routine ICH harmonized guidelines for preclinical Geno toxicologic testing. We present both a hypothesis for the mechanism of neurotoxicity and a propose a path forward for a more comprehensive evaluation of promising new drugs.

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Notes:

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Urban environmental problems affecting quality of life in cities of the central west region of Mexico: Security, resilience and integral risk management

Adrián Moreno Mata
Universidad Autónoma de San Luis Potosí, México

Cities around the world face numerous environmental health problems, such as air, water and soil pollution, traffic congestion, noise, urban amplification of heat waves and poor housing conditions, aggravated by unsustainable urban development and climate change. The urban environment implies health risks, insufficient distribution and unequal accessibility to urban amenities, and clear differences between different groups of the population regarding risks and vulnerability to environmental disasters. It is also an auspicious space to marginalization and segregation, especially of the less favored social classes. In Latin America, the problems that affect cities are very diverse, but could include the inefficient functioning of mobility and transport networks and their impact on air pollution, inequity in distribution and access to green public spaces, the deficiency in the quality and coverage of the potable water, drainage and urban sanitation systems, the lack of planning and control in the changes of land use and a growing demand for social housing.

But cities also generate opportunities for economic and social development, and promote creativity and innovations that allow balancing the relationship between costs and benefits of living in an urban environment. Undoubtedly, the growth of cities is driven by expectations of an improvement in the quality of life of its residents, in access to equipment and infrastructure, and in policies and actions aimed at solving the most common problems that affect urban life.

In this context, the conference addresses the cases of six metropolitan areas of the Central - Western Region of Mexico: Guadalajara, León, Querétaro, San Luis Potosí, Aguascalientes and Zacatecas. During the last two decades, these cities have observed an upward trend in urban competitiveness and productivity, a notable economic consolidation and the development of important industrial conglomerates -as in the case of the manufacturing, automotive, aerospace and electronic sectors-. Likewise, its economy diversified, encompassing the services, tourism and transport and commercial exchange sectors. Additionally, of the 40 cities where the creative class is concentrated in Mexico, five of the selected metropolitan areas achieved a locational coefficient greater than one. However, recent studies indicate that, as a result of globalization and the existence of local governments with low performance, the benefits of economic growth and competitiveness in these cities have not been widespread so far to all its inhabitants, generating a marked inequality in the quality of life of the different strata of the population, processes of exclusion and urban segregation, and a polarization between the winning socioeconomic groups and losers of globalization. In addition, the presence of an expansive, diffuse and fragmented urban model is observed, characterized by a pattern of land consumption above the national and regional average, and processes of degradation of the urban environment.

The objective of the conference is to intervene in the debate on urban environmental problems that affect the quality of life in cities, to discuss the links between the social and environmental determinants of human health in urban environments, and to analyze the possible sustainable alternatives that, from the perspective of Smart Urban Governance could promote security, resilience and integrated management of environmental risks in Mexican cities.

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Hospital pharmacist's role into the medicine's procurement processes

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Procurement is an important part of drug management and supply for measuring and increasing efficiency at all levels of healthcare institutions. Effective procurement means supplying the right drugs in the right quantities, at the right time, and with recognisable standards of quality. FIP Basel statements on the future of hospital pharmacy argue that "Hospital pharmacists should be involved in the complex process of procurement of medicines and health products, promoting equity and access." Recently, the European Association of Hospital Pharmacists position paper on procurement, released in June 2018, states that the knowledge and skills of hospital pharmacists make them specialists in the entire field of medicine procurement. Hospital pharmacists should lead all phases of procurement to ensure continuity of the supply of cost-effective quality medicines to patients. Hospital pharmacists' engagement in procurement is necessary both at local as well as at national level in all occasions that include hospital-use medicines. As an example, hazardous drugs management is an issue of major concern for pharmacists and healthcare occupational risks professionals' processes. Therefore, designing better procurement processes incorporating hazardous drugs issues during the qualification of products, can ensure compliance with applicable regulations and enable hazardous drugs management in terms of safety, quality and related costs. New concepts, as circular economy, are being introduced in the procurement processes of medicines. Circular economy acknowledges the constraints on natural resources and offers an approach to cope with them and move towards a more economically, socially and environmentally sustainable world. Healthcare and drug tendering offer opportunities to implement successful initiatives from other economic sectors.

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Clinical study of an outbreak in feedlot cattle by poultry litter consumption

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A clinical study in a feedlot cattle in Michoacan is described. The disease occurred in November 2017, in a feedlot beef cattle herd, 35 out 130 were affected. Clinical signs included anorexia, diarrhea, tachycardia, dyspnea, low weight gain and four animals, corneal opacity. The animals were fed with rations of grains (50%), poultry litter (35%), soybean paste (10%) vitamins, mineral salts (5%) and roughage. Daily water intake was low since there were no drinking sources. The treatment consisted in antibiotics, vitamins, antihistamines and hepatonics. Three months later, 64% of the animals were blind. The clinical diagnosis was poultry litter intoxication. Samples of poultry litter and water were collected from the production unit to confirm the diagnosis. Lead (Pb), mercury (Hg), chromium (Cr), copper (Cu), arsenic (As) and cadmium (Cd) were analyzed by the atomic absorption spectrophotometry technique coupled to a flame detector; phosphorus and sulfates by UV light spectrometry. Mercury and copper in the poultry litter were found out of the recommendations. In the water, arsenic, mercury and sulfates were found outside too. It is concluded an acute poisoning by Cu associated with Hg by exposure of bovines to contaminated water and poultry litter. The water contaminated caused a lower consumption due to taste, and a low nutritional performance reflected in the clinical picture of the intoxicated animals.

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Psychosocial Toxicology: Considerations for occupational health

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Psychosocial toxicology is incorporated as a new concept in the occupational context and safety and health at work, because social interaction in these work environments determine in these dynamics pollutants (precursors) that cause harm to workers, triggering intoxications derived from the adrenergic reaction when subjected to stressful situations (disruptors), which acts in the chemical development of the body and leads to intoxication, which, over time, has the capacity to alter the nervous system, tissues and organs (potential harmful) with physiological outcomes of incapacitating alterations that over time generate occupational disease and can lead to death (lethal dose). This new concept provides a baseline contribution to the public health of the knowledge of psychosocial toxic situations that allow the design of measurement strategies for the promotion, prevention and intervention of risk factors associated with this type of exposure, in order to reduce the occurrence of disorders derived from work stress caused by situations of high social and relational toxicity in work teams. In addition, results of the research conducted in Colombian companies of productive sectors of services and construction as evidence and technical support of this concept are presented.

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Impact of cadmium on the endocrine and exocrine sexual activity in the adult male and female wistar rats: Determination of an apoptotic process

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This study deals with the impact of chronic exposure to cadmium on male and female's fertility in rats. In fact, some male and female rats are given distilled water for drinking (T: controls), whereas the other ones are given distilled water enriched with chloride cadmium, either 10 (C1 group) or 20 mg/l (C2 group) for 1, 5, 10, 15, 30, 45, 60 or 90 days. In male rats, Cadmium, which induced a pathological change in spermatogenesis, is observed by histological studies: arrest of cell germ maturation, Then, an alteration of the structure of the seminiferous tubes with blockage of spermatogenesis (presence of male gametes without flagella or total absence of spermatozoa and destruction of the sertoli cells, testified by the presence of spans). Then, a decrease of the motility and the number of spermatozoa at the end of the treatment indicates the local cytotoxic effect of cadmium (Cd) on spermatogenesis, inducing an apoptotic phenomenon revealed by borated toluidine blue in the testicular cells, which affects the different stages of spermatogenesis. Serum testosterone level is found to be low at the beginning of the treatment, reaches a peak, then returns to the control values and even exceeds them in spite of the continuation of the treatment. It is therefore a hormonal adaptation to this pollutant. In female rats, the practiced vaginal smears revealed the oestrus phase in all the groups. Exposed females are mated to control males, and fertility is assessed later by counting the number of pregnancies. Fertility is found to be reduced in females of C1 and C2 groups as compared to control females (T group).

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Life style and environmental factors-influence the IQ in children and adolescents- A study in Malaysia

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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: 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 of Intelligence-second edition (WASI-II) questionnaire was used for each subject to evaluate the subtests of IQ.

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The target of many toxins and drugs is R-loop opening area in nuclear pores

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The ternary complexes (TC): DNA- phosphatidylcholine (PC) liposomes- divalent metal cations unlike lipoplexes are only lately has received attention. We proposed their involvement in the nuclear pore assembly. The formation of TC accompanied by the aggregation and fusion of PC liposomes was shown by freeze-etching and cryo- TEM technique. At the same time, double helix of DNA unwinds in the region of liposomes fusion that enhances initiation of DNA transcription. Membrane vesicles forming the nuclear pores in a cell are analog of PC liposomes. In our last nuclear pore model TC arises in the chromatin areas with three-stranded hybrids: DNA – small nuclear RNA (snRNA) at their interactions with two small membrane vesicles (~70 nm in diameter). The thermo stability of DNA/snRNA triple helix is considerably lower than the same sequence of double- stranded DNA. That specifies preferential attachment of three-stranded hybrids to membrane vesicles. The triple helical hybrid unwinding during fusion of two membrane vesicles results in pre-pore formation: double-stranded DNA/snRNA hybrid and a single- stranded DNA (ssDNA) located on the outer diameter of fused "big vesicle". This vesicle during interaction with double nuclear membrane can form channel between membranes. During this fusion ssDNA and hybrid, DNA/snRNA shifts to pore annulus center. The ssDNA in pore annulus is the reason for the enhanced transcriptional activity of the genes neighboring nuclear pore. The number of pores in a nucleus specifies chromosome territory and number of chromosome loops. Nuclear pores serve as sites of the initiation of transcriptions in a cell, because ssDNA is the best site of transcription initiation than dsDNA with the same nucleotide sequence. Binding of many toxic substances to ssDNA can prevent transcription initiation in area of nuclear pores. Using TCs as nuclear pore precursors we can made easy and sensitive test system for finding toxins and anti-toxicants.

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Ecotoxicology of pharmaceutical and personal care wastewaters on fish reproduction

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Pharmaceutical and personal products (PPCPs) are generated in lots of amounts all over the world due to the extra needs of it. It washed into the aquatic habitat and causes the harmful changes on its ecosystem. Among the aquatic organisms are the fishes can easily affected by these PPCPs. Acute and chronic exposure to PPCPs cause many harmful changes in fish vital functions. Therefore, the overall fish health, its fecundity and existence can facing the weakness or even stop function. The acute median lethal concentration (LC50) is varied according to the composition of PPCPs and the testing organism. The comparative assessment of PPCPs toxicology is necessary for its toxicity evaluation. Furthermore, its monitoring in the aquatic habitat is mandatory for healthy environment. Therefore, some of recent monitors of PPCPs are highlighted in freshwater and marine waters. The long term effect of PPCPs can disturb fish gonadotropins and regress its gonads. The effect of PPCPs on fish ovaries and testes are assessed in some of freshwater and marine water fishes. Furthermore, the PPCPs cause many harmful effects on fish at its early life stages. Therefore, the PCPs are one of the causative factors for depressing Global fisheries and disturb its sustainability.

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Side effects from meridian ignored

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Compared to conventional western medicine based on anatomy and chemistry particles, traditional Chinese medicine physicians practice clinic following "Chi". What is "Chi"? After 25 years study of Pulse Diagnosis, we defined it as Wave or Periodic signal. Under this definition, we could recognize the reality of meridians or harmonics between time and frequency domain phenomenon with Fourier Transform. With second harmonic generation law and the energy conservation law on meridians, we proved the core mathematic property and philosophy of the Chinese "Five elements theorem". From the balance of the forces on the artery wall by Newton's Law of mechanics, we derived the "Radial resonance equation" to describe the physical property of the blood pressure wave propagation and transmission in the arteries. Meanwhile, "Radial resonance theorem" explains the physiology of circulation system and builds up the basis of Pulse diagnosis on meridians. Based on the results obtained from both animal and clinical experiments, we verified the pulse diagnostic method on meridians recorded in medical literature classic and designed a pulse apparatus according to this meridian principle.

Through the pulse diagnostic apparatus, we could map the meridians to harmonics and quantitatively analyze the pathological excess or deficiency of the meridians including the five zang-organs and six fu organs of the patient (pathological matrix). In addition, a series of pharmacology research analyses of acupuncture, Chinese herbs, herbs prescription formula and western drugs on the reinforcing or reducing effect of meridians were being carried out. On the other hand, with matrix operation on harmonics, we were able to simulate the whole make up meridian function of a prescription formula which is composed of several herbs (pharmacological matrix).

As light, life and medicine owns the duality of particle and wave. However, almost all herbs or drugs effect on several meridians in the same time, the side effect occurs spontaneously if we do not take the meridian information into consideration

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Recovery and recycling of laminated packing materials

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It still remains a challenge to the recycling industry to develop an efficient, economical and environmentally-friendly commercial laminated packaging waste recycling system. Laminated packaging materials comprise a thin foil of aluminum, laminated in a matrix of paper and/or plastic layers, and are used for the packaging of consumer goods such as food, drinks, pet foods, toothpastes, and cosmetic products. Although few technical solutions were developed to reuse or recycle the waste, only one technology has been commercialized they have been largely impractical and not economically feasible for laminated packaging waste.

The objective of the research is to develop a recycling technique to segregate aluminum from component plastics and paper in post-consumer laminated packaging waste. The development of such a technique is essential in the recovery of valuable aluminum, cellulose fibers, and pure polymers. All these recovered materials are high valued products that are much cheaper to produce using this recycling method than conventional processes. In this project, recycling of laminated packaging waste using a solvent based delamination/dissolution would be examined. Plastics dissolution and recovery would be accomplished using organic solvents to reclaim the component polymers, typically polyethylene. Aluminum and paper would be recovered as the final insoluble residue after separating the plastics. This technique is expected to yield higher recovery rates and the reclaimed products quality would be in comparison with the virgin materials.

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Circular economy: Survey among Portuguese companies

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The Circular Economy (CE) economic system aims to conciliate economic and environmental performance, by adopting an innovative approach to address the relationship between business and the environment. A quantitative research based on an online survey was carried out among 99 Portuguese organizations showing that CE is regarded as a strategic and relevant issue for profitability and value creation. Furthermore, the perception that it requires the adoption of new business models in addition to the classical "reduce, reuse and recycle" approach is growing. Moreover, based on the hypotheses raised, results suggest that the level of CE adoption is positively impacted by the status of the EMS (Environmental Management System) certification and the willingness to improve the environmental performance and achieve a sustainable business model. However, CE activities are still relatively modest and a friendlier context (fiscal, legal, organizational, etc.) and the stronger support from supply chain agents and consumers are required. Future research should focus on how to design and shape the transition from a linear to a CE economy and to ascertain if the positive attitude towards CE is materialized in changing the way business is done.

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Proposed design of greywater treatment system in Batangas State University JPLPC Malvar campus

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Potable water is becoming a rare resource in the world. It is therefore essential to reduce surface and ground water use in all sectors of consumption, to substitute freshwater with alternative water resources and to optimize water use efficiency through reuse options. A greywater comes from sinks, shower, baths, and washing machine or simply defines as any domestic wastewater, excluding sewage. Batangas State University Malvar Campus has a total population of 5233, including students from college, elementary, faculties, employee and personnel. Increasing population of Bat state U Malvar campus can be lead to water shortage and will cause high consume billing of water which is cost an average monthly bill of 6,006 PhP according to their accounting office. Batangas State University Malvar produce high effluent of greywater with a total discharge of 57.4 gpm and as regard to our major, the researchers decided to design a greywater treatment system in Bat state U Malvar for having a new source of water for flushing toilet in the campus. The researchers get the total effluent of Bat state U Malvar by using Drainage Fixture Unit of the campus. This method provides a simple, inexpensive, and practical means of estimating flow, Based on the Result of Laboratory Analysis (ROLA) issued by Optimal Laboratory Incorporated, the Total Suspended Solid(TSS),Total Coliform Count(TCC),and Biochemical Oxygen Demand(BOD) exceeded the effluent standards set by DENR. Therefore, the greywater treatment system is needed. The researchers design a Greywater Treatment System where the treatment process to be applied is filtration and chlorination and to be constructed in Batangas State University JPLPC Malvar Campus with the capacity of 6.52m^3.

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Proposed compost processing system in Lipa city, Batangas

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Solid Waste Management (SWM) for every city is a great challenge to the government but also to the people living there. It must carefully be planned from disposal to dumping sites or to the transfer to treatment facilities.

The present status of the solid waste management of Lipa City was assessed and it was found out that there are certain policies being implemented in the city when it comes to proper solid waste management. The material recovery facility of the city is also under maintenance and planned to be moved to other location. According to the data given by the CENRO, as years pass, the generation of waste increases. The solid waste in Lipa City generates a total weight of 3884.78 kg of biodegradable, 4068.6 kg of recyclable, 2271.11 kg of residual and 376.17 of special waste based on the result of WACS done by the City ENRO.

Data were collected using a structured questionnaire that was distributed to 355 respondents who live within the seven zones of the target location for the construction of a compost pile facility and interviews from the officials of the City of Lipa to know the possible environmental impacts and social acceptability of the proposed project. The survey showed a result that 90.98% agreed to construct the compost processing facility while 9.01% of the respondents disagreed.

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