magnus Group
Share, Receive & Grow !

International Conference and Expo on

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14
JUNE 2022

VIRTUAL EVENT

Contact us:
Ph: +1 (702) 988-2320
Email: toxicology@magnusconference.com
Website: https://toxicology-conferences.magnusgroup.org/

magnus Group

BOOK OF ABSTRACTS

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

INDEX

Contents

ABOUT MAGNUS GROUP

Magnus Group (MG) is initiated to meet a need and to pursue collective goals of the scientific community specifically focusing in the field of Sciences, Engineering and technology to endorse exchanging of the ideas & knowledge which facilitate the collaboration between the scientists, academicians and researchers of same field or interdisciplinary research. Magnus group is proficient in organizing conferences, meetings, seminars and workshops with the ingenious and peerless speakers throughout the world providing you and your organization with broad range of networking opportunities to globalize your research and create your own identity. Our conference and workshops can be well titled as 'ocean of knowledge' where you can sail your boat and pick the pearls, leading the way for innovative research and strategies empowering the strength by overwhelming the complications associated with in the respective fields.

Participation from 90 different countries and 1090 different Universities have contributed to the success of our conferences. Our first International Conference was organized on Oncology and Radiology (ICOR) in Dubai, UAE. Our conferences usually run for 2-3 days completely covering Keynote & Oral sessions along with workshops and poster presentations. Our organization runs promptly with dedicated and proficient employees' managing different conferences throughout the world, without compromising service and quality.

ABOUT TOXICOLOGY-2022

Toxicology-2022, welcomes members from different parts of the world to join International Conference and Expo on Toxicology and Applied Pharmacology (TOXICOLOGY 2022) which is going to be held Virtually during June13-14, 2022.

The conference deliberations will be on the theme Tracing Toxicology Advancements for Better Life and will highlight the most recent breakthroughs and cutting-edge research on today's toxicological issues, providing a unique opportunity for toxicologists, scientists, experts, pharmacists, young and brilliant researchers, business, delegates, and talented student communities from all over the world to gain an understanding and share their experiences in the field of Toxicology and Applied Pharmacology.

We anticipate that this symposium will aid in the discovery of new research avenues, and we hope to see you at Toxicology 2022.

magnus Group

KEYNOTE FORUM

DAY 01

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Bartolome Ribas Ozonas*[1,2], Garcia Arribas O[2], Perez Calvo M[2], Gonzalez Rodriguez J[2], Sebastian Franco J.L.[3], Miranda[3] and Muñoz San Martin S[3]

[1]Royal National Academy of Pharmacy, Spain

[2]Area of Environmental Toxicology, Institute of Health Carlos III. Majadahonda, Madrid

[3]Department of Structure Matter, Faculty of Physics, Complutense University, Spain

Metallothionein as mineral ion carrier and reducing agent in metabolism and toxicology

Metallothionein is a biomarker in living systems principally for us humans, intracellular reducing agent also in defense for environmental pollution (high levels in mines workers in China have absence of pathology) and for the presence of heavy metals as cadmium, mercury and lead among others. On the other side Mytilus edulis is a water-sea sensor of pollution with high levels of MT and essential mineral ions, which is extensively produced and important economic product in the autonomous region of Galicia on the Nord-West coast of Spain for local use and to export, and also for the Cantabria north coast of the Iberic Peninsula. MT is a low molecular weight protein (7 kD), without aromatic amino acids, and the 30% of the amino acid residues are cysteines, which allows it to bind both positive essential mineral ions (Fe, Zn, Ca, Cu, etc.) as well as toxic heavy metals (Cd, Hg and Pb as others). Which in turn shows a great affinity for thiol groups (-SH). Cadmium concentration in environmental pollution of Ecosystems is increasing and must be evaluated in order to establish the risk assessment in human health. The thermal stability and the great affinity of MT to Cd2+ ions are due to the high number of negative thiol = -SH ligands and to the final globular structure. Its chemical characteristics allow the purification and isolation after homogenization, heating the extract, centrifugation, filtration and posterior determination and quantification by capillary electrophoresis. This is a rapid and reproducible technique to establish the MT concentration in biological samples.

Audience Take away:

- Apply the analytical technique of metallothionein in toxicology for its levels in humans and detect as a biomarker or sensor the presence of pollution or metal contaminants, heavy metals, in mine workers, etc
- Significance of knowing the metallothionein and its affinity to essential elements, to ingest them in fruits and vegetables
- Importance of a healthy diet, a balanced diet with essential minerals that transports metallothionein to all systemic organs, activation of the immune system, avoiding colds, virus pathologies, bacteria and toxic agents
- Metallothionein is an intracellular and mitochondrial reducing agent against free radicals in oxidative phosphorylation, and benefits the electron flow environment in the electron transport chain

Biography

Doctor of Pharmacy and Bachelor of Medicine and Surgery. Specialized in France in the Department of Pharmacology in Pharmacological Techniques; and at the SACLAY Atomic Energy Commissariat with Radiobiology courses; and User of Radioelements; and co-hired at the Fontenay aux Roses center in 1963-1964. Humboldt researcher at the Max Plank Institute of Biochemistry in Munich from May 1969 to December 1972. He introduced courses in Neurochemistry in the Faculties of Pharmacy and Medicine of the Complutense University of Madrid, and in Toxicological Biochemistry in the Pharmacy. He is an academic of the Royal National Academy. of Pharmacy, of the Institute of Spain, and of the National Academies of Argentina, Brazil, Peru, of Medicine of the Balearic Islands, and of Technology and Humanities of Valencia. Associate Professor en the Physical medicine and rehabilitation end Head Area Environmental Toxicology.

Ana Faustino Rocha*[1,6], Helena Vala[1,2], Carmen Vasconcelos-Nóbrega[1,2], Adelina Gama[3,4], Rita Ferreira[5], Paula A. Oliveira[1,3]

[1]Centre for the Research and Technology of Agro-Environmental and Biological Sciences (CITAB), Portugal

[2]Centre for Studies in Education, and Health Technologies (CI&DETS), Agrarian School of Polytechnic Institute of Viseu, Portugal

[3]Department of Veterinary Sciences, University of Trás-os-Montes and Alto Douro (UTAD), Portugal

[4]Animal and Veterinary Research Center (CECAV), Portugal

[5]Associated Laboratory for Green Chemistry (REQUIMTE), Department of Chemistry, University of Aveiro (UA), Portugal

[6]Department of Zootechnics, School of Science and Technology, Evora, Portugal

Toxicological effects of n-methyl-n-nitrosourea in a rat model of mammary cancer

N-methyl-N-nitrosourea (MNU) is the oldest member of the nitroso-compounds that can alkylate DNA. It has been used to induce tumor development in several organs, including mammary gland and prostate. The target of MNU depends on the animals' specie and strain, dose, route, and age at administration. The study aimed to address the toxicological effects of MNU administration in female rats. Twelve Sprague-Dawley female rats were divided into two experimental groups: MNU (n=10) and control (n=2). At seven weeks of age, animals from group MNU received an intraperitoneal administration of the carcinogen MNU, at a dose of 50 mg/Kg. Animals from group control received an administration of vehicle (saline solution 0.9%). Animals were humanely sacrificed 18 weeks after MNU or vehicle administration by intraperitoneal injection of xylazine and ketamine, followed by exsanguination by cardiac puncture. A complete necropsy was performed. Heart, lungs, liver, spleen, kidneys, adrenal glands, clitoral glands, and lymph nodes were removed and immersed in buffered formalin for histopathological analysis. Animals from group MNU developed a total of 21 mammary tumors. The organs of animals from group MNU presented a higher number of lesions with higher grade, when compared with the organs of animals from group control. Hyalinization, coagulative myocytolysis, congestion hemorrhage and hyperemia were observed in the heart. Lungs exhibited interstitial inflammation, arteriolosclerosis, arteriosclerosis, congestion, and hyperemia. Interstitial inflammation, congestion and cholestasis were observed in the liver. The spleen presented interstitial inflammation, congestion, hemosiderosis and hyperemia. Congestion, hyperemia, blebbing, hydropic degenerescence, hyaline casts and cystic dilations were found in the kidneys. Adrenal glands presented hyperplasia, congestion, and hydropic degeneration; while clitoral glands presented interstitial fibrosis, ductal dilation, interstitial inflammation, and hyperemia. Infiltrate and congestion were observed in the lymph nodes. The higher number and higher grade of the lesions in group MNU were due to the carcinogenic action of the chemical agent MNU.

Audience Take away:

Use of animal models of disease

Biography

Ana Faustino holds a Master in Veterinary Medicine and a European PhD in Veterinary Sciences. Animal models of cancer, tumoral angiogenesis and imaging are her main areas of interest. She has collaborating in several Financed Research projects. The results of her works were published in more than 250 publications in several formats. She received several prizes of scientific merit, and highlights and press honors. She has experience in supervising graduate and post-graduate students. She participated in several courses, workshops, international and national meetings. She is editorial member of several scientific journals and reviewer of more than 300 manuscripts. She is Guest Editor of two special issues in Veterinary Animals and in Life.

magnus Group

SPEAKERS

DAY 01

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Al Borhan Bayazid* and Beong Ou Lim
Konkuk Univeristy, Korea Republic of

Neuroprotective role of sodium butyrate through suppressing inflammation and modulating antioxidant enzymes in vitro and high fat diet-fed mice

The discovery of effective therapeutic agents against neurodegenerative diseases (NDDs) remains challenging. Neurotoxicity, inflammations, and oxidative stress are associating factors of NDDs. Sodium butyrate (NaB) is a short-chain fatty acid found in diet and produced in the gut that reportedly protects against cancer, inflammation, obesity, and so on. We have investigated the neuroprotective effects of NaB in SH-SY5Y cells stimulated with TNF-α. We also used four-week-old male C57Bl/6NTac mice were divided into three groups; the control group, the High Fat Diet (HFD) group, and the HFD + NaB group where mice received 11 mg/kg body weight of NaB with HFD. Our results showed that NaB attenuated cell death and inhibited the NO production and decreased the expression of iNOS and COX-2. NaB notably ameliorated apoptotic regulatory proteins p-53, Caspase-3 and caspase-1 level, and reversed phosphorylation of extracellular signal-regulated kinases and p-38 proteins. We found that NaB restored bodyweight and attenuated P-53, Bcl-2-associated X protein (BAX), and caspase cascades in the brains of HFD-fed mice. NaB ameliorated Glucocorticoid receptor and NLRP3 inflammasome expressions in SH-SY5Y cells and brains of HFD-fed mice. On the other hand, NaB treatment upregulated the expression of the growth factor-related factors PPARγ, CREB, and BDNF in the brain tissues of HFD-fed mice. NaB also suppressed the BAX activation and modulated Nrf-2, HO-1 and MnSOD expression in neuroblastoma cells and in the cerebral cortex of HFD-fed mice. In addition, NaB substantially reversed the Amyloid-beta and Tau activation in SH-SY5Y and BV-2 cells. Altogether, our results suggest that sodium butyrate has potential therapeutic effects against NDDs.

Audience Take Away:

- Neuroprotective effects of Sodium Butyrate with underlying molecular mechanisms. Nutraceuticals present studies and future perspective
- Role of High-fat diet in neurotoxicity
- It helps to design the research works. In further research, there are scopes to explore from this. Since there is no effective cure or therapeutic agent against NDDs (e.g.: AD and PD)

Biography

Al Borhan Bayazid studied Applied Biochemistry at the Konkuk University, Korea and graduated as MS in 2020. He then joined the research group of Prof. Beong Ou Lim at Bio Food and Pharmaceuticals Lab, Konkuk University. He received his BSC degree in 2016 from Daffodil International University, Bangladesh. He has published 8 research articles in SCI (E) journals.

Maria Luisa Mateus*, Diana Rodrigues Pereira
University of Lisbon, Portugal

Disease prevention through the promotion of healthy environments Trachoma: A public health problem

Trachoma is the leading infectious cause of blindness in the world. Caused by the bacterium Chlamydia trachomatis, recurrent episodes of infection during childhood lead to severe conjunctival inflammation, followed by scarring, and consequent rubbing of the eyelashes on the cornea, increase the likelihood of blindness in later life. An estimated 137 million people are at risk of blindness from trachoma, mainly affecting marginalized people on the African continent. To reduce the transmission of the infection and eliminate trachoma as a Public Health problem, the World Health Organization has developed an integrated strategy consisting of surgery to correct trichiasis, antibiotic administration, facial cleanliness, and environmental improvement, known as the SAFE strategy. The risk factors for trachoma are closely linked to lack of access to adequate water and sanitation and inadequate hygiene practices in communities, and it can be transmitted by routes such as direct person-to person contact, the vector Musca sorbens, and contact with fomites such as cloths and clothing. Great efforts have been made to implement the trachoma control strategy. However, the important role that the promotion of a healthy environment plays in fighting and preventing trachoma is not given the same value as antibiotic therapy. Currently, trachoma remains endemic in 45 countries, so investment and the formation of intersectoral partnerships for the promotion and health education of proper face and hand hygiene, provision of latrines, and installation of water sources in at-risk communities, coupled with the antibiotic distribution and surgery programs in place, are essential to the success of the SAFE strategy and the elimination of trachoma as a Public Health problem.

Audience Take away:

- With this presentation I want to alert to the dimension that trachoma has in certain countries
- Alerting to this public health problem
- Clarify what has already been implemented to minimize the problem
- Future actions to eradicate trachoma

Biography

Maria Luisa Mateus is an Assistant Professor at the Faculty of Pharmacy, University of Lisbon (FFUL), with over 35 years of experience as professor. She received her PhD degree in 2002 in Toxicology, at the same institution. She works in the Department of Pharmaceutical Sciences and Medicines. She is regent of several disciplines and teaches Toxicology. Member of iMed.ULisboa (FFUL) since its formation. Member of the Animal Welfare Authority (ORBEA) since the formation. Advisor of doctoral and master students. Published several articles, with special emphasis on exposure and effect biomarkers. Head of Instrumental Laboratory (FFUL) since 2009.

Oskar Karlsson
Stockholm University, Sweden

Paternal epigenetic inheritance: A man's exposome may impact health of his unborn children and grandchildren

The continuous exposure to air pollution and the growing number of manmade chemicals is a threat to biota and human health. These exposures can, together with other stressors, cause adverse effects, either alone or via complex interactions. The exposome can be defined as an individual's cumulative lifetime environmental exposure and related biological responses. Our response to current exposures and disease vulnerability is influenced by genetics, epigenetics, physiology, and health status, which involve alterations in biological pathways induced by earlier exposures. It might even be influenced by your parents or grandparents' exposures. At conception, the gametes deliver not only the genetic material to form an embryo, but also additional epigenetic information that could reflect the exposures and lifestyle behaviors of both parents. The alarming decrease in sperm counts and research indicating possible paternal transmission of phenotype through epigenetic mechanisms show that research on risk factors and implications are urgently needed. We aim to integrate experimental model systems, computational and omics tools, and epidemiological research to increase the understanding of if, and how, environmental exposures may affect male reproductive health and their children via paternal epigenetic inheritance. We recently published the first study of paternal transgenerational inheritance in frogs. This unique experiment took over 3 years to complete, from the exposure of male frogs (F0) to environmental concentrations of the pesticide linuron, until the grand-offspring (F2) was mated. Interestingly, the adult male offspring (F1) of linuron exposed fathers were smaller, demonstrated impaired spermatogenesis and reduced fertility, and additional evidence of endocrine system disruption. Impacts were further propagated to the F2 generation, providing evidence of transgenerational effects in amphibians. The adult F2 males showed increased weight and metabolic impairments, as well as less germ cell nests in testis. Our findings support a causal and complex role of pollutants in the occurring amphibian extinction. The results also provide important cross-species evidence of paternal epigenetic inheritance. We have similar unpublished data from other animal models indicating that chemical contaminants have the potential to induce alterations in sperm biomolecules that are transferred to the next generation during fertilization/embryogenesis, thereby affecting phenotype of the offspring via epigenetic mechanisms. To study this further, we are establishing a birth cohort, where we collect lifestyle data and biological samples from both mother and father, determine exposure to environmental chemicals—i.e. the chemical exposome—by comprehensive mass spectrometry workflows, and conduct detailed studies of sperm and paternal impact on child development/health. This cohort study is a long-term commitment to increase understanding and awareness of how the exposome may affect male reproductive health and child health through epigenetic inheritance.

Audience Take Away:

- The exposome, human and environmental health
- Paternal epigenetic inheritance
- Transgenerational inheritance

Biography

Oskar Karlsson is an Associate Professor at the Science for Life Laboratory (SciLifeLab), Department of Environmental Science, and Stockholm University, Sweden. Dr. Karlsson earned a PhD in Toxicology at the Department of Pharmaceutical Bioscience, Uppsala University, and has also worked at Centre of Molecular Medicine, Karolinska Institute, and Harvard University, School of Public Health. His research combines experimental model systems, computational and omics tools, and epidemiological studies to investigate the influence of environmental exposures on wildlife and human health, and underlying molecular mechanisms. Ongoing efforts include studies of paternal epigenetic inheritance in the ERC funded project PATER.

Veronica Zingales*, Fernandez-Franzon M and Ruiz MJ
University of Valencia, Spain

Evaluation of the toxicological effects of the mycotoxin sterigmatocystin on human neuroblastoma SH-SY5Y cells

Mycotoxins are low molecular weight toxic secondary metabolites produced by filamentous fungi, mainly belonging to the genera Aspergillus, Fusarium, Alternaria and Penicillium. Currently more than 300 mycotoxins have been identified. Sterigmatocystin (STE) is a mycotoxin produced mainly by filamentous fungi belonging to the genus Aspergillus. It has been reported to occur in grains and grain-based products, cheese, green coffee beans, spices, nuts and beer. STE has been shown to be hepatotoxic and nephrotoxic in animals and it has been classified as possible human carcinogen (group 2B) by the International Agency for Research on Cancer (IARC). Due to the too limited STE occurrence data in food and feed, no reliable human and animal dietary exposure assessments could be identified, as well as no safe levels in food are known. However, there is an increasing awareness of the importance of establishing a better risk assessment for this mycotoxin. Our research group evaluated the toxicological effects associated to STE exposure in human neuroblastoma SH-SY5Y cells. Our results demonstrated that STE decreased cell viability in a time- and concentration-dependent manner. Moreover, exposure of SH-SY5Y cells to STE revealed cell cycle disruption, increased DNA damage and oxidative stress, which could be related to apoptosis cell death. Additionally, the efficacy of the intracellular defence system (enzymatic and non-enzymatic) against oxidative stress was evaluated, observing a decrease in glutathione levels, as well as in the activity of the enzymes glutathione peroxidase, glutathione transferase, catalase and superoxide dismutase, which suggested that SH-SY5Y cells were not able of counteracting the oxidative stress induced by STE. Finally, considering that cytotoxic effects observed in conventional two-dimensional (2D) cell cultures often do not adequately resemble the complexity of the microenvironment in vivo, the effects of STE on processes such as proliferation, oxidative stress, apoptosis and DNA damage induction were evaluated in 3D spheroid model of human neuroblastoma SH-SY5Y cells and compared with the effects observed in monolayer SH-SY5Y cell cultures. The results obtained confirmed the cytotoxicity of STE and its ability to trigger apoptosis, oxidative stress and DNA damage on SH-SY5Y cells in both 2D and 3D cell cultures. However, spheroids showed more resistance than 2D monolayer cell culture to the toxic effects of STE, as lower concentrations and exposure times were sufficient to cause toxic effects in the 2D system compared to the 3D system. Taken together, our results highlight the cytotoxic properties of STE and suggest that cell culture models play a pivotal role in the toxicological risk assessment of mycotoxins.

Audience Take away:

- New insights on sterigmatocystin: occurrence, toxicity and mechanisms of action
- The potential risk associated to the dietary exposure to sterigmatocystin
- The role of cell culture models in the toxicological risk assessment

Biography

Veronica Zingales, Ph.D., graduated in Biological Science in 2014 and in Sanitary Biology in 2016 at the Faculty of Biological Science, University of Catania, Italy. She acquired Ph.D. in Food Science at the Faculty of Pharmacy, University of Valencia, Spain, in 2021. Currently, she is employed as Postdoctoral Researcher at the Institute of Pediatric Research – Cittá della Speranza, Italy. Veronica Zingales published 13 original scientific papers and attended several international and national scientific meetings. She is a member of few scientific associations.

Adam Bownik*, Małgorzata Adamczuk and Barbara Pawlik-Skowrońska

University of Natural Sciences in Lublin, Poland

Alteration of brachionus calyciflorus swimming behavior by cyanopepides: Microginin-FR1 and anabaenopeptin-a and microcystin-LR accompanied by decrease of catecholamine activity and degradation of muscle f-actin

Certain strains of cyanobacteria, microorganisms forming water blooms produce toxic secondary metabolites. Although various effects of cyanotoxins in aquatic animals are known, little is known on the effects induced by combinations of cyanobacterial oligopeptides and the explaination of mechanisms of their action in aquatic invertebrates. The aim of the present study was to assess the effects of pure single and mixed cyanobacterial oligopeptides: microginin FR-1 (MGFR1), anabaenopeptin-A (ANA-A) and microcystin-LR (MC-LR) on the swimming behavior and muscle structure, catecholamine release and cell viability of a model rotifer Brachionus calyciflorus. Swimming behavior was analyzed with the use of digital analysis with Tracker® software. Activity of catecholamine neuromediators (dopamine, adrenaline, noradrenaline) release and F-actin filaments was determined by fluorescent staining with EC517 and blue phalloidin dye, respectively. The obtained results showed that the studied oligopeptides decreased the rotifer swimming speed both during exposure to single and to the mixtures of the studied oligopeptides. Isobole analysis showed that binary mixtures of MGFR-1+ANA-A and ANA-A+MC-LR induced synergistic, however MG-FR1+MC-LR additive decrease of rotifer swimming speed. The highest inhibitory effects was observed in rotifers exposed to the mixture of MG-FR1+ANA-A. The results suggest that the cyanopeptide-induced inhibition of Brachionus swimming speed may be mediated by the decreased activity of neuronal catecholamines in the locomotory system and degradation of muscular F-actin. The results also suggest that fluorescent techniques may support behavioral observations in assessment of effects induced by various toxicants in aquatic invertebrates.

Audience Take away:

- The audience will enrich the knowledge on the effects of mixtures of cyanobacterial oligopeptides
- The audience will benefit with the knownledge of the use of fluorescent microscopy in aquatic toxicology
- Yes it will improve aquatic toxicologists' scientific skills
- It will provide explanations for mechanistic basics of neurotoxicity of cyanobacterial oligopeptides

Biography

Adam Bownik studied Environmental Protection at the Catholic University of Lublin, Poland and graduated as MS in 1996. He received his PhD degree in 2004 at the same institution. In 2016 he received habilitaion at University of Maria Curie-Sklodowska in Lublin and obtained the position of an Associate Professor at University of Life Sciences in Lublin. He has published over 60 publications

Brandon Lucke Wold, M.D., PhD*[1], Matthew Goldman[2], Jason Katz[2], Bavly Dawoud[3], M.D., Abeer Dagra[1]

[1]University of Florida, United States
[2]UFCOM, United States
[3]University of Illinois, United States

Respiratory Patterns in Neurological Injury: Pathophysiology, Ventilation management, and Future Innovations

Homeostatic mechanisms for respiratory control are diverse, sophisticated, and redundant, relying on both central and peripheral mechanisms. However, the orchestrated process of breathing under both physiological and pathologic conditions (i.e., stressors and/or illness) relies on intact neurological anatomy and physiology. The overarching goal is titrated ventilatory rate, depth, and rhythm to achieve proper gas exchange. The clinical syndrome known as Cushing's triad (intracranial hypertension, bradycardia, and irregular respirations) is a classic teaching point of the devastating clinical consequences of neuro-deterioration. Furthermore, 60% of patients with acute brain damage showed abnormal breathing patterns including periodic, irregular, and rapid respirations This paper will summarize the neurological basis and regulation of breathing as well as pathologic perturbations of this process. We will also highlight ventilatory management clinicians may use as an adjunct to improve respiratory control in neurologic injury. Lastly, we will discuss both preclinical and proposed experimental treatment approaches for respiratory distress in the context of neurologic injury.

Audience Take away:

- Learn about respiratory distress patterns associated with neurologic injury
- Discuss how different toxic molecules damage the brain's respiratory center
- Overview the various treatment approaches

Biography

Brandon Lucke-Wold was born and raised in Colorado Springs, CO. He graduated magna cum laude with a BS in Neuroscience and distinction in honors from Baylor University. He completed his MD/PhD, Master's in Clinical and Translational Research, and the Global Health Track at West Virginia University School of Medicine. His research focus was on traumatic brain injury, neurosurgical simulation, and stroke. At West Virginia University, he also served as a health coach for the Diabetes Prevention and Management program in Morgantown and Charleston, WV, which significantly improved health outcomes for participants. In addition to his research and public health projects, he is a co-founder of the biotechnology company Wright-Wold Scientific, the pharmaceutical company CTE cure, and was a science advocate on Capitol Hill through the Washington Fellow's program. He has also served as president of the WVU chapters for the American Association of Pharmaceutical Scientists, Neurosurgery Interest group, and Erlenmeyer Initiative Entrepreneur group. In addition, he has served as vice president for the graduate student neuroscience interest group, Nu Rho Psi Honor Society, and medical students for global health. He was an active member of the Gold Humanism Honor Society and Alpha Omega Alpha Honor Society. He is currently a member of the UF House Staff Council and Positive Culture Committee. He is married to Noelle Lucke-Wold and has two children. As a family, they enjoy running with their dogs, rock climbing, and traveling. In his spare time, Brandon frequently runs half marathons and 10ks together with is wife. Brandon also enjoys reading and discussing philosophy and playing chess. He is currently a Pgy4 neurosurgery resident at University of Florida with R25 funding and plans to pursue endovascular training.

Anja Katic*[1], Nevenka Kopjar[2], Vilena Kasuba[2], Mirta Milic[2], Gordana Mendas[3], Vedran Micek[4], Davor Zeljezic[2]

[1]Analytical Toxicology and Mineral Metabolism Unit, Institute for Medical Research and Occupational Health, Croatia
[2]Mutagenesis Unit, Institute for Medical Research and Occupational Health, Croatia

[3]Biochemistry and Organic Analytical Chemistry Unit, Institute for Medical Research and Occupational Health, Croatia
[4]Animal Breeding Unit, Institute for Medical Research and Occupational Health, Croatia

Effects of low dose imidacloprid exposure on pesticide levels and primary DNA damage in blood and brain of male wistar rats

Imidacloprid is a systemic pesticide used for crop protection and in the veterinary field that belongs to the group of the most widely used insecticides in the world - neonicotinoids. It acts selectively as an agonist on nicotinic acethylcholine receptors in insects. Due to its widespread use and detectable levels in the environment, imidacloprid can have adverse health effects in many species, including mammals. To assess the potential genotoxicity of imidacloprid, we investigated the effects of oral 28-day exposure to environmentally relevant doses of imidacloprid (0.06 mg/kg b. w./day, 0.8 mg/kg b. w./day and 2.25 mg/kgb. w./day) on pesticide levels and primary DNA damage in blood and brain of adult male Wistar rats. After the treatment, we applied the alkaline comet assay to determine primary DNA damage (based on tail intensity, i.e. DNA% in the comet's tail) in leukocytes and brain cells. Levels of imidacloprid in plasma and brain tissue were measured using high performance liquid chromatography with a UV diode-array detector. The presence of imidacloprid in the plasma of all treated animals and in the brain of animals treated with two higher doses was revealed. We observed peripheral blood leukocytes damage at the lowest dose of imidacloprid and dose-dependent brain cells DNA damage. Oral 28-day exposure to low doses of imidacloprid in rats resulted in detectable levels of imidacloprid in plasma and brain tissue that directly induced DNA damage, particularly in brain tissue. Our results call for further investigations of adverse outcomes associated with environmental imidacloprid exposure, especially long-term exposure to environmentally relevant doses, using other sensitive biomarkers of effect.

Audience Take away:

- The information contained in the presentation could be useful for broadening of the knowledge regarding adverse effects of low-level exposure to neonicotinoids, which is mostly unknown, or poorly documented
- Since most of the existing knowledge about imidacloprid toxicity is based on the research of higher doses exposure, the obtained results could help understand its toxic effects after oral exposure to low doses likely to occur in real-life situations
- The Presentation could be useful for researchers involved in risk assessment of pesticides, and also for university teachers, since it provides novel evidences regarding imidacloprid-related risks at genome level and DNA instability
- This information could be included in risk assessment of pesticides, or added to the existing lectures of various toxicology courses to improve their quality
- Other faculties could use this presentation in planning and accomplishing similar experiments within their research activities, but also to improve their teaching materials with novel information
- The solutions offered by the experimental design used in this study could be potentially helpful for improving a design of the similar forthcoming studies

Biography

Anja Katic, Ph.D., graduated at the Faculty of Food Technology and Biotechnology, University of Zagreb in 2005. She acquired Ph.D. in Biomedicine and Health Sciences at the Faculty of Pharmacy and Biochemistry, University of Zagreb in 2015. She is employed in Analytical Toxicology and Mineral Metabolism Unit at the Institute for Medical Research and Occupational Health, Zagreb, Croatia, since 2007. Anja Katic published 19 original scientific papers and more than 30 abstracts at the international and national scientific meetings. She attended several courses at foreign institutions, for which she received scholarships, and she is a member of few scientific associations.

Suzana Zunec*[1], Irena Brcic Karaconji[1], Anja Katic[1], Nevenka Kopjar[2], Vedran Micek[3], Goran Kozina[4], Ana Lucic Vrdoljak[1]

[1]Toxicology Unit, Institute for Medical Research and Occupational Health, Croatia

[2]Mutagenesis Unit, Institute for Medical Research and Occupational Health, Croatia

[3]Animal Breeding Unit, Institute for Medical Research and Occupational Health, Croatia

[4]University Centre Varazdin, University North, Varazdin, Croatia

Biochemical indicators of the effect of tetrahydrocannabinol against cytostatic irinotecan toxicity in a model of mice with syngeneic colon tumor

Irinotecan is one of the most commonly used cytostatics for the treatment of advanced colon cancer. The incidence of this type of cancer is a growing public health problem in all developed countries. Side effects caused by the use of irinotecan significantly reduce the quality of life of treated patients. Although they can be reduced to some extent by taking supportive therapies under medical supervision, patients treated with irinotecan often take various dietary supplements to reduce the effects of acute and delayed cholinergic syndrome and improve the general condition of the body. Due to the growing public opinion about the high antitumor potential of products with Δ-9-tetrahydrocannabinol (THC), for which the relevant scientific literature does not offer credible evidence, some cancer patients often take unregistered preparations containing up to 90% THC. Previous research has shown that the use of some bioactive substances can cause adverse interactions and disrupt the metabolism and pharmacokinetics of cytostatics. Considering the fact that the metabolic pathways of irinotecan and THC in the body overlap: (i) at the level of the first two phases of metabolic biotransformation in which the enzymes CYP3A4 and UDP-glucuronyltransferase are key; (ii) bacterial β-glucuronidase is involved in the metabolism of SN-38 (the active form of irinotecan) and THC; (iii) both compounds have an inhibitory effect on the enzyme acetylcholinesterase (AChE), it is assumed that the intake of high concentrations of THC in the body during treatment with irinotecan could worsen the side effects. This lecture will present an investigation on the potential interactions of cytostatic irinotecan and THC in an experimental mouse model in terms of biochemical toxicity indicators (cholinesterase activity and markers of oxidative stress). Given the general lack of knowledge about the potential interactions of the test compounds, and the fact that the use of THC preparations is popular, results of conducted study could provide a number of insights useful for practitioners in medical toxicology and possible application in clinical practice.

Audience Take Away:

- The lecture will focus on the lack of knowledge about the risks and potential toxic effects of the main psychoactive component of cannabis, Δ-9-tetrahydrocannabinol (THC). It is important for the audience to note that if the use of bioactive substances such as THC causes adverse interactions and disrupts the metabolism and pharmacokinetics of cytostatic, the appropriateness of chemotherapy is questioned in terms of possible drug resistance, the prolongation of the overall treatment and the development of additional side effects, which may ultimately lead to an unjustified increase in treatment costs
- Given the general lack of knowledge about the potential interactions of the test compounds, and the fact that the use of THC preparations is popular, results of presented study could provide a number of insights useful for practitioners in medical toxicology
- The results of the research that will be presented are a contribution to the knowledge of biochemical and toxicological properties of the tested agents (cytostatic irinotecan and cannabinoid THC) and therefore provide guidelines for the prevention of side effects of chemotherapy and present new information in cancer research
- Detailed search of the relevant literature published so far indicates a lack of scientific evidence on the risks and potential toxic effects of preparations with a high percentage of THC. Therefore, we can justifiably say
- that our research provides answers to a number of controversial questions and results in scientific knowledge that can be extrapolated from the animal model to the real clinical situation

- Study that will be presented was conducted on a tumor experimental model which also allows to determine the influence of test compounds on tumor biology and pathophysiology
- The presented research covers public health issues and therefore civil society stakeholders involved in patient protection, disease prevention, health education, etc., as well as professional societies and associations (toxicologists, physiologists, pharmacologists, oncologists, etc.) will benefit from the results of conducted research in terms of improving their activities as well as informing the public

Biography

Suzana Zunec is a senior research associate employed at the Institute for Medical Research and Occupational Health, Croatia. She defended her PhD in biochemistry and medicinal chemistry in 2012 with a thesis researching new effective antidotes against organophosphorous compounds poisoning. She expanded the research involving anticholinesterase poisoning to the evaluation of additional non-cholinergic mechanisms (e.g. oxidative stress) and the cyto/genotoxicity and antioxidative activity of xenobiotics and natural compounds. She has published more than 40 research articles in WoSCC journals.

Ahmed E. Goda *[1]and Toshiyuki Sakai[2]

[1]Department of Pharmacology and Toxicology, Tanta University, Egypt
[2]Department of Drug Discovery Medicine, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Japan

Molecular insights into the microtubules depolymerizing activity of the IL-8 receptor B antagonist SB225002

Objective: We have previously reported the novel off-target microtubules destabilizing activity of SB225002, a compound that was originally designed as a selective and potent IL-8 receptor B antagonist. In the present study we investigated the reversibility of SB225002 antimitotic effect and provided additional mechanistic insights underlying cell death induction in SW480 human colorectal adenocarcinoma cells.

Materials and Methods: Mitotically arrested cells by SB225002 treatment were isolated by shake-off, and their identity was verified by both flow cytometry and immunoblotting. The reversibility of SB225002 antimitotic effects was investigated by flow cytometry and immunoblotting. Prometaphase arrested cells were imaged via indirect immunofluorescence and confocal microscopy. Activation of CHK1 in mitotically arrested cells was assessed by immunoblotting, and the relationship between CHK1 and mitotic arrest was examined via siRNA- mediated knockdown of CHK1. JNK signaling was evaluated via immunoblotting as well as pharmacological inhibition followed by flow cytometry. The role of reactive oxygen species (ROS) in cytotoxicity was evaluated by ROS scavenging and flow cytometry.

Results: Following SB225002 washout, the mitotic checkpoint was abrogated, and cell cycle perturbations were gradually restored with induction of cell death. Mechanistically, CHK1 checkpoint was activated by SB225002 and occurred downstream of the mitotic checkpoint. In addition, SB225002 activated JNK signaling which contributed to cell death and restrained polyploidy. Furthermore, SB225002 increased intracellular ROS which played a role in mediating SB225002 cytotoxicity.

Conclusions: Findings of the present study warrants further development of SB225002 as a lead compound that uniquely targets microtubules dynamics and IL-8 signaling.

Biography

Goda is a Ph.D. holder from the Graduate School of Medical Science, Kyoto Prefectural University of Medicine (Japan), a former senior research associate at Korea Research Institute of Bioscience and Biotechnology (South Korea), and currently an associate professor at the Department of Pharmacology and Toxicology, Faculty of Pharmacy, Tanta University (Egypt). Dr Goda's research interests are focused on characterization of the molecular mechanisms underlying the novel/off-target anti-tumor activity of different agents which may be natural products, drugs in clinical use or synthetic compounds, with the aim of introducing novel anticancer agents and/or developing mechanism-based novel combinations which enhance apoptosis of cancer cells. Dr Goda has served as a peer reviewer for a number of international journals including Biochem Pharmacol and Pharmacol Res. Dr Goda participated in several international conferences/symposia, and has received the (Japanese Cancer Association Travel Grant for Excellent Paper) during the 2014 annual meeting in Yokohama. Dr Goda has also been awarded the (Young Scientist Award) from Kyoto Prefectural University of Medicine (Japan). Dr Goda has a publication record of 21 papers in reputable international journals, and his papers have gained over 650 citations with an H-index of 12 [https://scholar.google.com/citations?user=iG7wE28AAAAJ&hl=en&oi=ao]

Arif Mekhtiev*[1], N.J. Mustafayev[2] and T.N. Askerova[3]

[1]Academician Abdulla Qarayev Institute of Physiology; Fields of study: neurobiology, mechanisms of adaptation

[2]Azerbaijan State Agrarian University; Fields of study: ichthyology

[3]Azerbaijan State Agrarian University; Fields of study: ecology, adaptation

Biochemical markers of adaptation of animals to toxic anthrogenic factors

Monitoring studies of degree of environmental pollution concern mostly chemical analysis of the pollutants' levels not taking into account their effects on animals and adaptation potential of the latter to the impact of toxic substances. Our studies were carried out on the bystranka fish (Alburnoides bipunctatus eichwaldi) dwelling in the rivers flowing through territory of Azerbaijan, having high levels of phenol exceeding three (the Kura and Araz rivers) or four (the Agstafachay river) times its acceptable concentration, and on the sazans (Cyprinus carpio Linne) in laboratory conditions. In the first series of studies, specimens of bystranka were caught in the said rivers and samples of the liver and gills were taken off, and their protein extracts were used as antigens to determine the levels of cytochrome P-450 and serotonin-modulating anticonsolidation protein (SMAP) with indirect ELISA-test. The levels of cytochrome P-450 in the liver and gills of this fish were lower than in the fish of the uncontaminated Hudat river ($p<0.001$). However, the levels of SMAP in the liver and gills of the fish from Kura and Araz rivers exceeded its level of the fish from the Hudat river ($p<0.001$), but in the samples of the fish from the Agstafacay river its level was lower ($p<0.001$). In the second series of studies, specimens of sazan were culled into two groups: 1) positive control group (n=17), exposed to lethal concentration of neonicotinoid insecticide actara (400 mg/L), and 2) experimental group (n=15) whose animals were administered intramuscularly with SMAP (1 mg per 10 g of body mass) and put into container with the same concentration of actara. After 5 days of exposure all animals of the experimental group survived, although in the positive control group just 35% of animals were alive ($p<0.001$). These data altogether indicate to possessing by serotonergic system of high adaptation potential to the impact of toxic agents at lethal concentration.

Biography

Arif Mekhtiev graduated from the Faculty of Therapeutics and Prophylaxis of Azerbaijan Medical Institute in 1978 y. In 1986 y. he defended a thesis to getting degree of PhD in P.K.Anokhin Research Institute of Normal Physiology (Moscow). Then A.Mekhtiev entered A.I.Garayev Institute of Physiology (Baku) and has been dealing with purification of novel brain serotonin-modulating proteins, analysis of their role on memory formation and on the processes of transcription in the brain cells. Besides, he studies the role for these proteins in processes of animal adaptation, drug addiction and embryogenesis. He is an author of 70 research articles in SCI journals and was a principle investigator of five international research projects.

magnus Group

KEYNOTE FORUM

DAY 01

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Luis Jesus Villarreal Gomez*[2,3], Agnez Azalea Torres Martinez[1], Graciela Lizeth Perez Gonzalez[2,3], Lucia Margarita Valenzuela Salas[4], Juan Antonio Paz Gonzalez[2], Jose Manuel Cornejo Bravo[3]

[1]Faculty of Psychology and Medicine, Autonomous University of Baja California, Tijuana, Baja California, Mexico

[2]Faculty of Engineering Sciences and Technology, Autonomous University of Baja California, Tijuana, Baja California, Mexico

[3]Faculty of Chemical Sciences and Engineering, Autonomous University of Baja California, Tijuana, Baja California, Mexico

[4]Faculty of Health Sciences, Autonomous University of Baja California, Tijuana, Baja California, Mexico

Cytotoxicity effect of functionalized electrospun nanofibers

Biocompatibility and cytotoxicity studies are one of the most important features that have to be analysed in samples that are proposed as biomedical devices. Electrospun nanofibers have been gaining much attention in the biomedical industry, because they are interesting tridimensional structures that resembles extracellular matrix in tissue and can be fabricated with a great variety of polymers that confers to the fibrous scaffolds certain interesting characteristics such as biocompatibility, biodegradability, high surface area, bioactivity, adequate mechanical properties, amongst others. These electrospun fibers can be proposed in drug delivery systems, tissue engineering, biotechnology, biosensors and other areas where cytotoxicity is the most important characteristic. In our group, cytotoxicity has been tested trough the MTT assay which test mitochondrial activity of viable cells (fibroblasts and polymorphonuclear leukocytes), several polymeric nanofibers such as poly (caprolactone), poly (vinyl alcohol) and poly (vinyl pyrrolidone) functionalized with bioactive molecules such as Ruthenium complex, graphene, silver nanoparticles, curcumin and some pharmaceutical drugs such as dexamethasone phosphate, sildenafil citrate and propranolol. Moreover, some in vivo analyses have been used to test irritability and toxicity in tissue of animal's models following the ISO-10993-1. Also, bioactive antibacterial activity has been tested using Escherichia coli, Pseudomonas aeruginosa and Staphylococcus aureus. Most of the electrospun fibrous scaffolds demonstrated biocompatibility and slight effect in all the cells tested and in vivo animal provides evidence of the potential of the samples to be use in biomedical applications. This work discusses cell response, viability and characteristics of the nanofibers made by the electrospinning technique, the parameter used and drawbacks.

Audience Take Away:

- Innovation on wound dressings
- Applications of electrospinning technique
- Cytotoxicity of electrospun fibers

Biography

Dr. Luis Jesús Villarreal-Gomez, studied Chemistry-Biology at the University of Sonora, Hermosillo, Mexico and graduated in 2004. He then received his PhD degree in 2013 at the University Autonomous of Baja California, Tijuana, Mexico where he joined as full research professor. Dr. Villarreal is founder and editor in chief of the Revista de Ciencias Tecnologicas (RECIT) (ISSN 2594-1925) and is editorial board member of several journals edited from MDPI, Hindawi, BenthamOpen, amongst others. Until now, he been published 33 papers and have been reviewed more than 127 reviews. His research lines are biomaterials, tissue engineering, drug delivery systems and biotechnology.

magnus Group

KEYNOTE FORUM

DAY 02

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Marina Goumenou

University of Crete, Greece

Pbpk modelling under the real-life-risk-simulation approach: 3R and conventional in-vivo testing for cumulative risk assessment

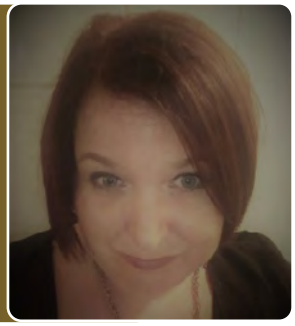
Environmental chemicals are currently regulated almost exclusively on a single-chemical exposure basis. In reality, people are exposed to chemical mixtures on a daily basis via many different exposure scenarios. The global scientific community has supported efforts to develop the toxicological evaluation and regulation of chemical mixtures for a considerable number of years. The study of the effects on human and animal health, as well as the environment, from exposure to chemical mixtures requires appropriate fit-for-purpose approaches including New Approach Methodologies (NAM) which endeavour to replace animal studies. For the foreseeable future these approaches will continue to depend on some in vivo testing although they might provide data for the development of animal-free toxicology testing tools. The Real-Life Risk Simulation (RLRS) approach aims to study long-term-low-dose exposure to chemical mixtures and includes replicating such exposure scenarios in rodents. However, the current accepted paradigm of animal testing does not provide sufficient information chemical mixtures risk assessment. The in vivo data currently generated could be combined with modelling approaches to: optimise experimental protocols (such as appropriate dose selection for the studied mixtures), study possible interactions (as with comparison of modelling predictions and real experimental in vivo data), and to move towards predictions of toxicity. Having these in mind we consider PBPK modelling as a key future element of the RLRS approach. In this presentation mixtures toxicology assessment approaches undertaken to date will be summarised, data gaps highlighted, and the potential for PBPK modelling to provide a bridge to the development of animal-free toxicology tools and conventional in vivo testing for cumulative risk assessment following long-term-low-dose exposure to chemical mixtures will be discussed.

Audience Take away:

- Understanding better what PBPK is about and possibly entering in this area
- Trying to study, develop or incorporating PBPK models in their projects
- RLRS is a under development approach that can be used as basis for further research. Of course, all material of this presentation can be used during teaching for knowledge and stimulation
- Certainly, as it aims on supporting 3R and mixtures toxicology
- This is the RLRS approach about

Biography

Marina Goumenou holds a BSc in Chemistry, an MSc in Analytical Chemistry, a PhD in Toxicology, and she is a European Registered Toxicologist (ERT). She worked at the Systems Toxicology Unit (STU) of the Join Research Centre (JRC) of the European Commission, and the European Food Safety Authority (EFSA) while currently she is a senior officer at the General Chemical State Laboratory of the Greek Republic. She collaborates as affiliate researcher with various universities. Her specialization regards Risk Assessment, Endocrine Disruption, Mode of Action/Adverse Outcome Pathways, mixtures toxicology, and PBPK modelling. She has published more than 100 scientific articles.



Irena Brcic Karaconji*[1,2], Andreja Juric[1], Blanka Tariba Lovakovic[1]

[1]Toxicology Unit, Institute for Medical Research and Occupational Health, Croatia

[2]Faculty of Health Studies, University of Rijeka, Rijeka, Croatia

Hair analysis for psychoactive substances: Is the future bright?

According to data provided by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), more than one quarter of adults (aged 15–64) in the European Union have used an illicit drug at least once in their lifetime. Advances in the sensitivity of analytical techniques have enabled analyses of substances of abuse in alternative biological matrices such as hair. Hair analysis is a reliable tool for detecting long-term exposure to illegal drugs over a period from a few weeks to a few months, depending on the length of the hair used for analysis. It is preferable as a biological sample for many reasons: hair is collected in non-invasive way, illicit substances stored in hair are very well preserved over the time and it is unlikely to be adulterated or replaced, which often is the case with urine. Unlike blood or urine sampling, it is possible to re-collect a sample representing the same time window in the case of suspicions regarding sample validity. The unambiguous identification of a specific substance must be carried out by a combination of chromatographic and mass spectrometric techniques able to distinguish among similar structures and detect low substance of abuse levels in hair. In recent years, public health concerns have been raised around the use of new psychoactive substances (NPS). At the end of 2020, the EMCDDA was monitoring around 830 NPS. The number of NPS, their chemical diversity and potency as well as the speed of their emergence makes this group of compounds very challenging in terms of detection in biological samples including hair. The analysis of hair to detect drugs of abuse is performed in various contexts, including workplace drug testing, court cases, and abstinence control programs. Since 1999, over 1900 hair samples were analysed using gas chromatography mass spectrometry (GC-MS) at the Institute for Medical Research and Occupational Health, Croatia for the presence of methadone, cocaine, heroin, codeine, morphine, and amphetamine-type stimulants. A total of 20% of the tested samples were positive for one or more drugs of abuse. Ecstasy and cocaine were the most frequently detected substances. In this lecture, main drawbacks in hair analysis such as false positive results and the high cost of analysis as well as challenging in NPS detection will be also discussed.

Audience Take away:

- How to choose proper biological sample for detection of psychoactive substances
- Get information about detection of new psychoactive substances in hair
- Learn about advantages and drawbacks regarding hair analysis

Biography

Irena Brcic Karaconji, PhD, received her BSc degree in Medical Biochemistry in 1998 at the Faculty of Pharmacy and Biochemistry, MSc degree in Toxicology in 2004 at the Faculty of Science and PhD degree in Biomedicine and Health Science in 2010 at the Faculty of Pharmacy and Biochemistry, University of Zagreb, Croatia. She is European Registered Toxicologist (ERT), Deputy Director of the Institute for Medical Research and Occupational Health (Zagreb, Croatia), Head of the Toxicology Unit at the same Institute, and an Assistant Professor at the Faculty of Health Studies, University of Rijeka. She has published more than 60 research articles in SCI (E) journals.

magnus Group

SPEAKERS

DAY 02

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Raphael Nudelman
Teva Pharmaceuticals, Israel

Setting limits for complex nitrosamines

Nitrosamine impurities have been in the center of the stage of impurities in drug products for the past 3 years. Regulators and industry have been deliberating the methods for determining limits for this special class of mutagenic/carcinogenic impurities. Preliminary guidelines have been published by regulatory agencies; however, they lack guidance on how to set limits for API-related nitrosamines, also known as Complex Nitrosamines. My presentation will discuss the ongoing activities to come to a consensus between the regulatory agencies and the pharmaceutical industry on what is the adequate process to set acceptable intake limits for the complex nitrosamines.

Audience Take away:

- This presentation should assist in understanding the current gaps in the regulatory guidances for setting limits for complex nitrosamines
- Several tools will be suggested in order to set acceptable intakes for nitrosamines that do not have sufficient carcinogenicity data

Biography

Raphael has over 20 years of pharmaceutical industry experience. He has a Ph.D. in organic chemistry from the Weizmann Institute of Science in Israel, a post-doctorate at the US Air Force Research Lab in Aberdeen Proving Ground, Maryland, and another post-doctorate at Duke University Medical Center, North Carolina. In 2001 he joined a startup biotech company in Israel that performed rational drug design by molecular modeling, and in 2003 Raphael joined the Medicinal Chemistry department at Teva Pharmaceuticals. In 2010 he established the Chemical & Computational Toxicology group in Teva, which he headed until mid-2021. Raphael now holds the position of Senior Director Impurity Expert in the R&D Operations department. Raphael's main topics of expertise are impurity and excipient qualification in drug substances and drug products.

Mojtaba Panjehpour*[1], Zahra Asadian[1], Hakimeh Zare[2] and Mahmoud Aghaei[1]

[1]Department of Biochemistry, School of Pharmacy and Pharmaceutical Sciences, Isfahan University of Medical Sciences, Iran
[2]Physics Department, Yazd University, Iran

The cellular uptake and cytotoxicity of cadmium telluride quantum dots in human cancer cell lines

Quantum Dots (QDs) are semiconductor nanocrystals that are increasingly used in biology. QDs, especially cadmium based QDs, play an important role in the diagnosis and treatment of cancer due to their intrinsic fluorescence. However, great concerns exist regarding their toxicity in biomedical applications. Understanding the cellular uptake mechanisms of CdTe QDs and evaluation of their cytotoxicity will be discussed in this presentation. The breast cancer cells and the ovarian cancer cell lines were treated with different concentrations of QDs, and cell viability was evaluated. Hoechst staining, apoptotic DNA fragmentation and flow cytometric annexin V/propidium iodide (PI) measurement was used for apoptosis detection. Intrinsic fluorescence and cellular internalization of CdTe QDs were assessed using flow cytometry and fluorescence microscopy imaging. A significant decrease in cell viability was observed after QDs treatment. Apoptotic bodies, chromatin condensation, DNA fragmentation as well as flow cytometry analysis confirmed apoptosis. The results of flow cytometry showed that the cellular uptake of CdTe QDs is a dose-dependent and time-dependent process. This line of study would help realizing the underlying cytotoxicity and cellular uptake mechanism of CdTe QDs and may provide information for the development of nanotoxicology and safe use of biological applications of QDs in diagnosis and treatment of cancer.

Biography

Mojtaba Pnjehpour received his PhD degree in 2004 in Clinical Biochemistry from Tarbiat Modarres University, Tehran, Iran. After postdoctoral research fellow with Prof. Dr. Karl-Norbert Klotz, Institute of Pharmacology and Toxicology, University of Wurzburg, Germany he obtained the current position: Associate Professor of Biochemistry, Department of Biochemistry, School of Pharmacy, Isfahan University of Medical Sciences, Iran. Dr. Panjehpour research interests devoted to the signal transduction of cancer biology. Also his second area of interest is focused on understanding the molecular mechanisms and signaling of cytotoxicity, genotoxicity and estrogenic effects of cadmium and cadmium telluride quantum dots in cancer.

Francis Uchenna Umeoguaju*[1], Joyce Oronne Akaninwor[1,2], Eka Bassey Essien[1,2], Benjamin A Amadi[1,2], Ezenwa James Chukeze[3], Lilian Nwamaka Okwuegbunam[3]

[1]World Bank Africa Centre of Excellence in Public Health and Toxicological Research (PUTOR), University of Port Harcourt, Nigeria

[2]Department of Biochemistry, Faculty of Science, University of Port Harcourt, Nigeria

[3]CLS Research Laboratory, Nigeria

Quercetin exacerbated pb-induced hemolysis of isolated human red blood cells

Quercetin is a plant derived flavonoid that is widely consumed as an antioxidant health supplement. Quercetin has been reported to possess both antioxidant and pro-oxidant effects. Human exposure to Lead (Pb), an inorganic heavy metal pollutant, is well documented and are often associated with toxic manifestation such as impairment in cognitive development, anemia and death. Pb has been previously reported to distort the architecture, polarity and fluidization of the Red Blood Cell (RBC) membranes. Pb can also trigger oxidative damage to RBC constituents and membrane by suppressing several components of the RBC's antioxidant system including the reduced glutathione (GSH) and the reduced nicotinamide adenine dinucleotide phosphate (NADPH). Such effect enhances the accumulation of ROS within the RBC thereby triggering oxidative damages to RBC membrane with subsequent hemolysis of the RBC. In this study, we investigated the effect of quercetin treatment of isolated human RBC under conditions of Pb-exposure. Isolated human RBC (1 %) was pretreated with Quercetin (10 µM) and then incubated with Pb Acetate (1.5 mM) at 37 oC for 3 hours. Hemolysis was subsequently determined spectrophotometrically in the RBC-free fractions. Our study revealed that the pretreatment of isolated RBC with quercetin prior to Pb-exposure enhanced Pb-induced hemolysis in a synergistic manner when compared to the Pb-exposed RBC that were not pretreated with quercetin. We proposed that the Pb-induced suppression of the RBC's antioxidant system possibly impaired the ability of RBC to recycle oxidized quercetin. This would have subsequently led to the accumulation of potentially toxic quercetin quinones, quinone breakdown products and other redox active cellular by-products that could have potentially contributed to the observed stimulation of Pb-induced hemolysis. Our study presents additional evidence that suggests that the characteristic constituent of cellular environments determines the actual biological activity of quercetin. Further studies are needed to unravel the detailed mechanisms and the clinical implications of this finding.

Audience Take away:

- Our study raises caution on the fact that Quercetin, a widely consumed health supplement, also possesses the potential to cause unintended harm to cellular systems
- We propose that such quercetin-mediated side-effects may be more evident in cellular systems that lacks sufficient capabilities to recycle oxidized quercetin quinones
- Until further details are known about the mechanisms involved in the quercetin-mediated stimulation of Pb-induced hemolysis, prescription of quercetin supplements should be done with caution, especially amongst patients with congenital impairments in their blood antioxidant capability
- The information presented in our presentation would inform audience on possible physiological fates of quercetin in conditions of Pb-exposed RBC. Such information can stimulate further research or inform a more effective utilization of the quercetin supplement in disease management

Biography

Umeoguaju acquired his B.Sc and M.Sc degree in Applied Biochemistry at the Nnamdi Azikiwe University Awka, Nigeria, in 2008 and 2014 respectively. He has worked as a Laboratory Scientist at CLS Research Laboratory, Awka, Nigeria for over 7 years during and after his M.Sc. degree program. He is currently a PhD Student of Nutritional Biochemistry and Toxicology at the World Bank African Center of Excellence in Public Health and Toxicological Research, University of Port Harcourt Nigeria. He has published about 4 articles in SCI(E) Journals. His PhD research is focused on the effects of flavonoids in conditions of Pb-induced toxicities.

Ananda Jayalal
Ministry of Health Sri Lanka, Sri Lanka

Fluoride in water as a negative modifying factor in Sri Lanka CKDu epidemic

A mysterious form of chronic kidney disease (CKD) prevails in epidemic proportions in certain geographical regions of Sri Lanka. A similar clinical entity is world-wide reported. In Sri Lanka, apparently heathy individuals including a substantial proportion of younger people in their twenties living in rural communities become ill with non-specific symptoms. Following clinical investigation patients are diagnosed with compromised renal function without evidence for common conventional causes such as hypertension and diabetes as well as immunological nephropathies. Without appropriate supportive renal replacement therapy these patients deteriorate rapidly and succumb to death. Renal replacement therapy (RRT) is carried out extensively in these patients but prognosis is unfavorable. In spite of number of research studies during the last three decades, the pathophysiology of the disease is not yet clearly understood. Therefore, optimum patient management is hampered whilst meaningful public health interventions to curb the disease are hindered. Consuming excessive fluoride contaminated water has been reported as an association with CKDu in number of studies. For this conference the firm evidence for negatively modifying role of fluoride in CKDu patients are presented. Clinical progression of twenty-four Chronic kidney disease of unknown aetiology patients from endemic region in Sri Lanka with post mortem analysis of their tissues and the analysis of water they consumed for lead cadmium and fluoride are described. Relevant clinical histories, and logically selected contaminants in bone and kidney tissues of deceased and in the water consumed by the patents were discussed. Analysis reveals significantly higher skeletal deposits of lead and fluoride in the tissues and drinking water consumed by them. Chronic exposure to lead may be the primary toxin which progressively lower the Glomerular filtration and at a certain point fluoride retention may further deteriorate the failing kidney to end stage renal failure. The observed clinical syndrome where patients more rapidly evolve to chronic renal failure as compared to renal diseases with conventional underlying etiologies is also explained by the above phenomenon.

Audience Take away:

- Possible Reserch Methods to evaluate nephrotoxins
- Importance of identifying the deleterious effects of fluoride in CKDu patients
- Insight on Chronic Kidney Disease of uncertain aetiology
- Better Management of CKDu patients
- Yes the research methodology can be extended and adopted to establish the findings
- Better public health intervention to control chronic kidney disease
- Decrease health care cost

Biography

Ananda Jayalal is medical graduate and specialized in public health management, food safety, Environmental Health, Toxicology. He became the Director and Deputy Director General in the Environmental health and Occupational health Unit of Ministry of Sri Lanka. He earned MSC and MD in Health Services Management from University of Colombo. He has undergone training in Environmental Toxicology in Chulabhorn University. He obtained postgraduate certificate in Paedidiatric Nutrion from Boston University. He involved research on chronic kidney disease of uncertain etiology which was prevalent in epidemic proportions in some parts of Sri Lanka. Similar disease outbreak reported globally. He has published more than 20 research papers.

Kavita Gulati* and Arunabha Ray

University of Delhi, India

Drug safety during management of respiratory disorders: focus on methylxanthines

Mehtylxanthines, the bronchodilators introduced 100 years ago by H.H. Salter for asthma therapy were used as first line of therapy for the obstructive airway disease for five decades. They have now reemerged as important adjuncts in the treatment of bronchial asthma and COPD, however narrow therapeutic index and resultant adverse drug reactions (ADR) remains a persistent safety issue associated with their clinical use. Clinical and preclinical studies were conducted to critically evaluate safety issues associated with the prototype methylxanthine, theophylline, in an attempt to device strategies for the safe yet effective use of this pharmacoeconomically viable drug. Clinical studies were conducted to monitor Adverse drug reactions (ADR) in patients of bronchial asthma and COPD who were prescribed theophylline as per standard methodology and causality analysis was done by Naranjo`s scale. The results showed that such therapy was associated with ADRs like anxiety, palpitations, dyspepsia, muscle spasm, paresthesia, etc. The ADR profile revealed that out of 63 patients who were prescribed theophylline, 70% of bronchial asthma and 46% of COPD, complained of one or other ADR. Incidence of anxiety, tremor and palpitation, dyspepsia, spasm of muscles, insomnia, and paresthesia were recorded, and causality assessment confirmed the association of most of the ADRs with the drug. Preclinical studies were then conducted to assess the mechanisms of theophylline-induced anxiety and tachycardia in experimental animals. Aminophylline dose dependently induced anxiety and tachycardia which were not attenuated by adenosine agonists or phosphodiesterase inhibitors. Aminophylline induced anxiety and tachycardia were associated with alterations in the biochemical markers of oxidative stress. Interestingly, pretreatments with the antioxidants, ascorbic acid, α-tocopherol (alone or in combination) attenuated both anxiogenesis and tachycardia in separate sets of experiments. Pretreatments with the antioxidants attenuated the methylxanthine induced changes in oxidative stress markers. These results indicated that oxidative stress could be involved in methylxanthine induced toxicity and antioxidants could act as possible antidotes in such situations. In the final study, clinical trials were conducted in patients of bronchial asthma and the safety and efficacy of theophylline in the presence and absence of ascorbic acid was compared. The results showed that the incidence of adverse effects in the ascorbic acid group was far less as compared to those in the placebo group – thus indicating the protective effects of antioxidants in such situations. Such complimentary clinical and preclinical studies using the translational approach could help in devising strategies for preventing adverse effects and rationalizing drug therapy.

Audience Take away:

- The audience learn that how the adverse effects of various drugs can be monitored following the principles of Pharmacovigilance and causality assessment is done by employing Naranjo's scale
- The study also helps to plan preclinical studies to delineate the toxicodynamics of methylxanthines and propose strategies to counter such adverse drug reactions, especially in tresponse to drugs with low therapeutic index
- Such complimentary clinical and preclinical studies using the translational approach could help in preventing adverse effects and rationalizing drug therapy in various disorders

Biography

Kavita Gulati is Director-Professor in Pharmacology at V.P. Chest Institute, University of Delhi. She obtained her Ph.D from the University of Delhi. Dr Gulati has more than 27 years of teaching and research experience in Clinical & Experimental Pharmacology and Toxicology in India and abroad. She is the elected Fellow of IACS, Canada and Fellow of National Academy of Medical sciences, India. She is the recipient of several national awards viz. Achari Prize, Uvnas Prize and the prestigious, Prof. B.N. Ghosh Oration of the IPS. Her research interests are in Traditional Medicine, Translational research in Respiratory Pharmacology and Toxicology, She is the Principal Investigator of several extramurally funded research projects and has published extensively (140 papers) is co-author of several chapters in reference/textbooks of Pharmacology, and co-editor of four books in Pharmacology.

Izharul Haq

Department of Civil Engineering, Indian Institute of Technology Guwahati, Guwahati, Assam, India

Bioremediation of petroleum refinery wastewater using bacillus subtilis IH-1 and assessment of toxicity

With the rapid expansion of the population and the modernization of civilization, environmental contamination from the petroleum refinery sector has surged, necessitating immediate repair.Petroleum pollutinh-degrading bacteria are common in nature and may use these molecules as carbon and energy sources. The microbial bioremediation of petroleum-related pollutuion. In this sttudy, a bacterial culture was obtained from petroleum-contaminated sludge in order to valorize PAHs and biodegrade petroleum waste water samples. Bacillus subtilis IH-1 was discovered as the bacterial strain after it was examined. After 6 days, the bacteria had degraded 20.3% naphthalene and 25.9% phenanthrene. The treatment of waste water samples was evaluated using physicochemical and Fourier-transform infrared spectroscopy (FTIR) analysis, which revealed that the level of pollutants was high and exceeded the allowable limits. However, after bacterial degradation there was a significant reduction in pollution parametres. The phytoxicity test using v. mungo revealed a concentration-dependent decrease in seed germination, root length, shoot length, and biomass when compared to the control. The mitotic index of A. cepa root tips planted in varied concentrations of petroleum refinery wastewater samples was significantly lower than thatof the control root tip exposed to tap water, indicating the induction of cytotoxicity. However, after treatment with a bacterial strain, both phytotoxicity and cytotoxicity dramatically decreased, indicating that the bacterium has the capacity to breakdown the harmful contamination of petroleum wastewater and might be employed in large-scale studies.

Audience Take away:

- The audience will learn about basic and advanced experiments and tools and techniques used in Environmental Microbiology and Toxicology studies
- The audience work in the area of environmental remediation will get benefitted
- The faculty of University may expand their research using these techniques
- The audience may learn and used this at industrial scale

Biography

Izharul Haq worked as a Post-Doctoral Fellow in the Department of Civil Engineering, Indian Institute of Technology Guwahati, India. He has obtained his PhD in Microbiology from CSIR-Indian Institute of Toxicology Research, Lucknow, India. He is working on the theme of liquid and solid waste management through microorganisms and their toxicity evaluation. He has been honored with the prestigious award Young Scientist Award 2018 to recognize his scientific research. Dr. Haq has published more than twenty research and review papers in reputed national and international journals with high impact factors. He has published many book chapters in splendid international books and has also published four books with reputed international publishers. He has supervised four M Tech students in the Environmental Engineering field. He is appointed as Review Editor on the Editorial Board of Water and Wastewater Management, Frontiers in Environmental Science. He also serves as a reviewer in many international journals published by different publishers.

Sweety Nath Barbhuiya*[1,2], Dharmeswar Bathoi[1] and Sarbani Giri[1]

[1]Molecular and Cell Biology Laboratory, Department of Life Science and Bioinformatics, Assam University, India

[2]Department of Zoology, Patharkandi College, India

Curcumin attenuates the reproductive toxicity induced by sodium arsenite and smokeless tobacco on the female murine test system

Background: Arsenic exposure is a major threat to human beings all around the world due to its immense potential to cause various diseases including cancer. In the Southern Assam, arsenic contamination (>10 µg/L) has been reported in the ground water. In addition, population of Southern Assam expansively consumes 'Sadagura', a unique type of smokeless tobacco which might enhance the effects caused by arsenic. Phytonutrients is a good source of antioxidant with therapeutic potential in curing many diseases. Thus, the current study is aimed to investigate the ameliorative effect of curcumin on the sodium arsenite and smokeless tobacco induced toxicity on the reproductive health of female mice.

Methodology: Female mice (n=30) were randomly divided into five groups viz. Control, Vehicle control (DMSO), Sadagura (SG, 5gm/kgbw/day); Sodium arsenite (SA, 2mg/kgbw/day) and Sadagura with Sodium arsenite (SG+SA). Evaluation of tissue malondialdehyde (MDA) level, reduced glutathione (GSH) and Superoxide dismutase (SOD) activity was done spectrophotometrically after 30 days exposure. Moreover, changes in estrous cycle and ovarian, uterine histology were also observed. DNA break in the reproductive cells was assessed by using Comet assay.

Results: The estrous cycle study revealed that the prolonged diestrous phase induced by arsenic and smokeless treatment was abolished upon curcumin administration. Curcumin treated groups showed increase in relative organ weight of the reproductive tissues as compared to the sodium arsenite and smokeless tobacco treated groups. The histopathological study of the ovary and uterus showed normal tissue architecture in the groups treated with curcumin. Curcumin treatment reduced the LPO level of the reproductive organs induced by arsenic and smokeless tobacco and increased the GSH level as well as SOD activity, indicating the antioxidant potential of curcumin.

Conclusion: From the present study, it can be concluded that curcumin has the potential to ameliorate the impaired follicular growth and atresia and restore the estrous cycle to its normal cycle and thus helps in maintaining the normal physiology.

Audience Take away:

- Inadequate studies are there about the harmful effects of co-exposure of arsenic and smokeless tobacco. So, researchers will find it interesting to explore this area
- Also the audience will get to know the hazardous effects of consuming smokeless tobacco of any kind.
- The audience may further extend the work and find the exact mechanism behind the toxicity caused by the co-exposure of arsenic and smokeless tobacco
- The mechanistic pathway by which curcumin abolishes the harmful imapact of arsenic and smokeless tobacco can be considered for futher research

Biography

Sweety Nath Barbhuiya studied M.Sc. in Life Science (Zoology) at the Assam University, Silchar, Assam, India and post graduated from there in 2015. She then joined the laboratory of Cell and Molecular Biology of Prof. Sarbani Giri at Assam University, Silchar, Assam, India. In 2016, she cleared State Level Eligibility Test (SLET). In 21st Dec, 2020, she has joined Patharkandi College, Patharkandi, Karimganj, Assam, India as the Assistant Professor in the Department of Zoology. She is going to submit her thesis shortly. She has to her credit 06 research papers published in the international journals and 03 book chapters, one published in IntechOpen and two chapters published in IGI global.

Dibyajyoti Banerjee
Postgraduate Institute of Medical Education and Research, India

Human serum albumin and cholesterol: A new thought

Among non-communicable diseases the cardiovascular disorders are topping the list. Hypercholesterolemia is one of the important risk factors for the genesis of cardiovascular diseases. The cholesterol biosynthesis is attempted to be blocked by various drugs but neither hypercholesterolemia nor cholesterol associated disorders are getting controlled. So, it seems that our understanding of the regulation of the cholesterol biosynthesis is mostly incomplete. It is in this context we have developed a hypothesis that human serum albumin can regulate cholesterol biosynthesis. In my talk I shall discuss the toxicological and pharmacological aspects of the above concept.

Biography

Dibyajyoti Banerjee, MD is currently Additional Professor, Department of Experimental Medicine and Biotechnology, Postgraduate Institute of Medical Education and Research, PGIMER, Chandigarh, India. He is interested in developing novel concepts for drug development and his several concepts are published and many researchers are working with it. His focus in drug development is diabetes and tuberculosis. Apart from drug development he is interested in developing point of care testing tools. In this area also he has developed several tools which are in current use.

Baskar Kathirvelu*, Shweta Gawade and Kedar Deobhankar
Department of Ecotoxicology, Ross Lifescience Ltd- OECD-GLP, India

Growth inhibitory effect of potassium dichromate with different PH on alga, pseudokirchneriella subcapitata

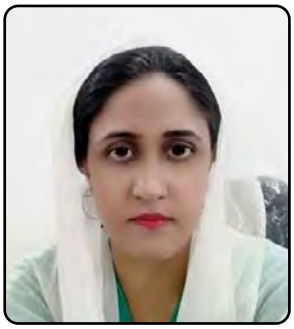
In the present study, different concentration of potassium dichromate was studied with different pH viz., 6, 7, 8 & 9 in Bold basal medium on alga, Pseudokirchneriella subcapitata. The study met all the validity criteria. Maximum algal biomass of 163 times was recorded in pH 6 followed by pH 7 (116.82 times). The minimum biomass of 63.61 times was recorded at pH 8. The interesting result was found in average specific growth rate, at 0.26 mg/L concentration of potassium dichromate was NOEC for pH 6 & 7, while, NOEC for pH 9 was 0.64 mg/L concentration followed by pH 8 exhibited 1.6 mg/L concentration. The maximum growth inhibition of 111.53% was recorded at 10 mg/L concentration of pH 6 followed by 76.57% at 10 mg/L concentration of pH 8 and least inhibition of 33.90% was recorded in pH 7. The maximum yield inhibition of 100.22% was recorded at 10 mg/L concentration of pH 6 and least yield inhibition of 80.41% was recorded in pH 7. Based on the ErC50 (2.89 mg/L) and EyC (0.48 mg/L). Potassium dichromate was more toxic towards alga on pH 6 against algal yield and growth inhibition respectively. Conclusion: In the present study, toxicity of potassium dichromate was found to be dependent on the pH of basal medium. Potassium dichromate in alga medium at pH 6 was found to be highly toxic to alga and exhibit least toxic at 8 pH.

Audience Take away:

- Importance of Environmental Toxicology- Aquatic toxicology
- Role of alga in the environmental toxicology
- Food chain
- Role of pH in the toxicity study

Biography

Kathirvelu Baskar has completed his Ph.D. in Entomology-Zoology under the guidance of Rev. Fr. Dr. S. Ignacimuthu S.J (Director, Xavier Research Foundation, St. Xavier's College, Palayamkottai, India) from University of Madras. He has specialized in the field of entomology and Ecotoxicology. He is having 18 years of research and 6 months of teaching experience. He has published more than 96 research papers (Scopus and SCI Journals) in the field of entomology and ecotoxicology. He has served as a regulatory ecotoxicologist in different organisations in India. He is currently working as Head of Ecotoxicology, at Ross Lifescience Ltd. Pune, Maharashtra, India. He is also serving as editor and reviewer in a few international journals.



Umbreen Rashid*[1,2,3], Muhammad Rashid Khan[1], Jasia Bokhari[1], Shumaila Jan[1]

[1]Department of Biochemistry, Quaid-i-Azam University, Pakistan
[2]Department of Microbiology, Quaid-i-Azam University, Pakistan
[3]Department of Life Sciences, Abasyn University, Pakistan

Evaluation of phytochemical constituents in Ethyl acetate and butanol fractions of periploca aphylla decne

Introduction: Plants have been utilized for the cure of different diseases since ancient times. Medicinal importance of the plants is due to presence of phytochemicals having specific physiological action on the human body. A wide variety of activities have been found in these phytochemicals which might help in preventing chronic disorders. Periploca aphylla Decne. Belongs to the family Asclepiadoideae, is traditionally used for the cure of cerebral fever and as stomachic.

Objectives: In this study, phytochemical constituents of ethyl acetate and butanol fractions of crude methanolic extract of Paphylla were investigated.

Methodology: Qualitative determination of phytochemical constituents (tannins, saponins, flavonoids, cardiac glycosides, terpenoids, coumarins, phlobatanins and anthraquinones) in the extracts was performed using standard procedures.

Results: The phytochemical analysis of ethyl acetate and butanol fractions of P. aphylla crude methanol extract confirmed the existence of tannins, saponins, alkaloids, flavonoids, cardiac glycosides and terpenoids. However coumarins, phlobatanins and anthraquinones were absent in both extracts.

Conclusion: It is evident from the above results that P. aphylla is a rich reservoir of phytochemical compounds which contributes to its various ethnomedicinal uses.

Biography

Visiting Faculty, Department of Microbiology, Quaid-i-Azam University, Islamabad, Pakistan. Currently working as Assistant Professor in the Department of Life Sciences, Abasyn University, and Islamabad, Pakistan. Ph.D. from Quaid-i-Azam University, Islamabad, Pakistan. Worked as a Research Fellow at Cardiff School of Chemistry, Cardiff University, Wales UK. Research interests are Ethnopharmacology, Toxicology, Nanotechnology, Food Biotechnology, and Medical Microbiology. Editorial board member (invited) of international journals. Reviewer of various International Journals. Launched a new Department of Environmental Sciences as a team member in G.C Women University, Sialkot, Pakistan. Also, established a new lab for the first time at GC Women's University, Sialkot to conduct in vivo assays.

magnus Group

POSTERS

DAY 02

INTERNATIONAL CONFERENCE AND EXPO ON

TOXICOLOGY AND APPLIED PHARMACOLOGY

13-14 JUNE

Sukhmanjit Kaur*[1], Allison Zhang[1], Sugandha[1], Charles Abrams[2], Rick Dobrowsky[1]

[1]University of Kansas, Department of Pharmacology and Toxicology, USA
[2]University of Illinois, Department of Neurology, USA

Modulating molecular chaperones: A potential therapeutic to treat x-linked charcot-Marie-tooth (Cmt1x) Disease

Introduction: CMT1X is an inherited peripheral neuropathy caused by mutations in the GJB-1 gene that encodes for connexin 32 (Cx32). Despite being the second most common form of CMT neuropathies, there are no pharmacologic treatments for CMT1X. We have developed novologues as orally bioavailable novobiocin analogues that manifest neuroprotective activity by modulating the expression of heat shock protein 70 (Hsp70). The novologue, KU-596, is in clinical trials for treating a metabolic neuropathy and we examined if it may improve neuropathic symptoms in Cx32 deficient (Cx32def) mice and T55I x Cx32def mice, authentic mouse models of human CMT1X.

Methods: 4-month-old Cx32def and T55I x Cx32def mice were treated with either vehicle or KU-596 (0.3 mg/kg, 1mg/kg or 3 mg/kg) daily for 5 months. We measured grip strength (alternate weeks) and nerve electrophysiology as parameters for peripheral neuropathy in CMT1X mouse models.

Results: Cx32def and T55I x Cx32def mice develop a significant reduction in grip strength (~0.8N), motor nerve conduction velocity (MNCV, ~45-50m/sec) and compound muscle action potential (CMAP, ~ 20-25mV) compared to wild-type mice (grip strength, ~1.6N; MNCV, ~60m/sec; CMAP, ~ 40mV). KU-596 therapy in Cx32def mice significantly improved grip strength (~1.5N), MNCV (~ 55-60 m/sec) and CMAP (~ 30mV). Treatment with KU-596 in T55I x Cx32def mice improved grip strength (~1.4N) and MNCV (~ 60m/sec) but did not significantly improve CMAP. To investigate whether these effects were Hsp70 dependent, Cx32def x Hsp70 knockout mice were treated with KU-596. While the deletion of Hsp70 did not affect the development of peripheral neuropathy, the therapeutic efficacy of KU-596 was Hsp70 dependent since, there was no improvement in MNCV or CMAP.

Conclusion: Our data suggests that modulating Hsp70 with KU-596 may be beneficial for treating CMT1X and that efficacy may not be limited by the nature of the underlying genetic mutation in the GJB-1 gene.

Biography

Sukhmanjit Kaur studied Pharmacy in Punjabi University, India, and got her bachelor's degree in 2016. She joined Dr. Nancy Muma's lab at the University of Kansas as a MS student and worked on a project entitled A FRET-based Approach to study SUMOylation in Serotonin 1A Receptors. Later in 2018, she joined Dr. Rick Dobrowsky's lab as a PhD student. Her work involves assessing the efficacy of a molecular chaperone modulator (KU-596) in improving motor and myelin deficits associated with X-Linked Charcot-Marie-Tooth Disease, the second most common cause of hereditary peripheral neuropathies.

Sanghita Das*[1,2], Pronobesh Chattopadhyay[1], Achintya Saha[2], Dev Vrat Kamboj[1]

[1]Department of Pharmaceutical Technology, Defence Research Laboratory, India

[2]Department of Chemical Technology, University of Calcutta, India

Implications of Cardiopulmonary Consequences in Wistar albino rats upon Exposure to capsicum resin extract and tryptophan metabolite

Various non-physiological effects ranging from disease to death may occur from direct contact of noxious agents to eyes, skin, and lungs as these agents are utilized globally for crowd dispersal and for women self-defensive purposes. However, defence personal uses such agents in unruly situations but figuring out the hazardous effects of such agents is an utmost importance to utilize these agents without causing life-threatening effects. Considering above, a combinational formulation was designed by incorporating an irritant (oleoresin capsicum, OC) and a foul-smelling (tryptophan metabolite) to disperse rioters without causing toxicity. Optimization and characterization of the formulation has already been accomplished. For this study, female Wistar albino rats were chosen and assigned into test (formulation exposure) and control groups to explore the cardiopulmonary consequences. Parameters such as respiratory variables by head neck plethysmograph, cardiac parameters by electrocardiography (ECG), in-vivo biodistribution of formulation in cardiopulmonary region, various biomarkers and biochemical parameters have been explored post-exposure to formulation. Study revealed changes in lung and cardiac parameters post formulation exposure as rats exhibited insignificant changes in ECG and blood pressure as compared to control rats. Biodistribution study showed formulation retained for 15 minutes in cardiopulmonary region but insignificant changes in other parameters were noted in test group as compared to control group which signifies the non-toxic nature of the formulation. Results suggest that developed emulsion formulation did not exert any major cardiac and pulmonary alterations as evinced from the above-mentioned study reports, which provide scientific relevance in cardiopulmonary safety aspect.

Biography

Sanghita Das studied M. Pharm in pharmacology at the Maulana Abul Kalam Azad University of Technology, West Bengal and graduated in 2017. She then joined Department of pharmaceutical technology, Defence Research Laboratory, Tezpur, Assam, India as Junior Research Fellow in 2017 in a project under Dr. Pronobesh Chattopadhyay and registered in PhD program under Prof. Achintya Saha at Department of Chemical Technology, University of Calcutta, Kolkata, India in 2019 in collaboration. She has all total of 1 book chapter and 4 research articles in SCI(E) journals having first and co-authorship and 3 more papers are in pipeline.

Participants List

magnus Group

UPCOMING CONFERENCES

2nd Edition of International Conference and Expo

Toxicology and Applied Pharmacology

June 19-21 | Rome, Italy

Questions? Contact

+1 (702) 988-2320 or Inquires:
toxicology@magnusconference.com

For Registration:

https://toxicology-conferences.magnusgroup.org/register