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13-14 MARCH, 2023 | VIRTUAL EVENT

8TH EDITION OF
GLOBAL CONFERENCE ON

PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

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BOOK OF
ABSTRACTS

8TH EDITION OF
GLOBAL CONFERENCE ON

PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

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Thank You All...

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 conferences 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.

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DAY 01

KEYNOTE FORUM

8TH EDITION OF

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Extracellular vesicles as delivery vehicles of therapeutic compounds

Extracellular vesicles (EVs) are lipoproteic particles released by organisms belonging to different kingdoms, and research in recent years has indicated they are mainly involved in cross-kingdom interaction. The content of EVs consists of various biomolecules, such as proteins, nucleic acids, sugars, and lipids. Extracellular vesicles possess several characteristics that make them suitable as drug delivery systems, such as the ability to cross biological barriers, the stability in the circulatory system, and safety. EVs represent an opportunity for the research community to transform cellular structures into new forms of treatment for various diseases, exploiting what nature already offers: systems that deliver biological messages addressed to other cells of the organism.

Extracellular vesicles from plants (PDEVs) have recently attracted attention for the therapeutic opportunities that they offer. EV-like structures have been purified from different citrus fruits, grapes, and tomatoes; their anti-inflammatory, anti-oxidant, and anti-tumor properties have been described. Furthermore, plant-EVs possess several characteristics that make them suitable as drug delivery systems, such as the safety and possibility of large scale production. Our research group is currently investigating the possibility to use tangerine-derived EVs as a vehicle for the delivery of anti-tumor SIRNAs.

In conclusion, the possibility of using edible extracellular vesicles, from both mammalians and plants, for the loading of compounds with therapeutic purposes, of vegetal or synthetic origin, appears very promising.

Audience Take Away Notes

- I believe that the presentation and discussion on extracellular vesicles can help the audience in taking into consideration these systems for further research in drug development
- The research on extracellular vesicles is increasing and several researchers with multidisciplinary background could be involved in the better definition of these nanoparticles as delivery systems
- The use of extracellular vesicles as drug delivery system may overcome different problems associated with current therapies such as toxicity and non-specific cellular targets

Nima Rabienezhad Ganji[1], Ornella Urzi[1], Vincenza Tinnirello[1], Roberta Gasparro[1], Alice Conigliaro[1], Riccardo Alessandro[1] And Stefania Raimondo[1]*

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Biography

Dr. Raimondo is Assistant Professor at the University of Palermo (Italy). In 2014 she obtained an international PhD in Immuno-Pharmacology from the University of Palermo under the mentorship of Professor Riccardo Alessandro. During her PhD program, she moved for 5 months to Gotheborg, Sweden. In 2019 Stefania has been a Star Ship Health Innovation fellow, an educational initiative in collaboration with leading European academic and health industrial partners. She has published more than 30 research articles in peer-reviewed journal.

Role of nano formulations in treating cystic fibrosis

Cystic fibrosis is a genetic disease caused by CFTR gene mutations resulting in an impaired mucociliary clearance and causing infection, inflammation, and insufficiently working respiratory system. This disease affects more than seventy thousand people across the globe. Multi-organ dysfunction is associated with the aberrant transport of electrolytes across the epithelium. The lung diseases related to cystic fibrosis form a significant part of mortality and morbidity because of this disease. The mutation in the CFTR gene causes impaired chloride ion secretion leading to sticky and thick mucus secretion, which provides for complications in the airway causing chronic lung infection and inflammatory reactions. Bacterial infections are very prevalent in this disease and cause life-threatening circumstances. Standard treatment involves using antibiotics, which have been proven ineffective because the amount of drug that reaches the site of action has always been insufficient. This disease has enormous potential for genetic mutation, which renders it a limited option for cure. We have focused on providing a valid alternative to the conventional therapies available in the form of nanoformulations targeting the root cause of the disease. The applications of nanotechnology in the CF specified field have been highlighted with the help of illustrating the natural and synthetic polymers and various strategies to overcome the physiological barriers.

Audience Take Away Notes

- Current trends and updates on nanoformulation for cystic fibrosis
- Apply the knowledge in development of formulation and optimization
- Gain the knowledge of Novel formulation approaches and targeting, can be extended in their research and job
- Yes, it can be
- Yes it can provide practical solution

Bhupendra G. Prajapati[1]*, Akshay Parihar[2]

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Biography

Dr. Bhupendra Prajapati is a Professor in Department of Pharmaceutics, Shree S.K.Patel College of Pharmaceutical Education and Research, Ganpat University, Gujarat, India. He has more than 20 years of academic and research experience, has published more than 100 research and review papers in international and national Journals. Under his editorial two book under process and he authored 20 book chapters in the field of novel drug delivery. He published two Indian patent and three applications under evaluation. He is a reviewer in three high impact journals and is on the editorial board of several scientific journals.

Pathology and patient safety: The vital role of electronic medical record and pathology informatics in error reduction and precision medicine

Electronic medical record (EMR)'s use has increased exponentially worldwide. There is a large variety of laboratory information systems (LIS) in the modern healthcare, which may have remarkable advantages over the traditional pen and paper way to record events and data in a patient's chart. Pathology informatics is key in identifying and focusing the role of Precision Medicine in the 21st century. Despite the healthcare has suffered impressive challenges during the COVID-19 pandemic, healthcare workers and administrators have identified to optimize and improve the way we approach patients and diseases. There is the potential to provide higher quality and safer care for patients while creating tangible augmentations for our organizations. Beaker is a system operating as an LIS offered in the United States and Canada by Epic Systems Corporation (Verona, WI, United States). This LIS is sold in two independent modules. Beaker Clinical Pathology (also known as Beaker CP) and Beaker Anatomic Pathology (also known as Beaker AP) are the two modules. Beaker is a quite recent new LIS within the Epic suite, which offers both LIS and EMR. Also, Beaker is universally incorporated in enterprise licenses for user of the Epic software.

Pathology informatics can play a critical role in the prevention, identification, and correction of errors. Standardization of AP/CP pathology reports, such as the College of American Pathologists (CAP) Checklist, has diminished the number of errors and misunderstandings regarding pathology findings useful for staging and therapy. We are going to elucidate some principles implementing Epic Beaker software for anatomic pathology in academic therapeutic institutions. Executing such software will improve the diagnostic approach because the clinical and anatomic pathologists will straight admit a massive amount of clinical and radiological information now at their front desk.

Audience Take Away Notes

- A variety of Laboratory Information Systems
- Pathology Informatics Role in Precision Medicine
- Challenges and Endeavors of Implementing EPIC in an Academic Centre

Consolato M. Sergi

Anatomic Pathology, Children's Hospital of Eastern Ontario, University of Ottawa, Ontario, Canada

Biography

Consolato M. Sergi is the Chief of the Anatomic Pathology Division at the Children's Hospital of Eastern Ontario, Professor of Pediatrics and Pathology, University of Alberta and Ottawa, Canada. Dr. Sergi is Canadian, born in Rome (Italy), obtained his MD degree with honors, qualification in Pediatrics, and Pediatric Pathology Fellowship at the University of Genoa, Italy. Dr. Sergi obtained his qualification in Pathology at the Ruprecht Karl University of Heidelberg, Germany, the Clinical Reader title at the University of Bristol, UK, PhD/Habilitation at the University of Innsbruck, Austria, MPH in Austria, and FRCPC (Pathology) from the Royal College of Physicians and Surgeons of Canada. In his research, he established his Canadian laboratory in August 2008. He welcomed more than 100 graduate MSc/Ph.D. students, fellows, undergraduate and summer students with on-going teaching in Genetics and Pathology. Dr. Sergi is a Consultant of Carcinogenesis in Experimental Animals at the WHO/IARC, Lyon, France, and an ad-hoc Peer-Referee for the National Toxicology Program, NIH, USA. His areas of interest are Biology and Pathology of the Cardiovascular/Gastrointestinal System and Gut/Bile Microbiome as well as Bone Cell Biology. Dr. Sergi has >300 peer-reviewed PubMed publications (h-index: 23, RG-score: 44.26, > 2,500 citations). He identified the role of apoptosis in the ductal plate malformation of the liver (Am J Pathol, 2000), a new CTL4/Neu1 gene fusion transcript in sialidosis (Hum Genet 2001, FEBS Lett 2002, J Med Genet 2003), two new genes, i.e., WDR62, which encodes a centrosome-associated protein (Nat Genet 2010) and OTX2, mutations of which contribute to dysgnathia (J Med Genet 2012), as well as characteristics of the bile microbiome (Infect Drug Resist 2019, HPB (Oxford) 2019, J Med Microbiol 2018, Eur J Clin Microbiol Infect Dis, 2018). He is editor in chief and in the editorial board of prestigious medical journals and international agencies.

mRNA-based systemically delivered directed gene therapy using nanomaterials

The presentation focuses on systemically administered targeted gene therapy using mRNA instead of DNA; why the former is superior for this purpose will be discussed. Lipid nanoparticles (LNPs) and, more recently, extracellular vesicles (EVs, aka exosomes) have proven effective vectors. An example of LNP-mediated directed mRNA delivery is that of Cas9 gene for editing of PTEN by the CRISPR/Cas system. Also, an mRNA-LNP drug, NTLA-2001, is in clinical trial for treating transthyretin amyloidosis. EVs are nature's own antigen delivery system, posing minimal immunogenicity/toxicity risk and their surface integrins confer intrinsic tissue tropism. They have been engineered to display targeting moieties, which are fused to EV anchor domains. Emphasis here will be on the lactadherin C1-C2 anchor domain (which binds to the EV surface) and its fusion to a high affinity anti-HER2 scFv, resulting in HER2 receptor targeting EVs. These were loaded with mRNA that encodes the enzyme HChrR6, which can activate several prodrugs, including CNOB and CB1954 (tretazicar). (The loaded and targeted EVs are called 'EXODEPTs'.) Systemic delivery of EXODEPTs along with either CNOB or tretazicar resulted in the killing of HER2+ breast cancer xenografts in mice without any off-target effects, indicating gene delivery exclusively to the cancer. Attaining specific tumor targeting and loading of the EVs with the HChrR6 mRNA were greatly facilitated by the fact that the activated drug of CNOB, MCHB, is highly fluorescent and can be visualized non-invasively in living mice. Tretazicar (whose activation could also be visualized vicariously by MCHB) was effective at its safe dose; the EVs needed to be delivered only twice; and there were no side effects. Thus, the results augment clinical transfer potential of this regimen. Examples of EV targeting using other anchor proteins, e.g., Lamp2b and CD47, will also be briefly discussed. As the EV anchor domains can be fused to other targeting moieties, the approach is generic for specific gene delivery also in other diseases.

A. C. Matin

Department of Microbiology & Immunology, Stanford School of Medicine, United States

Biography

He is a professor of Microbiology and Immunology from Stanford University School of Medicine. He was born in USA and completed his PhD in the year 1969 in the field of microbiology from University of California, Los Angeles. He is having a teaching knowledge of around 55 years. He is an active member for many microbiological and immunological societies and association. He received the Fulbright Scholar award in the year 1964-1971. He is the author for 142 publications along with few patents. He has been a part of many scientific conferences during his teaching and educational career. He had received the funding from reputed organization for his research work. His current research interest includes immunology, Microbiology, Cancer, Genetics studies etc. Currently he is working on Exosome (EV) project and also on the Extension of the ongoing antibiotic work.

Muco adhesive electro spun fibrous systems for the fast and sustained delivery of drugs

The necessity of new systems for drug delivery in children and specific procedures is clearly needed, in the case of children the difficulty of the correct dose administration is a problem when the drug carrier is not easy to administrate by a non-specialized adult. Mucoadhesive electrospun fibrous systems are an interesting alternative for the treatment of pathologies in the oral cavity due to their capacity to release pharmaceutical drugs at a fast and sustained rate. Electro spun fibers have many characteristics that make them ideal drug carriers for local delivery. Mucoadhesives fibrous systems of poly (vinyl alcohol) and poly (vinyl pyrrolidone) loaded with propranolol and dexamethasone phosphate will be discussed for their potential application in the oral cavity. Physicochemical (SEM, FTIR, TGA, DSC) and biological (MTT assay) characterization will be described in order to present the morphology, chemical composition, and thermal behavior of the fibrous mats, and cytotoxicity in fibroblast will be visualized, drug delivery rate, mucoadhesive and degradation rate will be also discussed. The evaluated muco adhesive loaded fibers presented potential characteristics to be used in the oral cavity, where successfully tridimensional fibrous scaffolds were fabricated with an average fiber diameter of about 368 ± 161 nm, thermal stability higher than 250oC, fibers were degraded completely before 15 min and high mucoadhesive and biocompatibility in fibroblast were observed. All these results give potential characteristics to these systems and promote the continuing evaluation at higher levels such as in animals and clinical studies. Poly (vinyl pyrrolidone) loaded fibers with dexamethasone phosphate are proposed for endodontic procedures avoiding injection of the anti-inflammatory drug and poly (vinyl alcohol) loaded fibers with propranolol for the treatment of hemangiomas in children.

Audience Take Away Notes

- Innovation on mucoadhesive systems
- Applications of electrospinning technique
- Innovation on drug delivery administrations

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Biography

Dr. Luis Jesús Villarreal-Gomez, studied Chemistry-Biology at the University of Sonora, Hermosillo, Mexico and graduated in 2004. He then received his Ph.D. degree in 2013 at the University Autonomous of Baja California, Tijuana, Mexico where he joined as a full research professor. Dr. Villarreal is founder and editor in chief of the Revista de Ciencias Tecnológicas (RECIT) (ISSN 2594-1925) and is editorial board member of several journals edited from MDPI, Hindawi, BenthamOpen, amongst others. Until now, he has published 34 papers and has reviewed more than 132 reviews. His research lines are biomaterials, tissue engineering, drug delivery systems, and biotechnology.

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DAY 01

SPEAKERS

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Hiu Yee Kwan[1]*, Minting Chen[1], Qianyi He[1], Shilin Xiao[1], Keyang Xu[1], Ying Ji[2], Tao Su[3]

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15, 16-dihydrotanshinone-i-laden plga-co-peg nanoparticles are potential therapeutic agents for the treatment of colorectal cancer by targeting the β-catenin/cd36 axis

15, 16-dihydrotanshinone I (DHTS) is tanshinones, a class of lipophilic abietane diterpenes rich in Salvia miltiorrhiza Bunge. It has many pharmacological activities. However, the poor solubility and biocompatibility of DHTS has hindered its clinical application.

To enhance the solubility of DHTS in aqueous solutions and the bioavailability, an amphiphilic co-polymer polylactic-co-glycolic acid-block-polyethylene glycol (PLGA-co-PEG) was utilized to form polymeric micelles for the encapsulation of DHTS. The DHTS-laden PLGA-co-PEG nanoparticles were prepared via the emulsion-solvent evaporation method. In the aqueous solution, the PLGA-co-PEG copolymer was self-assembled into a micellar structure, with PLGA block as the hydrophobic core to provide the encapsulation capacity for DHTS. The hydrophilic PEG block formed the outer shell and stabilized the micelles. With the encapsulation by PLGA-co-PEG nanoparticles, DHTS was stability dispersed to facilitate the in vivo administration.

Our in vivo data showed that DHTS-laden PLGA-co-PEG nanoparticles significantly reduced the tumor weight and the percentage increase in tumor size in colorectal cancer (CRC)-bearing xenograft mouse model, when compared to free DHTS. Subsequent studies showed that DHTS physically bound to □-catenin, and significantly reduced the nuclear expressions and transcriptional activity of □-catenin. Our data also demonstrated that CD36, an integral membrane protein on the cell surface for the fatty acid entry, was a downstream target of □-catenin. In parallel with the reduction of beta-catenin, DHTS also reduced CD36 expression that was reversed by β-catenin overexpression. The reduction of □-catenin and CD36 levels significantly reduced cellular ATP levels and inhibited CRC growth.

Our study strongly suggests the translational potential of DHTS-laden PLGA-co-PEG nanoparticles as therapeutic agents for the treatment of CRC.

Audience Take Away Notes

- Our study has demonstrated how to modify DHTS to DHTS-laden PLGA-co-PEG nanoparticles that can be used to treat CRC
- Since DHTS is an herbal compound that possesses many pharmacological properties, we believe this therapeutic design can be applied in many other disease treatments
- Our study may have drawn people's attention to this herbal compound and broadened the usage of DHTS for disease treatments

Biography

Dr. Hiu Yee KWAN obtained her B.Sc. (Hons.) degree in Biology from the Hong Kong University and Ph.D degree in Physiology in the Faculty of Medicine, the Chinese University of Hong Kong. She received her postdoctoral training in the Department of Nutritional Sciences & Toxicology at the University of California, Berkeley, before joining the Hong Kong Baptist University. Dr. Kwan discovers novel herbal-based target therapeutics to treat cancers, obesity and its comorbid.

Saliha Koc Aslan[1]*, Zubeyde Ozel[2], Gulay Goçmen[3], Mert Kuralay[4]

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Evaluation of medicine implementation: Nursing habits

Objective: This work aims to examine nurse's medicine implementation

Material and Method: This is a retrospective work. 10198 nurses thah join the process of medicine implementation in a group hospitals between the years of 2017-2020 generate. The number of nurses to be sampled from each of the hospitals was calculated as 395 using the stratified random sampling method. Observations are made every year in the institution to follow the drug administration habits of the nurses and to identify the issues that need improvement. The data of the research were obtained by examining these observation forms.

Results: In the research, the data of observtion that 395 nurses were examined and the correct application rate of the nurses' observation criteria was found to be 88%. Control of medicine interaction (52%) was the title with the lowest, and the title with the highest demand for the medicine administered (99%). In the observations, it was determined that 78.7% of the nurses performed identity checks before administering the medicine, and as the professional experience of the nurses increased, the rate of identity verification increased.

Conclusion: In the study, it was seen that the most of nurses correctly applied the criteria determined regarding the medicine administration process. It is necessary to increase the awareness of employees about the shortcomings in the medicine administration process and to establish the right practices as a corporate culture. For this reason, it is worthwhile to continue periodic observations and plan the necessary trainings on the shortcomings in the process.

Keywords: Medicine, nurse, observation, medicine implementation

Audience Take Away Notes

- By examining the medicine administration of the nurses, it was noticed by the researcher nurses who made the most mistakes
- Training's related to the step where the mistake was made were planned
- Awareness and application opportunities were created for this process to reach the expected standards by determining the step in which the most errors occur in the medicine administration process
- It was determined that the medicine administration attitudes of nurses should be followed
- In the observations, it was determined that the identity verification rate increased as the professional experience of the nurses increased. In this sense, it was revealed that inexperienced nurses should be observed more about medicine administration

Biography

Nursing Director of Acıbadem Health Care Group Ms. Saliha Koç Aslan graduated from Hacettepe School of Nursing in 1990 and received her master degree at Maltepe University. After joining Acıbadem Healthcare Group in 2000, she established the nursing services directorate. She presented nearly 18 hospitals opening in her institution and guided thousands of nurses for their education and career journeys. She has also lectured at the collaborating university as a faculty member. Ms. Koç Aslan, who has many books and dozens of published researches, more than 70 posters exhibited at the congress, more than 30 panel speakers and more than 50 international congress participants, still works as the Nursing Services Director of Acıbadem Healthcare Group.

Jegathambigai R Naidu[1]* and Sasidharan Sreenivasan[2]

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[2]University Science Malaysia

Cytotoxic potential of culinary herbs

Recent advances in our understanding of the cellular and molecular events of carcinogenesis have led to the development of promising therapeutic strategy for the treatment and prevention of cancer. Chemoprevention can be defined as the use of substances of chemical (natural or synthetic) origin to retard or reverse the process of carcinogenesis and has become the novel approach for cancer control. Numerous commonly used culinary herbs have been identified by the National Cancer Institute to possess cancer-preventive properties. Our previous scientific studies have indicated the cytotoxicity potential of Ocimum basilicum, Mentha spicata, and Centella asiatica extracts using MTT assay against human cancerous cell lines (HL60-promyelocytic blood leukemia cells). Our reports also have shown the potential of culinary herbs by inducing apoptosis in cancer lines The morphological changes such as, cell shrinkage and clumping, vacuolation, distorted cells, cell adhesion and spreading on tissue culture plastic, cell growth inhibition were observed in the HL60 cells treated with Ocimum basilicum, Mentha spicata and Centella asiatica extracts indicating the signs of apoptosis. Hence screening for apoptotic inducers from culinary herbs may be useful in chemoprevention. since most cancer drugs severely affect host's normal cells, the use of natural products has now been contemplated of exceptional value in the control of cancer cell.

Audience Take Away Notes

- The knowledge gained can be used for their research in the fields of Nutrition Pharmaceuticals/ Cancer fields
- To explore new areas on the application of Nutritional compounds in therapeutics & drug development
- Yes Is this research that other faculty could use to expand their research or teaching
- The technique learnt may be beneficial
- May be helpful to design the steps in their research

List all other benefits

- Research, cytotoxicity labs, Nutritional benefits of culinary herbs for disease prevention, Cancer research

Biography

Dr. Jegathambigai Rameshwar Naidu is currently serving as an Assc Professor of Biochemistry at a private medical university, Malaysia. She is a biomedical researcher and academician, with 19 years teaching and research experience in Biochemistry in Medical/Biotechnology schools. She has obtained her Ph.D (Molecular Medicine) from INFORMM, University Science Malaysia and M. Med. Sc (Molecular Medicine) from University Malaya. She also have secured her M.Sc and M.Phil (Biochemistry) degree from India. She has gained about 77 publications in international and local journals and 55 conference presentations in local and international platforms and several awards and professional memberships. Her current and future interest is to identify potential Malaysian culinary herbs with anticancer, anti-thrombotic and antiangiogenic properties and characterize their biological activities so to recommend them as suitable candidates for chemotherapy.

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Intranasal delivery of Galanin receptor 2 and neuropeptide y1 receptor agonists enhances spatial memory and antidepressant effects in rats: Linking to hippocampal neurogenesis

Dysregulation of hippocampal neurogenesis is linked to several neurodegenereative diseases and depression, where boosting hippocampal neurogenesis in these patients emerges as a potential therapeutic approach. Accumulating evidence for Neuropeptide Y (NPY) and galanin (GAL) interaction was shown in various limbic system regions at molecular-, cellular- and behavioral-specific levels. The purpose of the current work was to evaluate the role of NPY and GAL interaction in the neurogenic actions on the dorsal and ventral hippocampus. We studied the Y1R agonist and GAL effects on: hippocampal cell proliferation through the proliferating cell nuclear antigen (PCNA); the expression of neuroprotective and anti-apoptotic factors and the survival of neurons and neurite outgrowth on hippocampal neuronal cells. The functional outcome was evaluated in the object-in-Place task and the forced swimming test. We demonstrated that the Y1R agonist and GAL and promote cell proliferation and the induction of neuroprotective factors. These effects were mediated by the interaction of NPYY1 (Y1R) and GAL2 (GALR2) receptors, which mediate the increased survival and neurites outgrowth observed on neuronal hippocampal cells. These cellular effects are linked to the improved spatial-memory effects after the Y1R agonist and GAL coinjection at 24 hours in the object-in-place task and in the forced swimming test. Our results suggest the development of heterobivalent agonist pharmacophores, targeting Y1R-GALR2 heterocomplexes, therefore acting on the neuronal precursor cells of the DG in the dorsal hippocampus for the novel therapy of neurodegenerative cognitive-affecting and depressive diseases.

Audience Take Away Notes

- Understanding Neuropeptide Y and GAL interaction through Y1R-GALR2 heteroreceptor complex
- How the the Y1R agonist and GAL may promote cell proliferation in the DG of the dorsal and ventral hippocampus and the induction of neuroprotective factors, such as BDNF and Bcl-2
- How Y1R-GALR2 heteroreceptor complexes mediate survival and neurites outgrowth on neuronal hippocampal cells
- How these cellular effects may be linked to spatial-memory and antidepressant effects
- The development of heterobivalent agonist pharmacophores, targeting Y1R-GALR2 heterocomplexes, therefore acting on the neuronal precursor cells of the DG in the dorsal and ventral hippocampus for the novel therapy of neurodegenerative cognitive-affecting and depressive diseases

Biography

Manuel Narvaez Peláez cursed Medicine and surgery with the best academic record of his promotion. Our team has contributed to the GPCR receptor-receptor interactions field focus in CNS diseases, such as depression, Parkinson, addiction drugs and Alzheimer. As professor, he is performing an independent and emergent line of research, aim to understand the molecular mechanisms and potential relevance of Y1R heterocomplexes interactions in depression and Alzheimer disease, in line with my pioneering work in this field. The research results have been published successively

in congresses of international and national relevance. In addition, innovative articles have been published, including in the first quartile of impact index in its category and with quality indices, including high cite numbers. I belong to the CTS-156 of the Junta de Andalucía and the Malaga Biomedical Research Institute (IBIMA). I have reviewed international research projects from CONACYT, Mexico and recently as evaluator for the Call 'Marie Skłodowska-Curie Actions Doctoral Networks' (HE-MSCA-DN-2021).

Kalirajan Rajagopal* and Kannan R

Department of Pharmaceutical Chemistry, JSS College of Pharmacy, Tamilnadu, India

A systematic molecular modelling approach to identify potential inhibitors from natural compounds against SARS-CoV-2 Omicron

COVID-19 has created a major threat to human population across the globe. Since 2020, there are many mutations in SARS CoV-2 like Alpha, Beta, Delta and Omicron etc. Out of this Omicron variant is one of the fastest spreading disease in Covid-19. But still, we are not known about the effectiveness of vaccines and drugs against all the variants. So, natural remedies for the prevention and treatment of COVID-19 has been widely accepted as the rapid way for effective therapeutic options without major side effects, which can be identified via in-silico drug screening experiments. In this study, we performed in-silico high-throughput virtual screening with library of 325,000 natural compounds from supernatural-II database to identify potential hits. We used 3D crystallographic Omicron protein (7TVX.pdb) structure to find the lead molecules. The initially obtained top 100 hits from VHTS were subjected to SP docking and the top 30 hits H1-H30 were further subjected to the extra-precision (XP) docking by using Glide module and also binding free energy calculations for final compounds were performed by prime MM-GBSA module of Schrodinger suit-2021-4. It is evident that Coulomb and van der Waals energy were major favorable contributors while electrostatic solvation energy term disfavors the binding of ligands to the Omicron target protein. The in-silico ADMET properties were predicted by using Qikprop, Chem Axon and data warrior tools which showed the favorable pharmacokinetic profile of natural compounds. In order to validate the stability of inhibitor-protein complex, compound SN000299979 with the highest inhibitory potential against Mpro and lowest binding free energy was subjected to 100-ns molecular dynamics simulation using Desmond module.

Audience Take Away Notes

- This research work explains Virtual High throughput screening of natural products against SARS CoV-2 Omicron target
- This research that other faculty could use to expand their research or academic
- This research work explains the docking, ADMET, molecular dynamics study of the natural hits
- This research work will be helpful to design novel molecules against COVID-19

Biography

Dr. Kalirajan Rajagopal graduated both UG and PG in Pharmaceutical Chemistry at The Tamilnadu Dr. MGR medical University, Chennai. He received his PhD degree in 2013 at JSS University, India. He has 24 years of teaching and research experience and currently working as Professor and Head in department of Pharmaceutical Chemistry, JSS Academy of Higher Education & Research, India since July, 2006. He has nominated as BOS member in various universities. He Published 83 research papers with IF range 0.1 to 7.2 and H-index 14 by Scopus and 19 by Google scholar and 5 books. Received many awards.

Katarzyna Turecka[1]*, Rafał Hałasa[1], Agnieszka Chylewska[2], Czesława Orlewska[3], Krzysztof Waleron[1]

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The study of antimicrobial activity of synthesized and natural-source chemical compounds by optical fluorescence respirometry using a Ru(II)-based oxygen-sensitive sensor

The determination of the number of microorganisms is very important a.o. in the field pharmacy, biotechnology or clinical microbiology. Study the antimicrobial properties of natural or synthetic products requires testing of many samples, against many bacteria or fungi in a short time.

Counting microorganisms on the agar plates, membrane filters, and using the most probable number are basic method used to determine of the living cells. These methods require a long incubation time (1-5 days); colonies may be formed by several related species of microorganisms, and full identification takes up to seven days. In turn the serial dilution method in broth is used for determination of the minimal inhibitory concentration (MIC). The length of assay time and the impact of the physical properties of the sample affect the results.

We used the fluorescent optical respirometry (FOR) for analysis the aerobic bacteria and yeasts. In this method tested organisms growing, consume oxygen, resulting in an effect on the fluorescence intensity of the sample. The biosensor signal is quenched by oxygen in a reversible, non-chemical way, and oxygen reduction in the concentration of dissolved oxygen (which is associated with microbial growth and aerobic respiration) causes a significant increase in biosensor fluorescence emission. Monitoring of the changes in fluorescence intensity in cultures allows, therefore, to observe the metabolic activity of organisms, the influence of physical factors and chemical compounds on organism's activity in real time (Alderman et al., 2004; Hałasa et al., 2014, O'Mahony et al., 2006). The oxygen-sensitive sensor, ruthenium-tris(4,7-diphenyl-1,10-phenanthroline) dichloride (Ru(dpp)3Cl2) adsorbed on the DavisilTM silica gel, embedded in the silicone rubber Lactite NuvaSil® 5091 and coating on the bottom of 96-well plates, was used. The FOR method was performed to evaluate the effect of chemical and environmental factors, plant extracts on aerobic bacteria or yeasts. The FOR method allows to detect microorganisms in some sterile and non-sterile pharmaceutical products. This method allows also for a rapid, unequivocal detection and counting of living bacterial cells.

Audience Take Away Notes

- To reduce the time of analyzing the antimicrobial properties of new drugs
- To reduce the time of analyzing the sterility or microbiological purity of drugs
- To test of many samples, against many bacteria or fungi in a short time
- for analysis of the kinetics of the culture growth of bacteria and fungi and determination of growth parameters, such as generation of time in microorganism cultures
- Fluorescent optical respirometry provides much more information about the effects of chemicals on microorganisms than traditional methods. In particular, this applies to chemical concentrations lower than in MIC. This gives more possibilities of interpretation of experiments and an opportunity to develop effective methods for the analysis of the synergistic effects of the antimicrobial compounds

Biography

Dr Katarzyna Turecka studied Chemistry at the University of Gdansk, Poland and graduated as MS in 1998. Then she started to work at the Department of the Pharmaceutical Microbiology, Faculty of Pharmacy, and Medical University of Gdansk, Poland. She received her PhD degree in 2007 at the same institution. She completed a six-month internship at the Laboratory of Instrumental Analysis, University of Technology, Eindhoven, and the Netherland. She has published a lot of research articles in SCI (E) journals.

Merita Kucuku
Freelance consultant, Albania

Quality control of medicines and the role of quality control laboratory

The role of the laboratory is very important for the quality control of medicines, especially for imported medicines.

People very often discuss for the efficacy of medicines and this answer can give from the laboratory.

Quality control of medicines has an impact on public health and this request a very qualified staff, and equipment, and laboratory building according to the technical condition for analyzing medicines.

Biography

Merita Kucuku studied Master degree: Chemical Analysis and Determination of the structure by Instrumental Ana ysis and Master theses: Validation and optimization of the determination method of merthiolate in the vaccine by spectrophotometer by means of Factorial Design. Studied Ph. D: Study and chemical- analytical evaluation of some vaccines used in Albania. More than 10 years of experience in the field of safety and efficacy and regulatory issues of vaccines, Head of National Regulatory Authority of Vaccines & Immunobiological Products in Albania, and experience as Head of Control Laboratory of medicines in the National Agency for Medicines & Medical Devices (NAMMD). Trained in international agencies and organizations for: Safety, efficacy, AEFI and quality control of vaccines, and GMP. Quality Control/ Quality assurance of laboratories (ISO 17025). Environmental issues as: Environmental Impact Assessment (EIA) and Strategic Environmental, Assessment (SEA), Strategies for chemicals management, (Pharmaceutical waste management). Training for instrumental analysis as GC, GC- MS. Basic toxicology. National expert on the identifiction of populations at risk and gender dimensions under MIA project, UNDP. Expert in the project: Strengthening of capacities for chemical management in Albania, arranged from UNITAR.

Fatiha Brahmi [1]*, Amira Oufighou[1], Karima Bourihane[1], Lynda Boutaleb[1], Khodir Madani[1,2], Lila Boulekbache-Makhlouf[1]

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Application of cactus pear (Opuntia ficus-indica L.) cladodes in the formulation of an hand moisturizer cream

In this current study we are interested in the study of a part of the prickly pear (the cladodes) which constitute a by-product and can be exploited in many applications and are characterized by their effect on health and their richness in bioactives compounds. Before formulating a cream based on prickly pear cladodes powder, their extract was analyzed. Cladode extracts were studied to optimize the extraction parameters of antioxidants (phenolic compounds) using the central composite plane. The optimal experimental conditions allowing a maximization of the extraction of the polyphenols from the cladodes are an ethanol concentration of 40% (v /v) for a time of 90 min with a ratio of 1 g/20 mL. A quantification of a total phenolics (TPP) and flavonoids (TF) and an evaluation of the antioxidant activity (anti-radical and reducing power) of the extracts were carried out. Cladodes extract gave a phenolic content of 253.4 mg EAG/g DM and flavonoids content of 14.42 mg Quercetin Equivalent/g Dry Matter. The potato peel extract has better molybdate (10.65 µg / mL) and DPPH• radical reducing activity (179.75 µg / mL). It also results that the extract of cladodes studied reveal an interesting antioxidant activity for the various tests carried out (anti-radical power with DPPH and reducing power with phosphomolybdate). The IC50s found are 530.18 µg/mL and 43.09 µg/mL in the DPPH and phosphomolybdate tests, respectively. Cladode powder was also used to develop an hand moisturizer cream and the results of sensory analyses of the samples of the cream showed that 75% of the judges preferred the control sample, followed by the cream prepared with 0.5% of cladodes powder (63%).

Audience Take Away Notes

- Through this presentation, the audience will have information on the cactus in general and on its cladodes in particular
- We will present an innovative method which is used to maximize the extraction of an important class of their bioactive compounds which are the phenolic compounds
- We have also shown that the extract obtained has an interesting antioxidant power
- Finally, we will explain how the powder of these cladodes is applied to formulate a moisturizing hand cream

Biography

On the surface, Fatiha Brahmi is a teacher-researcher with over 16 years of experience in the field of natural and life sciences. Dr Brahmi continues to serve in Bejaia University from Algeria.She is so efficient in her work, she has several publications (more than 30) and communications (more than 66) in the field of natural products, pharmacognosy, fruit and vegetable by-products and involved in several research projects such as the Algero-espanol and Algero-Tunisian projects. She supervises and co-supervises several doctoral students in the field.

Manuela Labbozzetta*, Paola Poma, Monica Notarbartolo

Department of Biological, Chemical and Pharmaceutical Science and Technology (STEBICEF), University of Palermo, 90128 Palermo, Italy

Glandora rosmarinifolia essential oil: A potential natural anticancer agent

Identifying, testing and implementing the use of new medicinal plants in current therapeutic protocols is a very complex, time-consuming and costly process. In many situations, the focus is on the study of plant extracts as it is known that in some cases the activity of the phytocomplex is higher than that of pure phytochemicals due to the synergism of the molecular structures. Plant secondary metabolites, including essential oils (EOs), may in fact be one of the best sources for identifying promising new therapies. Essential oils are volatile, natural complex compounds characterized by a strong odor and in nature they play an important role in protecting plants from biotic and abiotic stresses. The biological properties of EOs are widely documented by the extensive literature demonstrating their antitumor, antibioceptive, antiviral, antiphlogistic and antimicrobial activity in vitro. Furthermore, essential oils contain different chemical classes of compounds whose heterogeneity of active parts can help prevent the development of drug resistance. Therefore, due to their low toxicity, good pharmacokinetics and multitarget action, EOs represents important alternatives to synthetic chemicals as promising drugs for use in therapy. The EO extracted from the aerial parts (branches with leaves) of Glandora rosmarinifolia (Ten.) D.C. Thomas (Boraginaceae) has been shown to possess antitumor and cytotoxic activity via a pro-oxidant mechanism in several tumor models such as hepatocellular carcinoma (HCC), triple negative breast cancer (TNBC) and acute myeloid leukemia (AML). The chemical composition of G. rosmarinifolia EO has been identified and an isomer of hydroxy-methyl-naphthoquinone was among the most abundant compounds. Several pharmacological properties are attributed to naphthoquinones, including the ability to inhibit topoisomerases or by as catalytic inhibitors or topoisomerase II poisons. In our study conducted on an acute myeloid leukemia cell line HL-60 and its multidrug-resistant variant (MDR) HL-60R, the essential oil has shown the ability to interfere with topoisomerase II activity by inducing a G0-G1 phase cell cycle arrest, with a reduction of cells in S phase. Furthermore, the combination of EO with etoposide showed a good enhancing effect in terms of cytotoxicity in both cell lines. These results highlight the antitumor activity of EO on the HL-60 cell line and its MDR variant with a peculiar mechanism, as a Topo II modulator capable of acting as a catalytic inhibitor. Therefore, G. rosmarinifolia EO appears to be a potential anticancer drug candidate due to its cytotoxic action that is not affected by multidrug resistance. This study supports the importance of natural sources for further research in the development of drugs and in particular, the recent interest in the design of conjugation and delivery systems capable of selectively transporting natural substances even in association with traditional drugs, could allow to circumvent the several problems associated with current therapies such as toxicity and non-specific cell targets.

Audience Take Away Notes.

- I believe that the presentation and discussion of the anticancer action of essential oil can help the public consider these important natural sources for further research in drug development
- Research on essential oils is on the rise and several researchers with multidisciplinary backgrounds could be involved in better defining their applications in different fields and in the design of conjugation and delivery systems

- The use of essential oils characterized by low toxicity and often multi-target activity can overcome several problems associated with current therapies such as toxicity and non-specific cell targets

Biography

Dr. Manuela Labbozzetta studied Biology at the University of Palermo (Italy) and graduated in 2002. Subsequently she joined the research group of Prof. Natale D'Alessandro at the Institute of Pharmacology of the University of Palermo. In 2007 she obtained the Specialization in Clinical Biochemistry, analytical-technological address and she obtained a PhD in Pharmacology and Social-Environmental Toxicology in 2012 at the same institution. Today you hold the position of Researcher at the Department of Biological, Chemical and Pharmaceutical Sciences and Technologies (STEBICEF) of University of Palermo. She has published more than 40 research papers in peer-reviewed journals.

Miranda F. Kamal[1]*, Nourhan M. Abdelbarey[2], Mokhtar M. Mabrok[3]

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Separation and assay of sorbitol and sucralose binary mixture by extraction using HPLC/ELSD method

Accurate, rapid and sensitive novel chromatographic method has been developed, validated and applied for the determination of Sucralose and Sorbitol; each compound in the presence of the other, in their binary mixtures. Iso sweet® artificial sweetener is a co-formulation of a non-caloric sweetener Sucralose and an excipient Sorbitol. Quality control assay of the cited formulation is an analytical challenge. Both sugars are non-chromophoric compounds, as well as they share similar chemical and physical properties. The present study aims at selective separation of both compounds by extraction step with ethyl acetate prior to column injection. HPLC / Evaporative Light Scattering Detection has been used with C18 column stationary phase, and mixture of acetonitrile and water as mobile phase. All operating conditions were optimized for maximum sensitivity. Full validation was carried out with respect to ICH guidelines. Linear ranges for Sucralose and Sorbitol reached 100-700 ppm and 200-990 ppm respectively. Non-linear responses of ELSD were converted into Log-values and correlated with their corresponding concentrations, resulting in coefficients around 0.99 values. Satisfactory recovery results have been obtained upon application of the suggested method for synthetic mixtures and marketed pharmaceutical formulations.

Audience Take Away Notes

- Novel Chromatographic method for separation and assay of Iso sweet® sachets
- Routine quality control analytical method is developed and validated
- Analytical and industrial purposes are fulfilled. (Research and QC lab)
- Great challenge in the accurate analysis of non-chromophoric compounds
- Yes, the suggested method in the study is first to be designed and applied
- Accuracy, time saving, relatively ecofriendly and affordability

Biography

Associate Professor of Pharmaceutical Analytical Chemistry, Faculty of Pharmacy, Damanhour University, since October 2022. Lecturer, PhD since May 2016 and MSc since May 2011. Worked as demonstrator and assistant lecturer at Pharos University in Alexandria since September 2006. She has published more than 20 research articles in SCI (E) journals.) Official Reviewer; Technical Monograph Revision at the EGYPTIAN PHARMACOPOEIA 5th Edition.

Peter B Chase
Essentia Health- St. Mary's Hospital, Duluth Minnesota, United States

Pediatric brain on cannabinoids: Adverse effects of cannabinoid products in children and adolescents

Peter B. Chase, MD. Essentiahealth, St. Mary's Hospital, Duluth Minnesota, USA Cannabinoids (phytocannabinoids and synthetic cannabinoids) are most often used during adolescence and given the changing norms, enhanced potency,reduced societal perceptions of risk and multitude forms of products for consumption,clinicians need to be become more cognizant of cannabinoid products andtheir effects. The aim of this presentation is to briefly discuss the above, acute toxicitiesand a few chronic toxicities associated with cannabinoids that clinicians are likelyto treat. In addition, cannabinoid toxicokinetics and toxicodynamics as it pertainsto the clinical effects will be discussed as well as the route of exposure and theclinical implications for therapeutics and research. Although the neurodevelopmental effectsof naturally occurring endocannabinoids will be briefly mentioned, it is beyondthe scope of this presentation to discuss in detail. Regardless, clinicians, researchers, parents and patients should be aware of the potential implications that exogenous cannabinoids (cannabis) may have in altering the normative trajectory of brain maturation inpediatric patients.

Audience Take Away Notes

- Audience will briefly learn about the three types of Cannabinoids: endocannabinoids, phytocannabinoids, and synthetic cannabinoids and their medical importance/implications
- Attendee's knowledge regarding the following will be enhanced: Cannabis use is increasing, long standing, and major driving forces in socioeconomics and legislative changes are generating cheaper, legally available, and of greater potency (botanical or synthetic) perhaps under the guise of falsely reassuring perception in lack of harm
- Acute and chronic toxicity of botanically derived or synthetic cannabinoids in derivation will be discussed as well as medical management
- Areas of excellent research in cannabinoids are lacking, urgently needed, and human findings and effects likely subtle and difficult to quantify

Biography

Dr. Chase received his MD degree from the University of Arizona, Tucson, Arizona, USA in 1996. He Is currently boarded and clinically active in Medical Toxicology, Emergency Medicine and Pediatrics and has published over 35 peer reviewed manuscripts and scores of abstracts in many areas of research including pharmacology, human physiology and medical toxicology.

Irie Bi Jean Severin*, Lehou Monnhessea Danielle, Zahoui Ouga Stanislas

Biology and Hearth Laboratory, UFR Biosciences/Felix Houphouet-Boigny University, Abidjan, Ivory Coast

Gastro protective effect of an aqueous extract of Syzygium Aromaticum (L.) MERR. & PERRY (Myrtaceae) in wistar rats

Introduction: In Africa, 80% of the population use medicinal plants for their primary health care. In Ivory Coast, Syzygium aromaticum (Myrtaceae) is used in traditional medicine in the treatment of gastric ulcer. This study aims to verify its gastroprotective effect of an aqueous extract of the buds of Syzygium aromaticum (EASA) in wistar rats.

Methods: An acute toxicity study was first carried out in rats with predefined doses of 500, 2000, and 5000 mg/kg of Body Weight orally. Then, for the study of the gastroprotective effect, the rats were pretreated with increasing doses of EASA of 500, 1000 and 1300 mg/kg B.W. before receiving an ulcerogenic substance (Eth/HCl/H2O) 1(one) hour later in comparison to a group pretreated with Omeprazole 20 mg/kg B.W., which is a reference substance. The stomach of the treated rats is observed and the ulceration index, the percentage of ulceration and the percentage of protection are determined. Finally, the histological sections of the stomachs are made.

Resultats: The results of this study show that the aqueous extract of Syzygium aromaticum buds is non-toxic orally. EASA, dose-dependently reduced the ulceration index and the percentage of ulcerations to 37%, 12%, 21% respectively at the doses used, versus 5% for the dose of Omeprazole. It therefore increases the percentage of protection 63%, 88% and 79% respectively for the doses of 500, 1000 and 1300 mg/kg B.W. against 95% for Omeprazole. Only, a few hemorrhagic points are observed but no hemorrhagic furrows in the stomach of the rats pre-treated with the extract on the histological sections.

Conclusion: Aqueous extract of Syzygium aromaticum is no-toxic orally and therefore protects the gastric mucosa against the onset of ulcerations, which would justify its use in traditional oral medicine.

Keywords: Syzygium aromaticum, gastroprotector, mucosa, ulcerations, Omeprazole

Audience Take Away Notes

- The use of biological substances to treat oneself is clearly on the rise in the world, for economic and cultural reasons and for its harmlessness
- The development of the society leads to an increase in the strees which is at the base of the ulcer. When the ulcer is left untreated or poorly treated it can lead to stomach cancer
- The African flora abounds in enormous pharmacological resources whose scientific bases are not yet established. All of its substances are still used empirically. This study makes it possible to lay the scientific foundations for the use of its substances
- Research in the medical field not being supported in Africa, this conference proves to be ideal in order to obtain aid in this field to deepen our research

Biography

Dr Irie Bi Jean Severin, Physiologist and Pharmacologist at the University Felix Houphouet-Boigny (Abidjan, Ivory Coast), obtained the MASTER of Physiology in 2014. He joins the research team of Prof Abo kouakou Jean Claude at the Laboratory of Animal Physiology from the UFR Biosciences of the Felix Houphouet-Boigny University. He defended his doctorate in 2017 at the same University after research carried out on the study of the pharmacological effects of an antihypertensive plant on the mammalian cardiovascular system. He is author and co-author of 11 scientific articles and 2 scientific communications.

Khatereh Zarkesh[1,2]*, Reza Heidari[2], Pooya Iranpour[3], Negar Azarpira[4], Fatemeh Ahmadi[1], Soliman Mohammadi-Samani[1,2], Fatemeh Farjadian

[1]Department of Pharmaceutics, Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran
[2]Pharmaceutical Sciences Research Center, School of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran
[3]Department of Radiology, Shiraz University of Medical Sciences, Shiraz, Iran
[4]Transplant Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

Theranostic hyaluronan coated EDTA modified magnetic mesoporous silica nanoparticles for targeted delivery of cisplatin

One of the eminent capabilities of nanoparticles in drug delivery is active targeting. Mesoporous silica nanoparticles (MSNs) are among the well-known nanocarriers, which have been utilized for gene and drug deliveries due to their particular physical and chemical properties. The present study aimed to introduce an engineered type of EDTA-modified Magnetic Mesoporous Silica Nanoparticles (MMSNs) with hyaluronan coating as a theranostic agent for delivery of an anti-cancer drug (cisplatin). EDTA was first applied as a ligand for platinum-based drug loading. The nanoparticles were synthesized in several steps. The properties of each step were characterized by various techniques such as Fourier transform infrared (FT-IR), X-Ray diffraction (XRD), vibrating sample magnetometer (VSM), and N2 adsorption/desorption. Morphology was also checked by field emission scanning electron microscopy (FE-SEM) and Transmission electron microscopy (TEM). In addition, loading capacity (LC) and loading efficiency, and in vivo release of cisplatin were analyzed through ICP-OES. Eventually, the plasma concentration profile and cisplatin pharmacokinetics parameters after intravenous administration of EDTA-MMSN @ HA were evaluated. The average particle diameters of prepared structure were approximate range of 70-100 nm. The profile release of cisplatin in acidic medium was faster in 72 hours, which confirmed the pH-responsive behavior of the nanoparticles. As the results of cytotoxicity showed, coating with HA can improve the internalization of nanoparticles in cancer cells compared to normal cells. Finally, EDTA-MMSN @ HA can be introduced as a new favor biocompatible and biodegradable nanoplatform for targeted drug delivery which can improve pharmacokinetic parameters. Overall, this study successfully synthesized a novel multifunctional pH-responsive MSN for efficient drug delivery and magnetic resonance imaging.

Audience Take Away Notes

- Application of nanotechnology in biopharmaceutical field
- Summarize types of nano carrier for smart drug delivery systems (DDSs)
- Introduce mesoporous silica nanoparticles (MSN)as a novel structure in biomedical and bio imaging (THERANOSTIC agent)
- Application of magnetic nanoparticles as contrast agents in Magnetic resonance imaging (MRI)
- Advantage of MSN in comparison of others carriers including: biocompatibility, high surface area, tunable morphology and pore size, porosity, and adjustable surface functional groups (active targeting)

Biography

Dr. Khatereh zarkesh studied pharmacy at the Kerman university of medical sciences Under and graduated as Pharm.D in 2016. The thesis title has been Preparation and Physicochemical Characterization of Topical Niosomal Formulation of Minoxidil and Tretinoin Under the supervision of: Prof. pardakhty and prof. khazaeli. She then joined the research group of Prof. Mohammadi-Samani at Faculty of Pharmacy, Shiraz University of Medical Sciences, Shiraz, Iran. She received her PhD degree in in Pharmaceutics in 2022. After that she obtained the position of an Associate Professor at the faculty of pharmacy, Hormozgan University of Medical Sciences. She has participated various pharmacy and pharmaceutical science as Poster presentation. She trained in various workshops including Column Chromatography, Vaccine Design and Production, PCMS academy training molecule and polymerase chain reaction.

Dimple Modi [1,2]*, Sriramakamal Jonnalagadda [2], Gossett A. Campbell[1], Gautam Dalwad[1]

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Enhancing drug loading of phenytoin into nanoemulsion via hydrophobic ion pairing and its potential to prevent in-vitro precipitation upon serial dilution at blood pH

Phenytoin was originally formulated in organic solvents at pH 12 and have been used via intravenous administration in treating epilepsy. However, due to its unfavorable pKa (8.3) with respect to physiological blood pH 7.4 it resulted in poor solubility and precipitation that caused phlebitis issue upon administration.The current study is focused on formulating nanoemulsion containing lipophilic ion-pair into oil to circumvent precipitation at physiological pH and potentially prevent phlebitis. A novel and atypical hydrophobic salt (1:1) was formed using a surfactant type counter ion Hexadecyl Trimethyl Ammonium Hydroxide (CTAH) and Phenytoin. Hydrophobic ion-pair (HIP) was found to be practically insoluble in water but led to 8-fold high Castor oil solubility compared the Phenytoin itself, and expectedly demonstrated infinite log P value. Castor oil was selected after screening various oils to formulate the nanoemulsion. The hydrophobic ion pair dissolved in Castor oil was further solubilized with lecithin, and subsequently the entire oily phase was emulsified with polysorbate 20 to formulate the nanoemulsion. Potential disproportionation and leaching of Phenytoin from CTAH counter ion were confirmed over increasing concentration of Polysorbate 20 from the HIP alone and dissolved in Castor oil separately. This revealed the strong partitioning tendency of the hydrophobic ion-pair into Castor oil due to enhanced lipophilicity. Polysorbate 20 was found to be an effective emulsifier to formulate the nanoemulsion at ≤ 300 nm particle size, with zeta potential of > 30+ mV. The positive charge of the emulsion was contributed to leaching of CTAH in the aqueous phase. The emulsion was found to be stable over a period of one month. A serial dilution study of the nanoemulsion was performed in PBS buffer, microscopic observations suggested no birefringence despite incubation for several hours. This result indicated that Phenytoin remained strongly partitioned within dispersed oily phase whether ion-paired or not. The zeta potential was remarkably flipped to a negative charge when formulated alone with Phenytoin due to the lack of CTAH leaching into the continuous phase. The advantage of ion pairing was in fact a higher drug loading, at which it remained partitioned into the disperse phase and did not precipitate when diluted and incubated in PBS buffer for several hours. The higher drug load could enable a smaller volume slow bolus injection to meet 50 mg/min or lower delivery rate criteria for Phenytoin in the clinical set up.

Audience Take Away Notes

- By attending this presentation on enhancing drug loading of Phenytoin into nanoemulsion via hydrophobic ion pairing and its potential to prevent in-vitro precipitation upon serial dilution at blood pH, the audience will gain a deep understanding of the novel approach to use hydrophobic ion pairing to enhance drug delivery. The audience will learn about the process of nanoemulsion formation and how hydrophobic ion pairing can enhance the drug loading of (BCS Class II) poorly soluble drug. Additionally, the presentation will explain the significance of preventing in-vitro precipitation upon serial dilution at blood pH, which can increase drug efficacy and reduce the risk of side effects Overall, attendees will acquire practical knowledge and insights into innovative drug delivery techniques that can lead to the development of more effective and efficient treatments

- A deep understanding of the process of forming nanoemulsion and the role of hydrophobic ion pairing in drug loading can provide valuable insights for creating innovative drug delivery systems
- Gaining knowledge of the physical characterization of nanoemulsion formulation can inform the development of drug delivery systems and improve their efficacy
- Learning about the significance of preventing in-vitro precipitation at blood pH can aid in mitigating the phlebitis issue of the drug, thereby improving its therapeutic value
- Acquiring knowledge of the challenges associated with drug loading and delivery can facilitate the evaluation of different excipients for enhancing drug loading, leading to the development of more effective drug delivery systems
- Developing a deeper understanding of the scientific principles that underpin drug formulations can inform future research and innovation in the field and lead to the discovery of more effective treatments for patients
- The techniques utilized in this research can be applied to explore the drug delivery options for other BCS Class II drugs that possess poor aqueous and oil solubility
- The hydrophobic ion pairing approach has the potential to alter drug lipophilicity and improve drug loading for drugs with poor bioavailability
- A comprehensive understanding of in vitro drug release studies, which involve the consideration of various parameters like dissolution media, temperature, and pH, could inspire future research on the use of hydrophobic ion pairing for drug loading and delivery of other drugs and conditions
- The study provides a model for investigating the potential of other innovative drug delivery techniques, such as solid lipid nanoparticles, SEDDS, and liposomes, in preventing in-vitro precipitation upon serial dilution at blood pH
- The research presents a new approach to drug loading and delivery that could be explored and expanded upon in future research and teaching, offering a promising avenue for the drug development
- Yes The research study outlines the challenges associated with the formulation of phenytoin drug and demonstrates the potential for improvement using hydrophobic ion pairing. The approach of hydrophobic ion pairing can help designers to understand the value and benefits of using this technique to enhance drug loading, which can improve drug efficacy and reduce the required dosage
- The prevention of in-vitro precipitation upon serial dilution at blood pH can reduce the risk of side effects and ensure a more consistent drug effect. The use of nanoemulsion can enable targeted drug delivery to specific areas of the body, improving treatment effectiveness and minimizingunwanted effects in other areas. Overall, The findings of this research provide a basis for the uniquedrug delivery systems for other drugs and applications, which can simplify and improve the work of pharmaceutical designers
- This research offers insights into the preparation of hydrophobic ion pairing to enhance drug lipophilicity, as well as an innovative approach using nanoemulsions to improve drug loading and reduce side effects associated with in vitro precipitation due to poor drug solubility. By using smaller and more targeted dosages, patient compliance can be increased, leading to better patient experiences and treatment adherence. The use of hydrophobic ion pairing can simplify the design and process of drug delivery systems, potentially reducing time and cost and simplifying regulatory requirements, as there is no modification of the drug involve

List all other benefits

- Hydrophobic Ion pairing presents several promising opportunities for drug delivery technologies, including nanoparticle-based drug delivery, modified drug release to increase circulation time, reducing side effects and toxicity, enhancing drug loading, preventing in vitro precipitation issues, and providing a straightforward and less stringent approach for regulatory approval

Biography

In 2009, Dr. Modi completed her Bachelor of Pharmacy and, in 2011, her master's in Pharmaceutical Sciences. She then worked as a Senior Scientist at Lupin Pharmaceuticals. While pursuing a doctorate in Pharmaceutics at Saint Joseph's University, she was working as an Investigator for parenteral drug design and development at GSK, she earned her Ph.D. in 2022. Modi received the Exceptional Science award in 2018 and additional recognition awards at GSK and her published research papers and AAPS PharmSci poster presentations have made significant contributions to the scientific community. Her profound commitment to scientific inquiry propelled her academic and professional accomplishments.

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PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

EU GMP Annex1 Barrier System and PIC/s Annex 2A on Cell and Gene Therapy

The new EU GMP Annex 1 for sterile Manufacturing was published in August 2022. The industry does now have one year time for implementation. Exception loading and unloading for the Lyophilization which provides an implementation time of two years. What does this mean for sterile Manufacturing but also for the Manufacturing of Cell and Gene Products. For Cell and Gene (ATMPs) the PIC/s published in 2021 the Annex 2A for ATMPs and it might be that PIC/s link their Annex 1 with the Annex 2 A which would mean higher requirements also for the manufacturing of ATMPs. The presentation will be focused on Contamination Control Strategy, Barrier Systems as those on of the major new areas to consider.

Audience Take Away Notes

- Comparison between EU GMP Annex 1 and PIC/s Annex 2A
- What to consider when implementation a CCS
- What is the right Barrier Solution for my process

Richard Denk

Senior Consultant Aseptic Processing and Containment, SKAN AG, Allschwil, Switzerland

Biography

Richard Denk is working at the company SKAN AG, headquartered in Allschwil in the position Senior Consultant Aseptic Processing & Containment. Richard is member of the PDA Isolator Expert Group and publisher of the PDA Paper Isolator Surfaces and Contamination Risk to Personnel and Patient. Furthermore, Richard is Member of the ISO TC 198 WG-9 Aseptic Isolator Group. Richard was on the Annex 1 and PIC/s Annex 2 commenting team of the ISPE, Richard founded 12 years ago the Containment expert group of the ISPE D / A / CH. The Containment Group published the Containment Manual Richard was responsible for in September 2015. Richard has spent more than 20 years with the subject on Aseptic Processing and highly active / highly hazardous substances and has developed the containment pyramid.

Dual GIP/GLP-1 receptor stimulation in treatment of type 2 diabetes mellitus – The ground-breaking 'twincretin' approach

The prevalence of diabetes and obesity is an increasing worldwide problem, and is referred to as the twin epidemics. In the physiological context, today we know that native glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide 1 (GLP-1) are incretin hormones that stimulate insulin secretion and decrease glucagon secretion. GIP also has a role in nutrient and energy metabolism, while GLP-1 in addition delays gastric emptying, suppresses appetite and improves state of being sated. Accordingly, glucagon-like peptide 1 aimed pharmacotherapy is a confirmed treatment alternative for the management of type 2 diabetes mellitus (T2DM) and is suggested early in the treatment protocol due to glycaemic efficacy, weight reduction and beneficial cardiovascular outcomes. Glucose-dependent insulinotropic polypeptide, in contrast, was thought to have no potential as a glucose-lowering therapeutic approach. However, co-infusion of GLP-1 and GIP was shown to exhibit a synergetic effect, resulting in notably increased insulin response with preventing further buildup of glucagon. These clarifications have led to the development of a dual GIP/GLP-1 receptor agonist tirzepatide, functionally recognized as a 'twincretin'. Tirzepatide is a recently registered, and a 'first-in-class' novel dual GIP/GLP-1 receptor agonist with potent glucose lowering and weight loss actions. It improves glycaemic control in adults with T2DM, as an adjunct to diet and exercise with an acceptable safety profile. Given the previous facts, the main objectives of this presentation will be to clarify pharmacological properties of tirzepatide, including pharmacodynamics, pharmacokinetics, indications and contraindications for use, adverse drug reactions, as well as the most important drug interactions. This will provide a better understanding of this ground-breaking drug for T2DM, and most likely obesity management, thus helping clinicians in appropriate prescribing and its adequate clinical use.

Miroslav Radenkovic

University of Belgrade, Serbia

Biography

Miroslav Radenkovic, MD, MS, PhD, a full-time professor at the Department of Pharmacology, Clinical Pharmacology and Toxicology, graduated from the Faculty of Medicine – University of Belgrade (FMUB) in 1995, and from 1996 he is working at the FMUB. He received an MS from pharmacology, board certified in Clinical Pharmacology, PhD from Medical Sciences, and a sub-specialization degree in Clinical Pharmacology - Pharmacotherapy in 1999, 2000, 2004, and 2016 respectively, from the FMUB, as well as Bioethics MS in 2021 from the Clarkson University, NYC, USA. From 2002 Dr. Radenković officially participated in several scientific projects supported by the Ministry of Science – Serbia; the Austrian Science Fund; as well as the NIH Fogarty International Center Project, USA. Dr. Radenković is a member of the Ethics Committee of Serbia.

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13-14 MARCH

DAY 02

SPEAKERS

8TH EDITION OF
GLOBAL CONFERENCE ON

PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

Jia-Nan Yan[1], Hai-Tao Wu[1,2,3]*

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[2]National Engineering Research Center of Seafood, Dalian 116034, PR China
[3]Collaborative Innovation Center of Seafood Deep Processing, Dalian 116034, PR China

Colon-specific scallop hydrolysates/κ-carrageenan hydrogel loaded with curcumin alleviates DSS-induced colitis through modulation of inflammatory cytokines and gut microbiota

Ulcerative colitis (UC) is a continual, relapsing inflammatory illness that mainly involves from rectum to sub mucosa. Curcuma (Cur) has been reported as a credible phytochemical component with effective treatment activity against UC, but it is prone to degradation during the digestion process and exhibits a short retention time in the colon. In this case, scallop (Patinopecten yessoensis) male gonad hydrolysate/□-carrageenan (SK) double cross-linking network hydrogels were fabricated as Cur delivery vehicles, exhibiting ideal UC mitigation behavior. The resulting Cur-loaded hydrogels exhibited considerable gel mechanical strength and a homogeneous honeycomb network. With the intervention of dextran sulphate sodium (DSS), the effect of various supplements (SK, Cur and SK-Cur) on modulating colitis in mice was explored. As expected, Cur and SK-Cur supplementation effectively attenuated the clinical symptoms of DSS-stimulated UC mice, reflected by less weight loss, decreased disease active index (DAI) indices, restored colon tissues with longer length and more intact intestinal epithelium, in which SK-Cur intervention manifested superior impact. Moreover, Cur-loaded administration could modulate oxidative stress and inflammatory expression, as indicated by decreased MPO and ions levels, down regulated expression of TNF-α, IL-1β and IL-6 and up regulated expression of IL-10, especially for SK-Cur, suppressing the epithelial to mesenchymal transition and thus alleviating inflammation. Furthermore, SK-Cur formulation regulated the ecological environment of the gut flora of colitis in mice, which was demonstrated by enriched alpha diversity (Shannon, Ace, Chao and Simpson) and restored taxonomic composition with increasing community abundance of Bacteroides and Verrucomicrobia accompanied by decreasing Firmicutes. Collectively, these results confirmed the development of colon-specific drug delivery dietary SK-Cur in vivo, epitomizing the potential protective effect of SK on Cur as a nutritional supplement against colitis and inflammation-related diseases.

Audience Take Away Notes

- This study provides the design and development of functional hydrogels based on scallop hydrolysates and □-carrageenan as effective vehicles for Cur delivery to the colon with a longer retention time and exerting therapeutic effects, further for food, pharmaceutical and biomedical applications
- In comparison to pure Cur, SK-Cur supplementation exhibits better efficacy at relieving the clinical symptoms in DSS-stimulated UC mice reflected by less weight loss, lower DAI values and longer colon length after DSS induction
- SK-Cur hydrogel supplementation reflects effective protection against DSS-induced destruction of the epithelial and mucosal architecture and reveals better preventive effect on pathological variations in the colons of UC mice than the pure Cur treatment
- SK-Cur hydrogel administration could ameliorate colitis partly by suppressing the expression of MPO and ions via oxidative stress modulation and regulating inflammatory responses including TNF-α, IL-1β, IL-6 and IL-10

- SK-Cur hydrogel administration could modulate the intestinal microbiome community of mice accompanying by less pathogenic bacteria composition and exhibit a positive immunomodulation role on DSS-induced UC mice

Biography

Dr. Wu studied Food Science and Engineering at the Dalian Polytechnic University, China and graduated as MS in 2005. She then joined the research group of Prof. Nakamura at the Okayama University, Japan and received her PhD degree in 2008. After graduation, she joined the research group of Academician Zhu and obtained the position of a Lecturer at School of Food Science and Technology in Dalian Polytechnic in University. In 2013, she became an Associate Professor at the National Engineering Research Center of Seafood and became a Professor in 2019. She has published almost 60 research articles in SCI (E) journals.

Francesca Gargano[1]*, Cristina Scavone[2,3], Annalisa Capuano[2,3]

[1]Unit of Anaesthesia, Intensive Care and Pain Management, Department of Medicine, Campus Bio-Medico University of Rome, Italy
[2]Campania Regional Centre for Pharmacovigilance and Pharmacoepidemiology, University of Campania Luigi Vanvitelli, Naples, Italy
[3]Department of Experimental Medicine, University of Campania Luigi Vanvitelli, Naples, Italy

General and local anaesthetic agents: An analysis of their safety data

General and local anaesthetics are widely used during surgical interventions. These drugs have usually associated with mild and reversible local adverse drug reactions (ADRs), but also with more severe and systemic ADRs, including respiratory and cardiovascular depression and anaphylaxis. In light of their peculiar safety profiles, we carried out a descriptive analysis on safety data of general or local anaesthetics contained in the Italian pharmacovigilance database and deriving from Campania Region (Southern Italy) in the last two decades. For this aim, we described their overall characteristics, focusing on the ADRs seriousness and distribution by System Organ Class (SOC) and Preferred Term (PT).

In this descriptive analysis, among relatively few Individual Case Safety Reports (ICSRs) related to general or local anaesthetics, the ADRs occurred in patients with a median age of 48 years and in a slightly higher percentage of men. Almost all ICSRs were sent by healthcare professionals with a poor contribution by patients. The most of ADRs were classified as not serious and with a favorable outcome. In terms of distribution of ADRs by SOC and PT, both general and local anaesthetics were associated with general and cutaneous disorders, with common ADRs that included lack of efficacy, rash, and erythema. Additionally, general anaesthetics were associated with the occurrence of respiratory ADRS, instead local anaesthetics were associated with the occurrence of nervous ADRs.

In conclusion, even though a limited number of ICSRs documenting anaesthetics-induced ADRs were retrieved from the Italian spontaneous reporting database in the Campania region, we believe that the continuous monitoring of these drugs is highly recommended, especially among the frail population.

Audience Take Away Notes

- Post-marketing data on general and local anaesthetics did not show an increase in adverse drug reactions
- The lack of efficacy observed with general and local anaesthetics, which could represent the consequence of clinical errors (e.g. misidentification of ampoules, vials, and syringes), underlines the need of more attention in the anaesthetic procedure/administration by healthcare professionals
- Since general and local anaesthetics are widely used, more Pharmacovigilance activities focused on their safety profiles should be promoted via educational campaigns and addressed to both healthcare professionals and patients

Biography

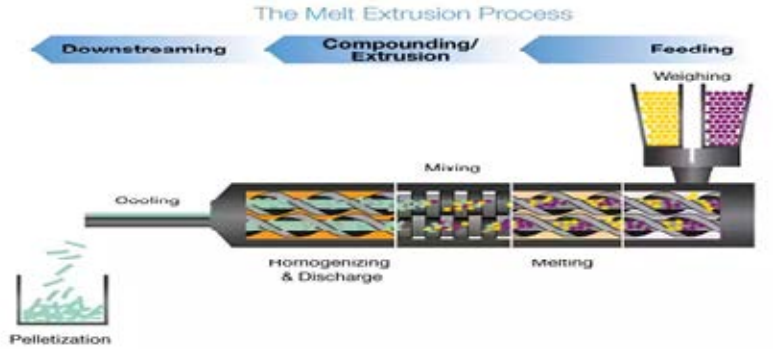
Francesca Gargano graduated in Medicine and Surgery in 2011 and specialized in Anesthesia, Intensive Care and Pain Therapy in 2016 at University of Campania L. Vanvitelli in Naples (Italy). She gained a long research experience in anesthesia and intensive care, focusing on the use and the monitoring of safety profiles of local aneasthetics during surgical procedures in orthopedic field. Since 2016, she obtained a contract for a clinical position at the Unit of Anesthesia, Policlinico Universitario Campus Bio-Medico in Rome (Italy). She has published more than 15 articles in peer-reviewed international scientific journals.

Smita More[1]* and Dhananjay More[2]

[1]Pharmaceutics, PES Modern College of Pharmacy (For Ladies), Savitribai Phule Pune University, Pune, Maharashtra, India
[2]Pharmaceutics, Arrotex Pharma, Pune, Maharashtra, India

Hot melt extrusion technique: A solution for poorly soluble drugs

One of the novel advanced technique established for enhancement of the dissolution rate and bioavailability, controlling or modifying drug release, taste masking, stabilizing the active pharmaceutical ingredient (API) is hot melt extrusion (HME). Combination of Drug, polymer and plasticizer make up the part of the formulation ingredients. During the extrusion process thermal binders can be used. Enhancement of dissolution and further animal study is of importance. One such case study reveals the dissolution enhancement.



Audience Take Away Notes

- HME techniques provides several advantages with major advantage of taste masking for bitter drugs and are acceptable by all age group people
- Yes the concept of poor solubility of drug has gained vast acceptability in several areas of research and so understanding the concept and making it aware by the faculty is of importance

Biography

Dr. Smita More studied Pharmaceutics at Dr. D.Y.Patil College of Pharmacy Pimpri at the Savitribai Phule Pune University, Pune and done PhD from JNTU, Hyderabad. Currently I am working as Associate professor at PES Modern College of Pharmacy (For Ladies) Moshi in department of Pharmaceutics. I have total 17years experience in teaching and research. I have supervised 15 MPharm students and currently guiding PhD students. I have numerous publications and also have done oral and poster presentations.

Lina Hemmeda
Faculty of Medicine, University of Khartoum, Khartoum, Sudan

Patients' access to essential medicines at primary healthcare facilities: A cross sectional study in Khartoum state, Sudan, 2022

Background: Access free essential medicines is a critical component of universal health coverage. However, the availability of essential medicines in Sudan isn't well studied. As well, the majority of Sudanese people lack health insurance, making outofpocket sp ending the primary source of drug financing. Wherefore, affordability of medicines in Sudan is questionable, with only 30% of the total population being covered by a public health service, public health insurance. We undertook this study to assess the ava ilability and the affordability of essential medicines in public sector health facilities in the Khartoum state. Secondly, we also ascertained the quality of storage and inventory management systems in health facilities. Moreover, this study also aim at as sessing patients' perceived accessibility of essential medicines.

Methods: The present study was carried out in 30 primary healthcare facilities drugs dispensaries across three districts in Khartoum state. Within each center dispensary unit, a standardized checklist evaluating the availability and affordability of 22 essential medicines (EMs) selected from Sudan national essential medicines list and assessing their storage conditions. Furthermore, at least 18 patients were selected randomly from each dispensary for an exit interview that assess their perceived accessibility, acc eptability, accommodation, and affordability of EMs. Data was collected through Kobo toolbox and analyzed by SPSS ver26 into tables and figures.

Results: The overall availability of EMs was found to be 36.8%, and that of pediatric drugs was 6.7%. All of e drugs were found to be affordable, except for acetyl salicylic acid and amoxicillin; which consume two days and more than 5 days of the lowest daily salary wage respectively. Moreover, the dispensary area conditions were found to be of good quality, yet the storeroom had a low conservative condition (33.3%). For patients' variables, only 26.7% were having full access. With a low average affordability score (1.5 + 1.1) from an overall score of 4.

Conclusion: Health system needs to be strengthened by making essential medicines available and affordable for patients. Ensuring access to free medicines is likely to better patients' satisfaction about the healthcare services and to reduce private expenditure on medicines towards universal health coverage of Sudan.

Keywords: Essential Medicines, Affordability, Accessibility

Audience Take Away Notes

- Help the audiences recognize Pharmaceutical situations internationally and in Sudan - as a low income country
- Understanding the health insurance scheme effect on the out of pocket pharmaceutical expenditure
- Giving overview about the healthcare system in low income countries, and insights about the developed once
- Understand the adequate primary healthcare storage conditions for the drugs

Biography

Lina Hemmeda is a fifth year medical student from Sudan. Focusing on solution-based actions she found herself melting into leadership and NGOs environment, taking numerous roles as a research and science advocate, and as an activist in evidence based practice. She had over three years of research experience with articles published in pubmed indexed journals.

Nilay Solanki[1]*, Vruti Patel[2]

Department of Pharmacology, Ramanbhai Patel College of Pharmacy, Charotar University of Science and Technology, CHARUSAT Campus, Changa, Gujarat, India

Drug utilization pattern and quality of life assessment in diabetic patients: A hospital based prospective study

Background: Diabetes Mellitus (DM) has impacted 422 million people worldwide and is responsible for around 1.5 million fatalities. Drug utilisation studies and the quality of life of diabetes patients are critical disease management evaluation markers.

Materials and Methods: 180 diabetic patients were included in a prospective study at a multispecialty hospital. In the Case Record Form, demographic data were gathered and drug utilisation pattern were evaluated as per WHO criteria. Using the quality of life questionnaire tool (MDQoL), physical health difficulties, role limitation owing to personal or emotional problems, social functioning, and general health perception were evaluated.

Results: Out of 180 patients, males (n=101) outnumbered girls (n=79) in the current study. The mean age was 58.34 years. During the trial, FBS and PP2BS levels were determined to be 194.1 and 288.40 mg/dl in males and 183.37 and 288.03 mg/dl in females. Metformin was the most often recommended medication, both as a monotherapy and in combination with Glimepiride. The most recommended route of administration was oral. 36 of the individuals in this study were newly diagnosed diabetics. Hypertension, along with neuropathy and retinopathy, was the most frequent comorbidity. Adjuvant therapy included cardiovascular drugs, antiemetic, antibiotics, and vitamin supplements. The majority of respondents to the MDQoL questionnaire reported an improved quality of life.

Conclusion: In patients with uncontrolled diabetes, serious diabetic complications including neuropathy and retinopathy were identified. Patients experiencing palliative effects frequently received metformin as monotherapy.

Audience Take Away Notes

- Drug utilisation studies (DUS) and the quality of life in diabetics
- This study will help audience to understand the details of DUS with specific drugs and its management in DM
- Yes this studies can be expanded through multi hospital data and more insight details can be evaluated

Biography

Dr. Nilay is an Associate Professor at Ramanbhai Patel college of Pharmacy, CHARUSAT, India. He studied Masters in Pharmacology from LMCP, India and completed his Ph.D in the year 2016 from CHARUSAT University, India. He joined the Ramanbhai Patel college of Pharmacy, CHARUSAT and developed his research core in the area of diabetic complication and neuropharmacology. His expertise is in the area of clinical research and preclinical animal model development of various disease conditions special emphasis on diabetes, NAFLD, obesity, Neurodegeneration etc. He has published more than 40 research review papers from scopus and web of science listed journals and completed consultancy projects worth 0.4 million INR. He had received various awards in national conferences and also provided his services as resource persons in national and international conferences in India.

Preeti Sharma
Santosh University, India

Study on yoga practices and biochemical, physical & physiological alterations: A perspective on yoga as preventive strategy against covid 19

Background: During covid pandemic period our home restricted life led to many undesirable physical, physiological and mental alterations. Yoga a traditional system of medicines by virtue of its holistic approach towards health and disease and also due to reasonable cost, the technique has an edge in dealing with health problems and with primary prevention of disease.

Aim: Current study has been designed to assess the effect of short term (for 3 months for 5 days in a week or 40 days) yoga practice on lipid profile, and blood glucose level, CRP and other physical & physiological parameters among healthy subjects

Methods: Students went for yoga practice for 3 months (90 days) for 5 days in a week under the supervision of trained yoga instructor. yoga activity was conducted via Google meet app through broad band connectivity. The procedure began with Surya Namesake (Sun Salutation) with a session of 12 asanas (fixed postures) for 20 minutes, followed by 15 minutes Pranayam (breathing exercise including anulome-vilome, surya bandana, sheetali, and bhramari). Session ended with 10 minutes meditation. Yoga program was started on 27th of September 2020 and ended on 27th of December 2020 after completion of 3 months. Biochemical Investigation (Lipid Profile, FBG, CRP) and physiological parameters (BP, Pulse), and other anthropometric parameters including weight, height BMI reports were collected before 27th September and after 27th December in a period of 5 days after completion of 3 months tenure.

Result: Results of the study clearly indicate fasting sugar, Systolic blood pressure and LDL were significantly decreased (with value < 0.02, 0.007 and 0.001 respectively) in the post yoga phase as compared to pre yoga baseline investigation.

Conclusion: Present study substantiates some good results of the yoga training. Though all the tested parameters could not show desired changes and they were statistically insignificant.

Biography

Motivating and talented Biochemistry Professor, driven to inspire students to pursue academic and personal excellence consistently strive to create a challenging and engaging learning environment in which students become lifelong learners. Exceptional track record of research success with multiple published articles. Dr. Preeti Sharma is currently working as Professor, Department of Biochemistry, Santosh Deemed to be University, Ghaziabad, NCR, Delhi, India, deeply involved in teaching and research. Her area of research has been interdisciplinary including Drug Metabolism, Pharmacokinetics and Inflammatory Markers, Immunology. She did her doctorate research from renowned world class institute 'Central Drug Research Institute', Lucknow, under the aegis of (Council of Scientific and Industrial Research), New Delhi India, in the Department of Biochemistry and awarded Research Fellowship. She has more than 130 publications (research and review articles) with high citation and few in phase of communications. She also wrote 2 books on Bio-organic Chemistry and Basics of Immunology. She is member of various professional bodies and has participated and presented number of papers in national and international conferences. She is frequently invited as

international speaker and currently she is global cooperative research consultant. She is credited with a number of ICMR (Indian council of medical Research)-STS funded projects and has guided and co-guided a number of Ph.D and MD students in the field of Medical Biochemistry. Recently she is awarded International Scientist award in 2020 and research excellence award in 2021, International education award 2021 for his exceptional contribution to research & teaching respective. During the pandemic she has been deeply involved in covid related research. Her contributions to covid-19 research in published in various publications and recently she was awarded Uttar Pradesh Government DGME corona worrier award 2022.

Tarek Aboul-Fadl

Department of Medicinal Chemistry, Faculty of pharmacy, Assuit University, Assuit 71526, Egypt

Thiadiazine-2-thione derivatives as new cell-cycle inhibitors

Cellular growth, development, and differentiation are tightly controlled by a conserved biological mechanism: the cell cycle. Deregulation of the cell cycle is a hallmark of the transformation of normal cells into tumor cells. Given its importance in tumorigenesis, several cell cycle inhibitors have emerged as potential therapeutic drugs for the treatment of cancers-both as single-agent therapy and in combination with traditional cytotoxic or molecular targeting agents. In recent years, the 3,5-disubstituted tetrahydro-2H-1,3,5-thiadiazine-2-thione scaffold have found many biological applications including anti proliferative activity. Accordingly, two series, a and b, of 3-cyclopentyl or (3-cyclohexyl)-5-substituted-3,4,5,6-tetrahydro-2H-1,3,5-thiadiazine-2-thiones (THTT) 2a-9a and 3b, 4b, 6b-9b, were synthesized to develop new cell cycle inhibitors. Variable and promising in vitro anti proliferative activities were shown with the synthesized THTT derivatives. Compound 5a with a 5-cyclopentyl group on position-3 and a glutamine residue on position-5 of the THTT moiety showed maximum activity (IC50= 8.98 μM). Compound 5a possessed notable cell cycle disrupting and apoptotic activities with enhanced selectivity against cancer cells, suggesting the potential for the development of new selective cell cycle inhibitors. In addition, a pharmacophore based study was performed to explain the biological activity on structural bases. A successful model was generated with a good correlation with the observed activity.

Audience Take Away Notes

- Potential of Structure based drug design for drug discovery and development
- Opening the windows for global scientific collaborations
- Improvement of the accuracy of drug design and provide new information to assist in solving drug design problems
- Searching for new leads to overcome of global disaster

Biography

Prof. Tarek Aboul-Fadl has completed his PhD in Medicinal Chemistry from Assiut University, Egypt (1994) under the channel system and joint supervision scheme between Assiut University and Josai University/Japan. He performed his postdoctoral training as a postdoctoral research fellow and scientist of Pharmaceutical and Medicinal Chemistry at University of Vienna, Austria (1997- 1998), Friedrich-Alexander-Universität, Erlangen-Nürnberg, Germany (1999 and 2013) and University of Utah, USA (2001-2002 and 2004-2005). He has over 77 publications and 4 patents that have been cited over 1880 times, and his publication H-index is 23(google_scholar). He awarded ACDIMA Research Award for the Best Scientific Research in Arab World, 2012.

Paula A. Oliveira[1,2], Ana I. Faustino-Rocha[1,3,4]*

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[2]Department of Veterinary Sciences, University of Tras-os-Montes and Alto Douro (UTAD), Vila Real, Portugal
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[4]Comprehensive Health Research Center, Evora, Portugal

Chemical carcinogens: An overview

A carcinogen in any agent able to cause cancer in humans or animals, increases cancer incidence or malignancy, or shortens the latency period. A chemical is considered carcinogenic after being intensively studied by researchers and after one or more agencies evaluated the evidence and determined if it is able to cause cancer.

According to the International Agency for Research on Cancer (IARC), the chemicals may be categorized in: Group 1 - carcinogenic to humans (the evidence is sufficient); Group 2A - probably carcinogenic to humans (mainly for experimental carcinogens with limited data to humans; Table 2); Group 2B - possibly carcinogenic to humans (mainly for experimental carcinogens with less than limited evidence from humans andless than sufficient evidence from animals); and Group 3 - not classifiable as to its carcinogenicity to humans (for agents that do not fall into any other category). Considering the difficulties in testing substances' carcinogenicity above, most of the substances are classified as probably, possibly carcinogenic, or not classifiable, and approximately 100 chemical compounds are classified as carcinogenic to humans. Environmental pollutants from industries, residences, and vehicles and chemical effluents from industry are among the chemical carcinogens listed by IARC, and the list has been continuously updated.

The chemical carcinogens, namely N-methyl-N-nitrosourea, N-butyl-N-(4-hydroxybutyl) nitrosamine, among others, have been used to induce cancer development in animal models of disease, mainly in rodents.

Audience Take Away Notes

- Present a list of chemical carcinogens
- Types and mechanisms of action of chemical carcinogens
- Animals models using chemical carcinogens

Biography

Ana Faustino is Professor at Department of Zootechnics of University of Évora and Researcher at CITAB/UTAD. She 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.

Andreia Freitas[1,2]*, Marta Leite[1,2,3], Jorge Barbosa[2], Fernando Ramos[2,3], Sara Leston[2,4]

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[2]REQUIMTE/LAQV, Oporto, Portugal
[3]University of Coimbra, Faculty of Pharmacy, Health Science Campus, Coimbra, Portugal
[4]Centre for Functional Ecology), University of Coimbra, Coimbra, Portugal

Multi-detection of pharmaceutical contaminants in food and environment matrices

All stakeholders involved in the food production are becoming increasingly concerned about how animal production affects the health of people, animals, and environment in an One Health approach. The ongoing use of pharmaceuticals in animals used for food production is one of the causes contributing to this unfavorable condition since it might result in the accumulation of harmful residues in both the environment and food products. Pharmaceuticals, for both humans and animals, are continuously released into the environment through wastewater treatment facilities, runoff from extensive livestock production, and the unrestricted use of manure, which can lead to the presence of these contaminants in ecosystems. Due to the harmful consequences they may have on the health of people, animals, and the environment, these emerging pollutants are a reason for concern worldwide. One of the effects of antibiotic misuse is the emergence and spread of bacterial strains that are resistant to antibiotics.

The best matrices for assess the anthropogenic contamination should include environmental matrices including water, algae, and sediments since they can act as significant bioindicators of contaminants.

Multi-detection and multi-class methods based on ultra-high performance liquid chromatography coupled with a high-resolution mass spectrometry detector, time-of-flight, have been developed and validated to detect the presence of pharmaceutical compounds in food (milk, muscle, fish), water, algae, and sediments. The developed methods were validated to evaluate the detection capability of the methods and the precision, recovery, linearity, selectivity and specificity were also evaluated to demonstrate their applicability of the methods. This multi-detection analytical approaches have the possibility of keeping a digital print, meaning that it allows the results to be re-evaluated in the future to search for untargeted compounds at the moment.

Audience Take Away Notes

- Understand the problematic of contamination with pharmaceutical compounds and how they can occur
- Possibility of knowledge improvement concerning the drugs mostly found and persistent in the environment
- Understand the relevance of analytical information to be used on the definition of levels that might pose risk for human, animal and environmental health
- Provide knowledge about the analytical strategies that can be used to map the contaminations to report what are the persistent pharmaceutical contaminants nowadays
- Optimize methods to analyse manure used in agriculture

Biography

Andreia Freitas studied Chemistry in the Instituto Superior Técnico (IST), Lisbon, and graduated as MS, in Analytical Chemistry (2008) at the same institution. She received her PhD degree in Pharmaceutical Sciences (2015), specialty of Bromatology and Hydrology at the Faculty of Pharmacy, University of Coimbra. With more than 18 years of experience, she is currently a researcher in the field of Food Safety specially in the area of veterinary drug residues analysis and contaminants in food of animal origin in the Nacional Institute of Agrarian and Veterinary Research (INIAV) in the National Reference Laboratory for Food Safety.

John K Maesaka
NYU Langone Hospital Long Island, United States

New pathophysiologic approach to hyponatremia yields revolutionary results, identification of natriuretic protein that causes renal salt wasting and new syndrome of renal salt wasting in Alzheimer's disease

The approach to hypernatremia is in a state of flux, especially in differentiating syndrome of inappropriate secretion of antidiuretic hormone (SIADH) from cerebral-renal salt wasting (RSW) because of diametrically opposite therapeutic goals of water-restricting in SIADH and administering saline in RSW. We differentiated SIADH from RSW by utilizing an algorithm based on fractional excretion (FE) of urate and failure of isotonic saline infusions to dilute the urine or correct the hypernatremia in SIADH as compared to excretion of dilute urines and correction of hypernatremia in RSW. We also identified the natriuretic factor we previously demonstrated in neurosurgical patients with RSW and in Alzheimer's disease (AD).

Results: Of 62 hyponatremic patients, (A) 17 patients (27%) had SIADH, 11 were nonresponsive to isotonic saline, and 5 normalized a previously high FEurate after correction of hyponatremia; (B) 19 patients (31%) had a reset osmostat based on normal Fuertes and spontaneously excreted dilute urines; (C) 24 patients (38%) had RSW, 21 had no clinical evidence of cerebral disease, 19 had saline-induced dilute urines; 2, 10 required D5W to prevent rapid increases in serum sodium to prevent osmotic demyelination, 11 had persistently increased FEurate after correction of hyponatremia. (D) 1 patient had Addison disease with a low FEurate and (E) 1 patient (1.6%) had hyponatremia due to hydrochlorothiazide. We identified haptoglobin related protein without signal peptide (HPRWSP), the first potent inhibitor of proximal tubule sodium transport, as the natriuretic factor in a patient with RSW and in AD.

Conclusions: RSW is much more common than is perceived with 21 of the 24 patients with RSW lacking evidence of cerebral disease, supporting our proposal to change cerebral salt wasting to RSW.HPRWSP can serve as a biomarker for RSW to simplify diagnosis of RSW on first encounter, direct proper therapy, improve clinical outcomes and identifying a new syndrome of RSW in AD. Development of an inhibitor to HPRWSP will more effectively treat patients with RSW. HPRWSP will more effectively treat congestive heart failure when combined with a distal diuretic.

Rachana
Department of Biotechnology, JIIT Noida, UP, India

Exploring various categories of phyto pharmaceuticals against old and emerging viral diseases

Since antient time human beings have been utilizing herbs as rich source of natural medicines. In the modern world, majority of the population trust allopathic medicines to treat most of the diseases without realizing that, plenty of the modern day's medicines are also obtained from natural resources. Plants produce secondary metabolites for their own survival and immunity and human civilization has explored the plants to obtained medicines to treat various old and emerging diseases. We have experienced the importance of these herbs in the COVID time when most of us were relying on natural products for our survival. There are various other important issues to be handled by the medical community such as: multi drug resistance for microbe and cancer etc. It has been observed that microbes mostly are not able to develop resistance against plant based natural products. There are various mechanisms of action associated with these herbs and a generalized mechanism being their antioxidant natures. Other than this they also act at specific molecular targets to control or manage the diseases and disorders. Most of the time the purified molecules obtained from these plants are not that efficient in comparison to their crude formulations, in fact the different components of such formulations work in synergy and have less or no side effect in contrast to the modern day's medicines or pure molecules. Various traditional systems of medicine like from China and India already have various natural products included in their daily routine and diet-plan which keep protecting a large population against the diseases. In the present various herbs such as: traditionally used Ocimum, Azadirachta, Curcumin and Withania have been discussed for their role against old and emerging viral diseases.

Biography

Dr Rachana is working as Professor at Department of Biotechnology, JIIT Noida, UP, India. She has completed her Masters from IIT Roorkee and Doctorate from IIT Bombay. Her lab is working the field of analyzing mechanism of action pf natural products and development of advanced formulations from the natural products. She has more than 48 international article publications and 15 chapters, 2 books, 2 Plant monographs and has been invited to various conferences and seminars as invited and keynote speaker.

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Physicochemical, phytochemical, HPTLC and antioxidant study of medicinal plant drug Butea monosperma

Butea monosperma (Family Fabaceae) popularly known as 'dhak' or 'palas', commonly known as 'Flame of forest' is an important plant and is extensively utilized for lac cultivation. Butea monosperma is found in countries like India, Bangladesh, Nepal, Pakistan, Sri Lanka, Myanmar, Thailand, Laos, Cambodia, Vietnam, Malaysia, and western Indonesia. The main active constituents of Butea mono sperma is oreopsin, isocoreopsin, sulphurein, butein, butin, isobutrin, mono spermoside and isomono spermoside, aurones, chalcones, flavonoids (palasitrin, prunetin) and steroids. It has strong antioxidant, hepatoprotective, anthelmintic, anti-diabetic, anti-stress, antifungal, astringent, aphrodisiac, laxative properties. It acts as anti-diarrheal and anti-inflammatory drug. Butea monosperma traditionally used for the treatment of piles, eye diseases, inflammation, diseases of the anus, dysentery, hydrocele, ulcers, tumours, dysmenorrhea, liver disorder, gonorrhoea and it also purifies the blood. Butea monosperma flower and seeds are consumed by children as remedy against intestinal worms. Its leaf & flower used as an appetizer, astringent, carminative, anthelmintic, aphrodisiac, tonic, lessens inflammation and lumbago, cures boils and piles. Also helps to cure cough, cold and stomach disorders. Butea monosperma gum is astringent to bowel, good in stomatitis, cough, pterygium, corneal opacities and cures excessive perspiration, goitre of human being and body swellings. Its bark is acrid, bitter, appetiser, aphrodisiac, laxative, anthelminthic properties. Present study reveals the results of Physiochemical, Phytochemical and High Performance Thin Layer Chromatography study of Butea monosperma flower. The result of Physiochemical study, LOD (2.85%), Total Ash (5.43%), Alcohol extractive values (13.26%), Water extractive values (29.00%), and Total solids (3.30%), Wt/ml (0.92g) and Alcohol content (53.2%). In UV Spectroscopy ⊔max. Observed at 325nm in in-house sample. HPTLC analysis of chloroform extract of in-house sample was performed by using toluene ethyl acetate (9:1, v/v) as mobile phase. Visualizing under UV light (254 nm), five spots appear at Rf. 0.21, 0.32, 0.65 and 0.71 (all brown). Under U.V light (366nm), six spots appear at Rf. 0.21(brown), 0.28(yellow), 0.32(brown), 0.48(blue), 0.60(blue) and 0.70(brown). After derivatization with Anisaldehyde Sulphuric acid reagent at 366 nm five spots appear at Rf. 0.21, 0.32 , 0.42, 0.68 and 0.70 (all blue) which confirms the presence of active constituent in Butea monosperma flower extract. The present physicochemical, phytochemical and HPTLC data are to be considered as monograph of pharmacopoeial standards for aforesaid drug.

Audience Take Away Notes

- Yes Audience will learn about Drug standardization parameter for natural medicinal plant drug for checking safety, therapeutic efficacy and quality of the drug
- Yes The present research will help the industry and researchers and scientist to set parameters for drug standardization study for natural medicinal plant drugs, which will be beneficial to maintain batch to batch accuracy of manufactured drug
- Yes the present research may open the area of vast research opportunities on medicinal=Plant biochemistry and become useful for the faculty to expand their research in the field of natural's medicinal plant chemistry and motivates audience to do further research in natural medicinal plant

- Yes it helps in the quantitative estimation of natural medicinal plant drugs should be carefully evaluated and quantified to determine the presence of active compounds in these drugs which are responsible for the overall pharmacological activity of the medicine
- Yes The presence of active constituents in mother tincture suggests that the mother tincture of medicinal plant drugs contained specific active compounds which justify its medicinal usage in complementary medicine and the reason for a cure and healing properties of these medicines

List all other benefits

- The present studied plant Butea monosperma is an important plant and is extensively utilized for lac cultivation. Butea monosperma acts as anti-diarrheal and anti-inflammatory drug and traditionally used for the treatment of piles, eye diseases, inflammation, diseases of the anus, dysentery, hydrocele, ulcers, tumours, dysmenorrhea, liver disorder, gonorrhoea and it also purifies the blood

Biography

Dr. Rakhi Mishra studied Chemistry at Delhi University, India and post graduated as MSc. (chemistry) in 2015. She then joined the Drug standardization, Department of chemistry, DDPR CRI (H) Ministry of AYUSH, Government of India. She completed her PhD degree in 2023 at Amity University Noida, India. She has more than 7 year's research experience in the field of analytical chemistry & Natural medicinal plant chemistry. She has published more than 30 research articles in international and national journals, abstract books/souvenirs of conferences.

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Revolution of transdermal Patches: A novel drug delivery system

As an alternative to traditional needle injections, a number of non-invasive administrations have lately surfaced. The least unattractive approach among them is a transdermal drug delivery system (TDDS), which has a low rejection rate, excellent ease of administration, and outstanding patient convenience and persistence. Additionally, the elderly patients need specific attention when it comes to drug delivery, drug interactions, and drug adherence. Patients with chronic neurological illnesses, in particular, may require numerous drug administrations throughout the day to maintain stable plasma medication levels, which raises the risk of noncompliance. In order to establish a constant rate of drug distribution, numerous attempts have been undertaken to design pharmacological formulations. However, the physicochemical characteristics of the skin result in a number of challenges and limitations for transdermal distribution, and several studies have been done to address these bottlenecks. In this review, we present the various types of TDDS (Transdermal Drug delivery system) approaches that are now available and critically examine the benefits and drawbacks, characterisation techniques, and potential of each method. The high efficiency of TDDS has been demonstrated by advancements in research on these alternative methodologies, and it is anticipated that TDDS will find use in a variety of industries.

Audience Take Away Notes

- The development of TDDS technology is widely acknowledged as the development of a mass delivery methodology, making it the preferred drug injection modality for transdermal delivery across the spectrum of skin types while avoiding first-pass metabolism and other sensitivities connected to various alternative drug administration routes
- Through TDDS, drugs are typically consistently and securely administered, and they remain secure and biochemically stable up until they reach the target region. Drugs may be distributed uniformly at predetermined and controlled rates with TDDS since it is noninvasive, nonallergenic, and has a predetermined duration and dose delivery technique
- The bioavailability of medications with low absorption is being improved by numerous new and old formulations through simple administration routes that enable big dosages to be given over an extended period of time. Because it may enhance drug delivery through topical channels, the TDDS technology is expanding quickly in the pharmaceutical industry and has been successful in gaining critical value in the market for biomedical applications
- Because transdermal administration delivers prolonged therapeutic plasma levels of medicines, is easy to use, and may lessen systemic adverse effects, it is the optimal therapeutic method for chronic neurological illnesses in elderly persons
- Several transdermal delivery systems are now being researched for the treatment of neuropathic pain, Parkinson's disease, and Alzheimer's disease
- The US Food and Drug Administration (FDA) has received multiple reports of adhesional failure for transdermal drug delivery devices through the Drug Quality Reporting System (DQRS). It is expected that in transdermal patches the adhesive will maintain a bond with the skin, once the release liner has been removed and deliver therapeutic action to the skin without causing any kind of skin irritation

- In this presentation, we will also focus is primarily on the utilization of adhesives in the fabrication of dermal patches, tests to determine the efficacy of adhesives, and possible adhesion failures of transdermal patches

Biography

Dr.Niharika is working as Associate Professor in Metro college of Health sciences and Research, Greater Noida. She is Ph.D, M.Pharm in Pharmaceutics, has 7 years of teaching and research experience. She has 7 years of teaching experience of diploma, bachelors and postgraduate students. She is having total 25 publications in international journals, and many of her articles are indexed in Scopus and SCI journal. During her Ph.D she has worked on 'Design and characterization of Acrylic Pressure sensitive adhesive based Transdermal therapeutic system to which she has been appreciated by Departrment of Polymer Sciences, IIT Kharagpur. Her area of interest is Transdermal Drug delivery and Gastroretentive drug delivery.

Kandekar Ujjwala[1]*, Gore Chaitrali[1], Munot Neha[2], Pandit Ashlesha[1], Khandelwal Kishanchand[1], Patil Neha[1], Chaudhari Pravin[3]

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Flaxseed mucilage/HPMC and sodium alginate/polyvinyl alcohol composite bilayer film as a promising drug carrier for periodontal treatment

The present study focused on formulation of mucoadhesive bilayer composite films for the treatment of periodontitis and evaluation of its physicochemical properties. The primary layer was prepared by flaxseed and HPMC composite to sustain the release of doxycycline hyclate. Second layer comprised of sodium alginate and PVA composite for faster release of clove oil. Bilayer film was prepared by casting second layer on primary layer. ATR-FTIR results showed the intactness of drug and clove oil in the presence of excipients. The pH of the films was found to be compatible with periodontal cavity and thickness of the film was suitable to insert in periodontal cavity. The immediate release layer showed faster disintegration and swelling. Content of clove oil was above 80%. The rate of swelling of primary layer was found slow and drug content complies as per the United States Pharmacopoeia. SEM analysis revealed intact, non-porous and smooth films. The films exhibited better mechanical strength and bio-adhesiveness. Clove oil was released from the immediate release layer within 10 min. and doxycycline hyclate release was retarded minimum up to 8 h in primary layer as well as bilayer. The formulation also showed significant effect on both E-coli and S. aureus. The prepared bilayer formulation can be effectively used for the treatment of periodontitis.

Audience Take Away Notes

- Periodontal diseases are most spreading clinical condition all over the globe. Current research work was aimed to develop the targeted therapy for the treatment of periodontitis
- By targeting to the periodontal area, the side effect associated with the oral treatment will be eliminated, besides more specific targeting will be achieved along with reduction in dose. Other faculties have scope to explore other drugs and polymers to target the periodontal cavity
- Audience will understand the formulation and evaluation aspects regarding preparation of periodontal film and they can procced research in similar line. If this research work is explored further for in-vivo testing grants can be fetched to carry out research work

Biography

Dr. Ujjwala Y. Kandekar graduated from Sinhgad College of Pharmacy, Pune, Maharashtra, India. She had completed her post-graduation from Dr. D. Y. Patil Institute of Pharmaceutical Education and Research, Pune, Maharashtra, India. Then she joined Jawaharlal Nehru Technological University, Anantapur, Anantapuramu, Andhra Pradesh, India in 2017. Currently she is working as Associate Professor at JSPM'S Rajarshi Shahu College of Pharmacy, Pune, Maharashtra, India. She had contributed in two book chapter published by CRC press and published 14 research papers and presented 9 posters in various conferences.

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POSTERS

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PHARMACEUTICS AND NOVEL DRUG DELIVERY SYSTEMS

Yue Liu[1]*, Ka Sin Lui[1], Zuodong Ye[1], Tsz Yan Fung[1], Luo Chen[2], Ping Yiu Sit[1], Chin Yu Leung[1], Nai Ki Mak[1], Ka-Leung Wong[2], Hong Lok Lung[2], Yoshimasa Tanaka[3] and Allen Ka Loon Cheung[1]

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EBV latent membrane protein 1 augments γδ T cell cytotoxicity against nasopharyngeal carcinoma by induction of butyrophilin molecules

Nasopharyngeal carcinoma (NPC) is a diverse cancer with no well-defined tumor antigen, associated with oncogenic Epstein-Barr Virus (EBV), and with usually late-stage diagnosis and survival <40%. Current radio- and chemotherapy have low effectiveness and cause adverse effects. In this regard, adoptive immunotherapy using □□ T cells has potential if enhanced expression of butyrophilin molecules can be achieved in the NPC.

Methods: Human γδ T cells were expanded (with Zol or PTA) and used for cytotoxicity assay against NPC cells, which were treated with the EBV EBNA1-targeting peptide (L2) P4. Effect of (L2) P4 on BTN2A1/BTN3A1 expression in NPC cells was examined by flow cytometry and Western blot. An NPC-bearing NSG mice model was established to test the effectiveness of P4 and adoptive γδ T cells. Immunofluorescence was performed on NPC tissue sections to examine the presence of γδ T cells and expression of BTN2A1 and BTN3A1. EBV gene expression post-(L2) P4 treatment was assessed by qRT-PCR, and the relationship of LMP1, NLRC5 and BTN2A1/BTN3A1 was examined by transfection, reporter assay, Western blot, and inhibition experiments.

Results: Zol- or PTA-expanded the V□2 subset of γδ T cells that exerted killing against certain NPC cells. (L2) P4 reactivates latent EBV, which increased BTN2A1 and BTN3A1 expression and conferred higher susceptibility towards Vδ2 T cells cytotoxicity in vitro, and enhanced tumor regress in vivo by adoptive Vδ2 T cells likely due to P4 induced expression of BTN2A1 and BTN3A1 in the tumors. Mechanistically, (L2) P4 induced EBV LMP1, leading to IFN-γ/p-JNK and NLRC5 activation and subsequent expression of BTN2A1/BTN3A1.

Conclusions: This study demonstrated the effectiveness of using the EBV-targeting probe (L2) P4 and adoptive γδ T cells as a promising combinatorial immunotherapy against NPC. The identification of the LMP1-IFN-□/p-JNK-NLRC5-BTN2A1/BTN3A1 axis may lead to new insight and therapeutic targets against NPC and other EBV+ tumors.

Audience Take Away Notes

- A better understanding of the mechanism of nasopharyngeal carcinoma and related immunotherapy methods
- Learn about the possibility of γδ T cells in immunotherapy for nasopharyngeal cancer
- The understanding of the mechanism that P4-induced LMP1 can trigger BTN2A1/BTN3A1 axis has the potential for future development as a combinatorial immunotherapy with adoptive γδ T cells in treating NPCs and other tumors

Biography

Yue Liu is a PhD student currently studying in the Department of Biology at Hong Kong Baptist University.

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Development and validation of quantitative analysis using head space gas chromatographic method [HS-GC] of genotoxic impurity bromoethane in vigabatrin drug substance

A specific HS-GC method has been developed, optimized, and validated for the determination ofgenotoxic impurity Bromoethane in Vigabatrin (VGB) drug substance. Chromatographic separation of genotoxic Bromoethane impurity was achieved on DB-1 column (30m × 0.53 mm, 5.0 µm), consists of 100% dimethyl polysiloxane as stationary phase and passing nitrogen carrier gas. The performance of the method was assessed by evaluating the specificity, linearity, sensitivity, precision, and accuracy experiments. The established limit of detection and limit of quantification values for the genotoxic impurity was in the range of 3.57–10.80 µg/ mL. The correlation coefficient value of the linearity experiment was 0.9880. The average recoveries for the accuracy were in the range of 95.3–106.8%. The results proved that the method is suitable for the determination of Bromoethane content in Vigabatrin.

Audience Take Away Notes

- Audience will get exposed to new method development for quantitative analysis of genotoxic impurity Bromoethane in Vigabatrin drug substance
- New method can be used for evaluation of impurity by HS-GC
- Yes, this work could be used to expand their research and training
- Validation of this method worked in this research article will provide great accuracy of quantitative analysis for reliable quantitative analysis of the impurity

Biography

Narapereddy Krishna Prasad has completed his master's degree in Pharmacognosy from Manipal college of pharmaceutical science, Manipal University. He is currently working as Senior Formulation Scientist in Research and Development, Reckitt Benckiser LLC. He has more than 10 years of industrial research and development experience at both Formulation and Analytical chemistry.

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