

Scholars International Conference & Exhibition on

PHARMACEUTICS & DRUG DELIVERY RESEARCH 21-22 March 2022 | Dubai, UAE

Theme: "Exploring the Challenges in Pre & Post Formulations and Drug Delivery Systems"

Sponsor



Hosted By: Victor Oliver | Program Manager Pharmaceutics 2022 SCHOLARS CONFERENCES LIMITED 21 Clifton Road, Newcastle Upon Tyne, England, United Kingdom, NE4 6XH pharmaceutics@scholarsconferences.org +447426060443

SCIENTIFC PROGRAM

Day 1 | March 21, 2022 | In-Person 08:00-09:00 Registrations 09:00-09:15 Opening Ceremony

KEYNOTE FORUM

09:15-09:50	Title: Next-Gen innovations to bring targeted HIV and cancer combination therapies that are long- lasting and accessible: A case study of New Paradigm in Academic Public-Private Partnership Redney He University of Washington USA
	Title: Open Innovation in Life Sciences: from Theory to Industrial Implementation
09:50-10:25	Mohamad Haitham Avad, Johnson & Johnson UAF
	Title: The ocular anti-inflammatory CBD nanoemulsion safety challenge
10:25-11:00	Simon Benita, Hebrew University of Jerusalem, Israel
	Networking and Refreshments Break @ 11:00-11:20
11.00.11.55	Title: Considerations and approaches in Drug Targeting Delivery Systems in cancer
11:20-11:55	Heyam Ali, Pharmaceutics University of Khartoum, UAE
11.55 12.20	Title: In-vitro and in-vivo models of cardiac ischemia: Past and Future
11:55-12:50	Julie Laloy, University of Namur, Belgium
12.30-13.05	Title: Will be updated soon
12.00-10.00	Claus Geiger, Gameta Pharma Consulting, Germany
	Lunch @ 13:05-13:45
West Street	Title: Better medicines for special patient populations: Leveraging human characteristics and
13:45-14:20	dosage form designs
11 B.C.	Nelio Drumond, lakeda, Germany
	Scientific Sessions
14.20 14.45	Provise and a second se
14:20-14:45	Promosomes Rang Sammaur, Dubai Pharmacy College for Girls LIAE
	Title: The promising use of nano-molecular imprinted templates for improved SARS-CoV-2 detection
14:45-15:10	drug delivery and research
	Alaa Nahhas, King Abdulaziz University, KSA
	Title: Interaction of amylin species with Copper
15:10-15:35	Mawadda Alghrably, King Abdullah University of Science and Technology, KSA
	Special Sponsor Session
15.25 16.15	Title: Marinosolv® - The technology platform for novel aqueous formulations
15:55-10:15	Cornelia Siegl & Susanne Bach, Marinomed Biotech AG, Austria
	Networking and Refreshments Break @ 16:15-16:35
	Title: Tumor-targeted fluorescent proteinoid nanocapsules encapsulating synergistic drugs for
16:30-16:55	personalized cancer therapy
	Ella Itzhaki, Bar Ilan, Israel
16:55-17:20	Litle: Antibody-Drug Conjugates Used in Breast Cancers
	Aram Abbas, Damascus University, Syria
	Litle: Chlorotorm-Injection (CI) and Spontaneous-Phase-Iransition (SPI) are Novel Methods;
	Simplifying the raprication Liposomes with versatile Solution to Cholesterol Contents and Size

17:20-17:55 Distribution

Muhammad Ijaz Khan, University of Swabi, Pakistan

17:55-18:20

Title: Multivariate Analysis Correlation of Oral Biofilm Growth Inhibition and Hydrophobicity: A Study on Streptococus mutans, Streptococcus sanguinis, Lactobacillus acidophilus and Actinomyces viscosus

Diyah Tri Utami, Sekolah Vokasi UNS, Indonesia

Day 01 Ends

	Day 2 March 22, 2022 Virtual	
REYNOTE F	OROM	
09:30-09:55	Title: CBD New Technologies with Enhanced Therapeutic Activity Elka Touitou, The Hebrew University of Jerusalem, Israel	
09:55-10:20	Title: Structure - Function Relationship of Lipid-Based Excipients in Advanced Pharmaceutical Sharareh Salar-Behzadi , Research Center Pharmaceutical Engineering GmbH, Austria Title: Can a proper physical characterization of lipid nanoparticles provide accurate information's	
10:20-10:45	on their performance? Rita Cortesi, University of Ferrara, Italy	
10:45-11:10	Title: The Prevention Of Viral Particles In Nano-Liposomic Aerosol Form By Herbal Molecules	
	Networking and Refreshments Break @ 11:10-11:25	
	Scientific Sessions	
11:25-11:45	Title: New Nanoparticle Formulation for Cyclosporin A: In-Vitro Assessment Mariana Varna-pannerec, University of Paris-Saclay, France Title: Impact of polymor type, ASD logding and polymor drug ratio on ASD tablet divintegration	
11:45-12:05	and drug release Wei Zhang, Genentech, USA	
12:05-12:25	Title: Improved efficiency of pomegranate seed oil administrated nasally Hiba Natsheh, Hebrew University of Jerusalem, Israel	
12:25-12:45	Title: Will be updated soon Yuki Akagi, Tokyo University of Agriculture and Technology, Japan	
	Networking and Refreshments Break @ 12:45-13:00	
13:00-13:20	Title: Will be updated soon Mariam LOUIS, EVA Pharma, Egypt	
13:20-13:40	Title: Drug release mechanisms from coated pellets: How non-invasive analytical tools can help to comprehend them	
13:40-14:00	Title: Ethosomes for transdermal delivery of natural antioxidant molecules: Design and activity on 2D and 3D skin models	
	Maddalena Sguizzato, University of Ferrara, Italy	
	Poster Presentations	
14:00-14:20	Title: Dual delivery of doxorubicin and plant-based compounds from Mangifera indica L. for synergistic cancer therapy against hepatocellular carcinoma Pakatip Ruenraroenasak , Mahidol University, Thailand	
14:20-14:40	Title: Does megaloblastic anemia lead to psychosis? A single-center study from saudi arabia Hanaa Wafaa, King Abdulaziz University, KSA	
14:40-15:00	Title: Melatonin Improves Endoplasmic Reticulum Stress-Mediated IRE1? Pathway in Zucker Diabetic Fatty Ra	
15:00-15:20	Samira Aouichat, University of Granada, Spain Title: A Review on the Conceptualization of Treatment for Psoriasis Using a 'Green' Surfactant' Ignatius Dinshaw, University of Malaya, Malaysia	

15:20-15:40	Title: Will be updated soon	
	Federica Giuzio, University of Basilicata, Italy	
Scientific Sessions		
15:40-16:00	Title: Gene therapy – affordability, access, and reimbursement	
	Brian Huber, ICON, USA	
16:00-16:20	Title: Will be updated soon	
	S. M. FARID HASAN, Karachi University, Pakistan	
16:20-16:40	Title: How to improve safety and antitumoral activity of a new Platinum (IV) compound	
	Taher Nassar, The Hebrew University of Jerusalem, Israel	
	Day 02 Ends	



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Innovative therapies and unique solutions

Solving the un(dis)solvable

Company Profile Marinomed

Marinomed Biotech AG

Marinomed is an Austrian Biotech company specializing in the development of innovative products based on its IP protected technology platforms. Under the brand Solv4U, Marinomed provides Marinosolv® formulation development in technology partnerships for active ingredients at all stages of drug discovery and lifecycle extension. Marinosoly® enables the solubilization and bioavailability of small molecules and peptides hardly soluble in aqueous formulations. Consequently, new treatments of a multitude of diseases can be envisaged. Marinosolv® technology facilitates efficient drug delivery with a low systemic off-target activity. Exsting drugs and off-patent active ingredients can be improved and re-patented as part of new formulations using Marinosolv®. It has been clinically shown that Marinosolv® allows a pronounced reduction in the amount of an API in a formulation with an improved therapeutic effect suggesting a more targeted, more precise, and more sustainable treatment compared to existing options. The development of hydrophobic highly active compounds is often hampered by their low local and systemic bioavailability resulting in excessively high dosing of the drug to compensate for the lack of efficacy. Solv4U partnerships address this inherent challenge in drug development and rely on a clinically proven technology. Formulations based on Marinosolv® are well-tolerated when administered locally or systemically allowing various applications in different indications. The patented Marinosolv® technology offered to Solv4U partners is based on micelles and is customized for individual compounds to achieve an optimal formulation.

Platforms

Marinosolv



The Marinosolv® technology platform increases the efficacy of hardly soluble compounds for the treatment of sensitive tissues such as the eyes and nose.

The Carragelose®

platform comprises

innovative products to

treat viral infections of

the respiratory tract.



Solv4U technology partnerships support formulation development of Active Pharmaceutical Ingredients (APIs) based on the Marinosolv® technology platform.

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SCHOLARS INTERNATIONAL CONFERENCE AND EXHIBITION ON

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KEYNOTE SPEAKERS (In-Person) Day 1





Rodney JY Ho University of Washington, USA

Next-Gen innovations to bring targeted HIV and cancer combination therapies that are long-lasting and accessible: A case study of New Paradigm in Academic Public-Private Partnership

The advances in medical and pharmaceutical sciences have enabled translation of knowledge in biomedical discoveries of physiologic, cellular molecular and genetic abnormalities into drug and vaccines for treatment and prevention. The collective response of scientists in academic, governments and pharmaceutical companies to collaborate to leverage on the accumulated "know-how" have made the Covid-19 vaccines and antiviral therapies that are now approved under Emergency Use Authorization (EUA) the US Food and Drug Administration. Many of the pharmaceutical and technological advances accumulated over the years, including drug/protein/DNA/ RNA/CAR-T cell formulation, delivery and scale up as well as regulatory and clinical sciences in translation of concept into pharmaceutical and vaccine product, have allowed rapid deployment of Covid-19 vaccine and anti-viral product scaling, non-clinical and clinical evaluation programs as well as product launch logistics world-wide. Even with the best effort, Covid-19 mono-drug therapy is not 100% effective. In the case of Hepatitis C treatment, a combination of at least 2 drugs is needed to eventually clear the virus in the liver. Most of the cancer (e.g., breast and pancreatic) types would need multiple drugs given in sequence or a combination to reduce the rate of progression and recurrence. In the case of HIV, which exhibit high viral sequence mutation rate, and unlike Covid-19 (SARS-Cov-2), effort to develop an effective vaccine for HIV continue to elude us. While 2 or 3 HIV drug combination in a one-pill-a-day dosage can reduce the HIV virus levels to undetectable in the plasma, the patient must take daily pills of multiple drugs for life. Pill stoppage will lead to nearly immediate rebound within a week or so and at risk of progression to AIDS. With the discovery and demonstration that oral dosage forms of multiple HIV drugs have limited localization and retention in HIV host cells. our research team at TLC-ART (Targeted-Long acting Therapeutic) program has discovered a novel platform technology to co-localize drug combination into HIV host cells, which are concentrated in lymph nodes and lymphoid tissues. With support from NIH public and private sources, our TLC-ART team has taken systems approach to develop a drug combination nanoparticulate platform technology targeted to HIV host and metastatic cancer cells under an innovative regulatory path to human testing. The research findings and innovations-including developmental and regulatory processes necessary in translation of the short-acting oral drug combinations into long-acting injectable dosage forms targeted to HIV hosts and cancer cells will be presented.

Biography

Dr. Ho is a professor and presidential entrepreneurial fellow of the University of Washington, and holds appointments at the Fred Hutchinson Cancer Research Center. He is also an expert on pharmacology and systems approaches to drug targeting and long-acting therapy. His research aims to improve the therapeutic efficacy and safe-



ty of viral and cancer drugs, medical diagnostic agents and vaccines. He is an elected fellow of the American Association for the Advancement of Science (AAAS) and the American Association of Pharmaceutical Scientists (AAPS). He studies the relationships between drug target distribution and disease development in cancer, AIDS, and neurological disorders. Building on this understanding, he has developed a systems approach to drug delivery and targeting. He is known for his expertise in bio-therapeutics, lipid-drug and -protein interactions, liposomes, drug-combination nanoparticles, pharmacokinetics, and the interplay between tissue targets and drug penetration. His research has led to enhanced HIV, cancer, and pain medication potency and safety. In addition, he is an editor of the Journal of Pharmaceutical Sciences and the author of "Biotechnology and Biopharmaceuticals: Transforming Proteins and Genes into Drugs." He has also received top honors including the Paul Dawson Biotechnology life-time achievement award and the AAPS Biotechnology Research achievement, one of the AAPS's highest recognitions.





Mohamed Haitham Ayad Johnson & Johnson, UAE

Open Innovation in Life Sciences: from Theory to Industrial Implementation

The dramatic reduction of pharmaceutical R&D efficiency over time resulted in only 16% of drug candidates entering clinical testing make it to regulatory approval, at an overall cost estimated approximately at \$2.6 Billion. The traditional "All in house" business model is no more the dominant way for discovering new innovative products as 70% of the pharmaceutical industry's new sales today come from drugs originated from the Open Innovation model.

Naturally, this multipart innovation model created new complexity and challenges that need to be addressed for efficient collaboration. This Paper explains the Open Innovation model, the benefits for both Industry and Academia and explains the steps and criteria of establishing a successful collaboration.

It is becoming universally acceptable that working in Open Innovation collaborative model is a key success factor to meet the global health challenges as no single organization, private or public, will be able to face them alone.

Biography

Mohamad Haitham Ayad is a State Registered Pharmacist from the University of Damascus, Syria. He holds a Master's Degree in Pharmaceutical Technology from the University of Bordeaux, France.

Working several years in different pharmaceutical companies in technical research and development, he gained substantial broad experience in Drug Delivery and Formulation Development of oral dosage forms from early preclinical stage to late commercial scale production.

Currently, Dr. Ayad is working at Johnson & Johnson, Dubai, as Manager & R&D Fellow - Manufacturing Science and Technology (MS&T). He is in charge of technology transfer of commercialized products and supporting their manufacturing. In addition, he is Innovation Ambassador for London Innovation Center to scout external opportunities in MENA region.

Before Joining J&J, he worked for several pharmaceutical companies in Switzerland and in France where he was in charge of the development projects of oral dosage forms from the preformulation stage until the scale-up at manufacturing location.

Dr. Ayad filed three patents and published three Research Articles in the field of Formulation Science. In addition, he was invited speaker in several international conferences in the Pharmaceutical Development and Innovation fields.





Simon Benita Hebrew University of Jerusalem, Israel

The ocular anti-inflammatory CBD nanoemulsion safety challenge

Cannabidiol is a highly lipophilic and labile phytocannabinoid, effective in many diseases. However, a scarce number of studies evaluated its potential in ocular inflammatory states. In addition, a controversy on its use for ophthalmic purposes arose after some researchers reported its negative impact on intraocular pressure (IOP) while others in the past, showed no effect or a decrease in this parameter. Thus, the aims of the present study were first to develop a stable and suitable, purified CBD ocular delivery system since its physicochemical properties do not allow a simple incorporation into conventional aqueous eye drops. Then, evaluate its potential therapeutic effect on an ocular inflammation model and lastly, assess the impact of the optimal formulations on the IOP.

CBD nanoemulsions were therefore designed and optimized to meet ocular physiological require-

ments. Stability of the compound was resolved by adding a specific antioxidant to the final formulation. Further, experimental LPS induced keratitis exhibited the anti-inflammatory effect of CBD utilized at high concentrations, from 0.4% to 1.6% w/v, while lower concentrations did not show any impact on the inflammatory markers analyzed. Interestingly, the CBD therapeutic concentrations in that model, were also the ones that decrease or did not impact the IOP measured on murine eyes, while the lower concentration of 0.16%w/v increased it, leading to a bell-shaped dose-response curve.

In conclusion, our results show for the first time, that CBD could be considered as a potential treatment for ocular surface inflammatory disorders, provided that an adequate dose-response range is identified in humans.

Biography

Simon Benita is a Professor at The Hebrew University of Jerusalem, where he received his Ph.D. in Pharmaceutics (1980). His research is focused on nano delivery technologies aimed at improving the therapeutic performance of active ingredients. He has published 162 research articles, 21 book chapters, edited 3 books and been issued more than 40 patents/patent applications. He is the former Head of the School of Pharmacy (2010-2014) and a serial entrepreneur. He received the Hebrew University's Kaye Innovation Award in 2000, 2005 and again in 2014. Prof. Benita is Knight in the National Order of Merit of France (2012).





Heyam Saad Ali Pharmaceutics University of Khartoum, UAE

Considerations and approaches in Drug Targeting Delivery Systems in cancer

This talk is meant to address molecular targeted drug delivery founded on Pharmaceutical nanotechnology which generates the new tools in Nano medicine platform. These include nanomaterials & Nano devices, which have significant applications in Nano medicine such as: Development advanced potential targeted delivery system, therapeutic and diagnostics in various diseases & their theranostic applications.

The drug targeted delivery systems have unique features in achieving self-regulation and timely controlled responses which could monitor the drug targeting delivery through pH and other spatial targeting schemes. This system delivers a certain quantity of a therapeutic Nano-drug for longevity of its action to targeted area within the human tissue, which in turn enhances the therapeutic efficacy and reducing the side effects.

There are some considerations should be taken into account in designing a successful targeted drug delivery system such as the appropriate selection of the suitable platform in Nano-medicine, biological and physiological barriers, variety of immunological Responses and body interactions, when the drug administered into the body. In addition to that, the critical and of significant impact in cancer therapy issues are the strategies to achieve drug delivery targeting. Those include various approaches such as: Physical, Internal and external targeting stimuli. Furthermore, the selection of the suitable and appropriate platform Nano-carrier from various Nano-carriers is one of the major and fundamental points in drug targeting to the cancerous tissues or cells, such as a nanoparticles, polymeric micelles, dendrimers, liposomes, etc. as targeted delivery system. Moreover, the associated health risks associated with the medical nanotechnology applications in different diseases available till present.

Biography

Heyam Saad Ali, She used to work as a head of pharmaceutics department in Dubai Pharmacy College, UAE. Currently, she is working in University of Khartoum, Faculty of Pharmacy, Pharmaceutics Department, Prof. contributed more than 70 articles to reputed international scientific journals and invited as speaker in many conferences. The subjects of interest include: different types of conventional, controlled and targeted drug delivery systems in nanotechnology, pharmaceutical product development, Quality control, Quality assurance and GMP in pharmaceutical industry. She has been invited as speaker to numerous International conferences. In, addition of being Editor, Reviewer and member of editorial board of many international journals develop





Julie Laloy University of Namur,

Namur Research Institute for Life Sciences (NA-RILIS), Belgium.

In vitro and in vivo models of cardiac ischemia: Past and Future

Myocardial ischemia-reperfusion injury is a frequent event in the clinic. To avoid myocardial irreversible injury (like infarction), causes of ischemia need to be removed within 20 minutes after onset. Many drugs for cardiac disease treatment have demonstrated promising results in preclinical studies but the benefits cannot be demonstrated in large clinical trials. It appears thus important to identify the failure to translate developed promising drugs from preclinical studies to practice. It can be attributed to the reliance on cell and small animal models of preclinical studies, and to pathogenesis mechanism of ischemia-reperfusion injury not fully understood.

For animal model, they cannot fully recapitulate human cardiac physiology due to limitation of using nonreperfused myocardial infarction and reperfused myocardial infarction. For in vitro models, isolated cardiomyocytes allow studies of the direct effect of therapeutics on cardiomyocytes with easy management of external factors in simulated ischemia-reperfusion impacting mechanisms that drive ischemia-reperfusion injury. But these models present limitations due to the lack of adult cardiac stem cells availability and the low turnover of mature cardiomyocytes. Some promising new models are under development like cardiomyocytes derived from human induced pluripotent stem cells that are more resistant to hypoxia than the mature cells, tissue engineering platforms to promote cardiomyocyte maturation, or 3D cell culture for a more predictive physiologic response.

Thereby, the development of more relevant in vitro and in vivo models of cardiac ischemia-reperfusion are thus necessary to facilitate translation from research into clinical practice.

Biography

Julie Laloy is an assistant professor affiliated with the Department of Pharmacy, University of Namur (UNamur) in Belgium. She has a master degree in biomedical sciences (specification in toxicology) and holds a doctoral degree in Ex vivo and in vivo evaluation of the potential toxicity of manufactured nanoparticles (Ph.D.). She has an expertise in preclinical assessment of nanodrugs for treatment of neuronal and cardiovascular diseases. Her research focuses on 3 topics, namely (i) the development, characterization and safety assessment of nanomedicine (in vitro and in vivo), and (ii) hemo-compatibility of nanoparticles/nanomedicine, and (iii) in vivo toxicology after inhalation of particles.





Claus Geiger Gameta Pharma Consulting, Germany

Biography

Claus Geiger is Pharmacist, PhD, MBA and various Expert Qualifications (e.g. Qualified Person) Professional Experience: Worked for global pharma companies for about 30 years Started career at Roche (Basel, Switzerland), and joining Sanofi in 1997. Since then has held various roles in the field of injectable drug delivery systems for biotherapeutics with expanding responsibility: QA/ QC, Manufacturing, Supply Chain, Key Account Management of device partner companies, Global Medical Device Surveillance. Present position: Global Device Project Leader and Drug Device Integrator Special interests: Pioneering new fields in biotherapeutics such as Drug Device Integration during Research & Development phase, gaining new insights and learnings in biotherapeutics and Drug Delivery Device technologies, building and forming new concepts, processes and establishing cross-functional diverse teams.





Nélio Drumond Takeda Pharma, Germany

Better medicines for special patient populations: Leveraging human characteristics and dosage form designs

Oral drug administration provided as Solid Oral Dosage Forms (SODF) remains the major route of drug therapy in primary and secondary care. There is clear evidence for a growing number of clinically relevant swallowing issues (e.g., dysphagia) in the older patient population, especially when considering the multimorbid, frail, and polymedicated patients. Swallowing impairments have a negative impact on SODF administration, which leads to poor adherence and inappropriate alterations (e.g., crushing, splitting). Different strategies have been proposed over the years in order to enhance the swallowing experience with SODF, by using conventional administration techniques or applying swallowing aids and devices. Nevertheless, new formulation designs must be considered by implementing a patient centric approach in order to efficiently improve SODF administration by older patient populations. Together with appropriate SODF size reductions, innovative film coating materials that can be applied to SODF and provide swallowing safety and efficacy with little effort being required by the patients are still needed. Scientific evidence demonstrating the benefits of given SODF coating materials in the concerned patient populations are still very limited. Consequently, the availability for safe, effective, and clinically proven solutions to address the increasing prevalence of swallowing issues in the older patient population is still limited

Biography

Nélio Drumond is a PharmD by training with a PhD in Patient Centric Drug Product Design. He shares several years of experience in the Pharmaceutical Industry providing scientific leadership to govern the formulation and manufacturing aspects of drug product development projects during clinical stages, including their scalability and validation for commercial use. Currently, Dr. Drumond is responsible for the oversight of commercial manufacturing activities conducted at different Contract Manufacturing Organizations (CMOs) within the European region for a portfolio of Takeda products.



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Rana M.F. Sammour

Dubai Pharmacy College for Girls, UAE

Effect of Different Carriers on *In vitro* and In vivo Drug Release Behavior of Aceclofenac Proniosomes

Improved bioavailability of Aceclofenac may be achieved through proniosomes, which is considered as one of the most effective drug delivery systems and is expected to represent a valuable approach for the development of a better oral dosage form as compared to the existing product. However, the carrier in this system plays a vital role to control the drug release and modulate drug dissolution. Accordingly, a comparative study between different carriers can give clear ideas on the selection of carriers to prepare Aceclofenac proniosomes.

This study aims to evaluate the role of maltodextrin, glucose, and mannitol as carriers on in vitro and in vivo performance of Aceclofenac proniosomes.

Three formulations of proniosomes were prepared by the slurry method using different carriers, i.e., Glucose (FN1), Maltodextrin (FN2), and Mannitol (FN3). In vitro, drug release studies were conducted by the USP paddle method, while in vivo studies were performed in albino rats. Pure Aceclofenac was used as a reference in all the tests. Lastly, the results were analyzed using the High-Pressure Liquid Chromatography (HPLC) method, and data were evaluated using further kinetic and statistical tools.

In in vitro drug release studies, the dissolved drug was found to be 42% for the pure drug, while 70%, 17% 30% for FN1, FN2, and FN3 respectively at 15 min. After 24 hrs, the pure drug showed a maximum of 50 % release while 94%, 80%, 79% drug release were observed after 24 hr for FN1, FN2, and FN3, respectively. The in vivo study conducted using albino rats showed a higher Cmax and AUC of FN1 and FN2 in comparison with the pure ACE. Moreover, the relative oral bioavailability of proniosomes with maltodextrin and glucose as carriers compared to the pure drug was 183% and 112% respectively. Mannitol based formulation exhibited low bioavailability (53.7%) may be attributed to its osmotic behavior.

These findings confirm that a carrier plays a significant role in determining in vitro and in vivo performance of proniosomes and careful selection of carrier is an important aspect of proniosomes optimization.

Biography

Rana M.F Sammour has completed her MPharm and PhD in Pharmaceutical Technology.

She is working as an assistant professor in Dubai Pharmacy College in the Pharmaceutics department. She has published many researches in international conferences and journals. The interest of her researches is mainly in drug development and novel drug delivery systems.

The aim of her studies is to explore the role of the novel delivery systems in improving the pharmacokinetics parameters of drugs.





Alaa Nahhas King Abdulaziz University, KSA

The promising use of nano-molecular imprinted templates for improved SARS-CoV-2 detection, drug delivery and research

Molecular Imprinting (MI) is a technique that creates a template of a molecule for improving complementary binding sites in terms of size and shape to a peptide, protein, bacteria, mammalian cell, or virus on soft materials (such as polymers, hydrogels, or self-assembled materials). MI has been widely investigated for over 90 years in various industries but is now focused on improved tissue engineering, regenerative medicine, drug delivery, sensors, diagnostics, therapeutics and

other medical applications. Molecular targets that have been studied so far in MI include those for the major antigenic determinants of microorganisms (like bacteria or viruses) leading to innovations in disease diagnosis via solid-phase extraction separation and biomimetic sensors. As such, although not widely investigated yet, MI demonstrates much promise for improving the detection of and treatment for the current Coronavirus Disease of 2019 (COVID-2019) pandemic as well as future pandemics. In this manner, this review will introduce the numerous applications of MI polymers, particularly using proteins and peptides, and how these MI polymers can be used as improved diagnostic and therapeutic tools for COVID-19.

Biography

Alaa F. Nahhas's degrees are in biochemistry from the King Abdulaziz University (B.S., 2006) and in biomedical engineering and biotechnology from University of Massachusetts (Ph.D., 2017). She currently serves as an Assistant Professor of Biochemistry at King Abdulaziz University.





Mawadda Alghrably

King Abdullah University of Science and Technology, KSA

Interaction of amylin species with Copper

Protein aggregation has attracted substantial interest because of its role in causing several illnesses, such as neurodegenerative diseases and type II diabetes. Recently, it has been shown that protein aggregation can be prevented by forming metal ion complexes with a target protein, which affects their conformation and physical properties. Thus, understanding the interactions between aggregating molecules and metal ions is beneficial for new drug discovery.

Human Islet Amyloid Polypeptide (hIAPP) or human amylin, is known for its complementary role to insulin, in maintaining blood glucose levels in the human body. hIAPP has a high tendency to aggregate, this characteristic is primarily associated with type II diabetes. On the other hand, hIAPP analogues, Pramlintide, and Rat amylin are known to be resistant to aggregation due to

the presence of proline residues, which are usually β -sheet "breakers" within their amino acid sequence.

Here, we will introduce hIAPP and its analogues. Then, we will show my work on the investigation of Cu^{2+} coordination properties of pramlintide and rat amylin using nuclear magnetic resonance. Furthermore, we will provide some results of thioflavin T assays and TEM, that shows the influence of Cu^{2+} on the aggregation properties of these analogues.

We find that both peptides form stable complexes with Cu²⁺ with similar affinities. The N-termini of both peptides are involved in Cu²⁺ binding; His18 imidazole is an equally attractive binding site in the case of pramlintide. Our results show that Cu²⁺ ions influence the aggregation of pramlintide, but not that of rat amylin.

Biography

Mawadda Alghrably is a PhD candidate at King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia. She obtained her Master's degree in Cellular and Molecular Biology from the same university in 2019. She works currently with professor Mariusz Jaremko, her work is focusing on understanding and describing the biological phenomena which rule the protein folding and dynamics, as well as the behavior of peptides under different conditions, using NMR spectroscopy and other biophysical tools.





Cornelia Siegl Marinomed Biotech AG, Austria

Marinosolv[®] strongly increases solubility and thereby enables enhanced bioavailability of hydrophobic small molecules and peptides. Consequently, more efficient treatments of a multitude of diseases can be envisaged. Marinosolv[®] technology facilitates targeted drug delivery with a low systemic off-target activity. Existing drugs and off-patent active ingredients can be improved and re- patented as part of new Marinosolv[®] formulations.

Saponins (e.g., Escin, Glycyrrhizin) and Dexpanthenol form micelles in a buffered aqueous solvent. They are self-forming in aqueous solutions having a hydrophobic core and a hydrophilic outside. The different constituents of the Marinosolv[®] matrix are individually composed for an optimized formulation of each drug substance adapted to a specific indication and application form such as topical, oral or systemic.

Several ex-vivo studies of fluorescently labeled estradiol dissolved in Marinosolv[®], as model compound, showed remarkable amounts of estradiol in porcine cornea compared to estradiol suspension. To substantiate these findings In-vivo studies were conducted in mice and pigs with budesonide and tacrolimus, two potent anti-inflammatory compounds. For both substances enhanced permeation into the target tissue was shown and both substances were successfully clinically tested. A placebo-controlled Phase II to assess safety and efficacy of two different doses of tacrolimus in a crossover design, and a pivotal challenge chamber study designed to demonstrate efficacy and faster

onset of action of budesonide exposing allergic subjects to grass pollen. Under the brand Solv4U, Marinomed provides Marinosolv® formulation development technology partnerships for APIs at all stages of drug discovery and for lifecycle extension.

Biography

Cornelia Siegl is project manager at Marinomed Biotech AG since 2015 and has since then concentrated on the development of the Marinosolv® technology platform, thereby creating IP protection of the technology. Her primary objectives were focused on solubility and stability studies of well-known active pharmaceutical ingredients, that are currently marketed as suspension, due to their low water solubility and / or their poor stability in aqueous formulations. Some of these substances were then chosen for a potential product development for a dedicated indication, resulting in formulation development for clinical phases. During clinical development and for market product development she is responsible for manufacturing process development and validation together with and at the CDMO's. Cornelia Siegl also leads the technical team for Solv4U formulation development partnerships based on the Marinosolv® technology.





Ella Itzhaki Bar Ilan, Israel

Tumor-targeted fluorescent proteinoid nanocapsules encapsulating synergistic drugs for personalized cancer therapy

Personalized cancer treatment based on specific mutations offers targeted therapy and is preferred over "standard" chemotherapy. Proteinoid polymers produced by thermal step-growth polymerization of amino acids may form nanocapsules (NCs) that encapsulate drugs overcoming miscibility problems and allowing passive targeted delivery with reduced side effects. The arginine-glycine-glutamic acid (RGD) sequence is known for its preferential attraction to $\alpha\nu\beta3$ integrin, which is highly expressed on neovascular

endothelial cells that support tumor growth.

Here, tumor-targeted RGD-based proteinoid NCs entrapping a synergistic combination of Palbociclib (Pal) and Alpelisib (Alp) were synthesized by self-assembly to induce a reduction of tumor cell growth in different types of cancers. The diameter and size distribution of the hollow and drug encapsulated polyRGD NCs used for the present work were 34 ± 5 and 22 ± 3 nm, respectively, thereby their drug targeted efficiency is due to both passive and active targeting. The encapsulation yield of Pal and Alp was 70 and 90 %, respectively. In vitro experiments with A549, MCF7 and HCT116 human cancer cells demonstrate a synergistic effect of Pal and Alp, controlled release, and dose-dependence. Preliminary results in a 3D tumor spheroid model with cells derived from patient-derived xenografts of colon cancer illustrate disassembly of spheroids, indicating that the NCs have therapeutic potential. Additional in vivo PDX mice experiments illustrated a significant reduction of tumor volume and reduced side effects compared to free drugs and hollow P(RGD) NCs. These results show the potential of the loaded NCs to stabilize cancerous tumors into becoming a chronic disease. This stabilization can greatly improve the survival rate of cancer patients.





Aram J. Abbas Damascus University, Syria

Antibody-Drug Conjugates Used in Breast Cancers

The prognosis of breast cancer has radically changed in recent years and continues to improve due to the broad application of effective therapies. New targeting strategies including targeted delivery of cytotoxic drugs via receptor-targeting agents have been developed. I summarize recent developments of novel Antibody-Drug Conjugates (ADCs) used to control breast cancer.

Biography

Aram Abbas is a medical student at Damascus University. He has some publications in the medical field, and he hopes to participate more in enriching the medical literature in the future.





Diyah Tri Utami Sebelas Maret University, Indonesia

Multivariate Analysis Correlation of Oral Biofilm Growth Inhibition and Hydrophobicity: A Study on Streptococus mutans, Streptococcus sanguinis, Lactobacillus acidophilus and Actinomyces viscosus

Objective(s): This study was aimed to determine the correlation of oral biofilm growth inhibition and Hydrophobicity Streptococus mutans, Streptococcus sanguinis, Lactobacillus acidophilus and Actinomyces viscosus in effect of essential oil (eugenol, C-10 Massoia lactone, thymol, cinnamaldehyde and zerumbone)

Material and methods: The oral biofilm growth was evaluated using the crystal violet staining. The hydrophobicity of the strains was evaluated by the adhesion to hexadecane

Results: The result showed that biplot graphic indicated phenolic compound (eugenol and thymol) had the grouping. Furthermore, hydrophobicity test had positive correlation with biofilm inhibition growth. The angle of the graphic between the hydrophobicity test and the growth inhibition is less the 45°C. This indicated the greater the planktonic growth inhibitory activity, the larger reduction in hydrophobicity.

Conclusion: Correlation analysis showed that the hydrophobicity test had positive correlation with biofilm inhibition growth.





Muhammad Ijaz Khan Quaid-i-Azam University, Pakistan

Chloroform-Injection (CI) and Spontaneous-phase-transition (SPT) are Novel Methods; Simplifying the Fabrication Liposomes with Versatile Solution to Cholesterol Contents and Size Distribution

Statement of the Problem: Intricate formulation methods and/or use of sophisticated equipment limit the prevalence of liposomal dosage-forms. Simple techniques are developed to assemble amphiphiles into globular lamellae while transiting from immiscible organic to the aqueous phase. Methodology & Theoretical Orientation: Various parameters are optimized by injecting chloroform solution of amphiphiles into the aqueous phase and subsequent removal of the organic phase. Further simplification is achieved by reorienting amphiphiles through a spontaneous phase transition in a swirling biphasic system during evaporation of the organic phase under vacuum. Findings: Although the chloroform injection yields smaller size and PDI yet spontaneous phase transition method overrides simplicity and productivity. The size distribution of liposomes and solid/solvent ratio in both or any phases of formulation show direct relation. Surface charge dependant large unilamellar vesicles with a narrow distribution have PDI <0.4 in 10 µM saline. As small and monodisperse liposomes are prerequisites in targeted drug delivery strategies. Hence the desired size distribution <200 d.nm and PDI <0.15 is obtained through serial membrane-filtration method. Phosphatidylcholine/ water 4 µmol/ml is achieved at a temperature of 10°C below the phase-transition temperature of phospholipids ensuing suitability for thermolabile entities and high entrapment efficiency. Both methods furnish the de-novo rearrangement of amphophiles into globular lamellae aiding in the larger entrapped volume. The immiscible organic phase facilitates faster and complete removable of the organic phase. High cholesterol content (55.6 mol%) imparts stability in primary hydration medium at 5+3°C for 6 months in light-protected type-1 glass vial. Conclusion & Significance: Collectively the reported methods are novel, scalable, time-efficient vielding high productivity in simple equipment.

Biography

Mr. Muhammad Ijaz Khan is Assistant Professor in the Department of Pharmacy University of Swabi, KPK, Pakistan, He served various Pharmaceutical industries for 14 years before joining the academia. His professional skills include formulation development of various dosage forms, their validation and scale-up to commercial batch production. He has keen interest in natural medicines and their targeted delivery strategies. His research interest areas include neuroprotectives regimens for neurodegenerative diseases. He believes in targeted drug deliveries to overcome toxicities and improve amelioration. His key interests include monocytes mediated drug cargo to the brain in the treatment of neurodegenerative diseases. Unconventionally, he believes in the simplification of complicated scientific approaches to make them available for global humanity.



PHARMACEUTICS AND DRUG DELIVERY RESEARCH



Figure1 Comparison of CI and SPT liposomes produced with optimized parameters and without sizing a: CI method b: SPT method c: Z-av and PDI of unsized CI-liposomes d: Z-av, and PDI of unsized SPT-liposomes e: SEM image of unsized CI-liposomes f: SEM image of unsized SPT-liposomes



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Elka Touitou The Hebrew University of Jerusalem, Israel

CBD New Technologies with Enhanced Therapeutic Activity

Cannabidiol (CBD) is a non-psychoactive component of cannabis. The molecule is used in the treatment of numerous illnesses including pain, inflammation and epilepsy. However, due to its low bioavailability, there is a need for new approaches to better deliver this molecule. We have designed and investigated a portfolio (IP) of breakthrough technologies answering the need for new efficient cannabinoid pharmaceutical products for treatment of serious ailments. The new cannabinoid compositions are aimed for administration by various routes including nasal, oral and dermal/ transdermal. The nasal dosage forms have the unique property of a quick onset of action allowing administration of high doses of cannabinoid. The oral technology is effective shortly after administration and remains efficient for a period of at least ten hours. CBD transdermal system acts as a reservoir for the active molecule upon application on the skin, enabling prolonged and efficient treatments. The novel technologies, being efficient and safe, are an important advance in the design of new topical and/ transdermal cannabinoid products. By such a versatility of novel dosage forms, we answer unmet needs enabling enhanced efficiency of cannabinoids for various treatments. The feasibility of these novel technologies was tested in vivo in pharmacokinetic studies and in animal models for various ailments.

Biography

Elka Touitou is the Head of Dermal. Transdermal. Transmucosal Delivery Lab at The Hebrew University of Jerusalem. She is an internationally recognized authority in the field of drug delivery and design of novel and advanced technologies for delivery of cannabinoids and for drug dermal/ transdermal and nasal delivery research. She has served as a member in the Board of Directors of Controlled Release Society (CRS) and as President of the ICRS (Israeli Controlled Release Society). She has more than 100 scientific original research papers, reviews, books editorial and chapters. Prof. Touitou received numerous awards including the Kaye Innovation Award 2006 and 2020, as one of the leader innovators at the Hebrew University. She is the inventor of more than 50 granted international patents. She is in the Scientific Advisory Board of several startups and dermal and cosmetic companies.





Sharareh Salar-Behzadi

Research Center Pharmaceutical Engineering GmbH, Austria

Structure - Function Relationship of Lipid-Based Excipients in Advanced Pharmaceutical Manufacturing

The following three factors play an important role on the gradually increased expenses of global pharmaceutical R&D: a) rising number of new FDA approvals in the recent years, b) increased awareness of pharmaceutical companies of the sustainability of their production, c) increased awareness of the specific requirements of patients as individuals. These trends are closely associated with the demand for innovative and robust dosage forms with stable performance. Using excipients with desired functionality is the key parameter for realizing this demand. In this context, lipid-based excipients (LBEs) have been increasingly applied due to their advantages such as being naturally occurring materials, low-toxic, biocompatible, and easily available. The serious challenge, however, is their unstable solid state, which affects the stability and robustness of pharmaceutical products.

In this work, the structure-function relationship of LBEs and its effect on the performance of pharmaceutical products are discussed. Moreover, the ideal properties of LBE are defined from molecular to macroscopic level, taking a group of advanced LBEs as an example. Case-studies are shown to discuss their functionality as matrix agents and solubility enhancer in preparation of stable nano-lipid suspensions, spray-dried engineered particles, lipid-based extruded filaments and 3D-printed forms for a variety of pharmaceutical dosage forms.

Biography

Sharareh Salar-Behzadi is assoc. professor at the department of pharmaceutical technology and biopharmacy, University of Graz, and key researcher at Research Center Pharmaceutical Engineering GmbH, Graz, Austria. She studied pharmacy and received her PhD from University of Vienna in pharmaceutical formulation and process development.

Her interest is in pharmaceutical material science, solid state, structure-function analysis of pharmaceutical excipients, with a focus on lipid-based drug delivery systems, particle engineering for different routes of administration and patient-centric product development.





Rita Cortesi University of Ferrara, Italy

Can a proper physical characterization of lipid nanoparticles provide accurate informations on their performance?

Nanomedicine and nanosized drug transporters have applications in many pharmaceutical areas, such as vaccine, antibacterial, diagnostics, imaging and gene delivery using different ways of administration. Taking into consideration the composition, properties, and physical parameters of lipid nanosystems, some important techniques involved in their characterization, such as Cryo-TEM, SEM, X-ray, dynamic light scattering, sedimentation field flow fractionation, optical microscopy and zeta potential measurements, can be compared and discussed.

The techniques presently available strongly help the comprehension of the structure, the behaviour and the stability of the produced nanosystems. Therefore, the choice of the most suitable technique for their characterization appears to be very important in order to correctly investigate a nanosystem. However, the modalities of interaction between the nanosystem matrix and the loaded molecules still represent open questions concerning the selectivity, reliability, and reproducibility of each method.

Indeed, researchers are increasingly aware of what needs to be measured. Therefore, for significant progress to be made toward this goal, much more effort is needed to establish testing criteria, validate efficacy, and accumulate safety data. Obviously, the accuracy and resolution of many techniques need to be further improved, hoping that the data here described will help define which ones are worth the effort for further technical improvements.

Biography

Rita Cortesi graduated in Pharmaceutical Chemistry and Technology and reached PhD in Pharmaceutical Sciences at Ferrara University. She attended a HMC Post-doc fellowship at Pharmaceutical Sciences Department of Nottingham University in 1995, and stayed at Ferrara University as assistant professor up to 2008 when she became associate professor. In 2014 she obtained the gualification on role of Full Professor on Pharmaceutical Technology. Her work focuses on pharmaceutical nanotechnology strategies. Other interests are on the use of natural antioxidant molecules for cosmetic application. She is the author of over 150 scientific papers considering articles in international journals, book chapters and patents.





Ozan Emre EYUPOGLU Istanbul Medipol University, Turkey

The Prevention Of Viral Particles In Nano-Liposomic Aerosol Form By Herbal Molecules

Aerosol particle films are dispersed in the Z space direction according to the orbital coordinates with a collision energy of 0.3 eV per atom on the alumina substrate surface through the nebulizer nozzle (<4 μ m), taking into account the structure and physical properties, size distribution and morphology of the particles, as well as Langevin dynamics and Monte Carlo pore width. The volatile herbal molecules absorbed into the cartridge effective liposomal nanofiber filter technology were sent with aerosol particles on the respiratory fluids and gases in the magnetic field created against gravity formed with a copper cable wrapped in a combined silicon nanowire

transistor coil, simulating the change of covid-19 virulence. Extracts containing herbal molecules in nebulized aerosol form in nano liposome were successful with 90% efficiency on virulence. Viral particle propagation was also pictured with thermal cameras.

Biography

Ozan Emre Evupoglu is an Assistant Professor in School of Pharmacy at Istanbul Medipol University, İstanbul, Turkey He received his PhD Degree from Graduate School of Natural & Applied Sciences, Chemistry (Biochemistry), Karadeniz Technical University, Turkey in 2017. His area of interest includes Health Sciences. Medicine. Basic Medical Sciences, Biochemistry, Biophysics, Biomolecules, Proteomics and Biological Spectroscopy. He has published number of researches and conference articles about the chromatographic analysis and antioxidant activities of medicinal plants in reputed journals. He is closely related to topics such as artificial intelligence, machine learning, and innovative techniques, and plans studies for processing biochemical data for disease diagnosis. He is an interdisciplinary scientist who specializes in developing on-line chromatographic methods. He supervised 2 Master degree candidates who are making thesis on the coagulation system and aromatherapy recently



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Mariana Varna University of Paris-Saclay, France

New Nanoparticle Formulation for Cyclosporin A: In Vitro Assessment

Cyclosporin A (CsA) is a molecule with wellknown immunosuppressive properties. As it also acts on the opening of mitochondrial permeability transition pore (mPTP), CsA has been evaluated for ischemic heart diseases (IHD). However, its distribution throughout the body and its physicochemical characteristics strongly limits the use of CsA for intravenous administration. In this context, nanoparticles (NPs) have emerged as an opportunity to circumvent the above-mentioned limitations. We have developed in our laboratory an innovative nanoformulation based on the covalent bond between squalene (Sq) and cyclosporin A to avoid burst release phenomena and increase drug loading. After a thorough characterization of the bioconjugate, we proceeded with a nanoprecipitation in aqueous medium in

order to obtain SqCsA NPs of well-defined size. The SqCsA NPs were further characterized using dynamic light scattering (DLS), cryogenic transmission electron microscopy (cryoTEM), and high-performance liquid chromatography (HPLC), and their cytotoxicity was evaluated. As the goal is to employ them for IHD, we evaluated the cardioprotective capacity on two cardiac cell lines. A strong cardioprotective effect was observed on cardiomyoblasts subjected to experimental hypoxia/reoxygenation. Further research is needed in order to understand the mechanisms of action of SqCsA NPs in cells. This new formulation of CsA could pave the way for possible medical application.

Biography

Mariana VARNA received her PhD in Biology and Biotechnology at Paris Diderot University (Paris, France). After completing a first postdoctoral fellowship on stem cells and tumor resistance she joined Institut Langevin at ESPCI (Superior School of Physics and Industrial Chemistry, Paris, France) for a second post-doctorate on nanomedicines. Since 2015, she is Associate Professor at Faculty of Pharmacy of Paris Saclay University (France). Her research area is focused on the development and preclinical evaluations of nanomedicines for imaging and therapy of cardiovascular diseases. Mariana Varna is co-author for more than 50 publications.





Wei Zhang Genentech Inc., USA

Rational design of amorphous formulation – from theoretical solubility calculation to ASD tablet development

This presentation will cover three major topics for amorphous drug product development -(1)theoretical solubility calculation of amorphous drugs: (2) effect of surfactant on the supersaturation maintenance of amorphous formulation and (3) effect of ASD composition on the disintegration and drug release of ASD tablets. At the early stage of drug development, it is critical to understand how much solubility advantage an amorphous form can provide. The first topic will discuss different methods of calculating amorphous drug solubility and the experimental evaluation of these equations. Based on the evaluation, one calculation equation was recommended. After the determination of solubility advantage, composition screening is the second critical step for amorphous formulation development. The second topic will discuss the ASD composition effect on supersaturation maintenance. While extensive studies have been conducted for the effect of polymers, little study has been done on

the effect of surfactants. This topic will discuss a systematic study of the effect of surfactants on the crystallization kinetics including nucleation and crystal growth for supersaturated solution. The effect of surfactant-polymer interaction will be also discussed under this topic. For oral administration, the ultimate deliverable is solid dosage form such as a tablet. Owing to great amount of polymers in the ASD composition, the disintegration and drug release usually become an issue for ASD tablets especially when ASD loading increases. The third topic will discuss how polymer type, ASD loading in tablet and polymer-drug ratio affect the disintegration and drug release of ASD tablets. To summarize, the overall goal of this presentation is to provide one of the industrial perspectives for the design and formulation of amorphous drug products based on fundamental understanding of amorphous materials.

Biography

Zhang received his Ph.D. degree in Pharmaceutical Sciences from the University of Wisconsin- Madison in 2016. Since then, Dr. Zhang has been working in the Small Molecule Pharmaceutical Sciences Department at Genentech Inc. Dr. Zhang's research interest focuses on development of amorphous solid dispersion formulation to deliver poorly water soluble drugs especially with its application in industrial drug development. Dr. Zhang's work in this area covers the investigation of amorphous solubility enhancement prediction, amorphous formulation stability evaluation, downstream processing of amorphous solid dispersion tablet etc. From his research work, Dr. Zhang has published 19 research papers and given several presentations at conferences and university.





Hiba Natsheh

The Hebrew University of Jerusalem, Israel

Improved Efficiency of Pomegranate Seed Oil Administrated Nasally

Pomegranate Seed Oil (PSO) has antioxidant and anti-inflammatory activities. The main components of PSO are punicic acid, oleic acid, linoleic acid, phenolic compounds, tocopherols, chlorophylls and carotenoids. PSO is currently administrated orally as a food supplement for improving memory. However, the efficiency of the oral dosage forms for management of memory is low, mainly due the blood brain barrier. We propose here a nasal formulation (PI) we have designed and investigated for improved efficacy of PSO. Results of in vivo studies on animal models of impaired locomotor activity and memory have shown more than 1.5 folds improvement in the behavior of animals treated nasally with this new formulation, in comparison with the orally administrated oil. Furthermore, a superior nasal delivery to brain of fluorescein isothiocyanate probe was observed by multiphoton imaging, following administration of our PSO system as compared with a control nasal composition. In conclusion, our nasal PSO system possesses many advantages vs. oral treatment, including direct delivery of the active ingredients to brain leading to enhanced activity.

Biography

Hiba Natsheh is currently a postdoctoral researcher in Prof. Elka Touitou's laboratory at the Institute for Drug Research, The Hebrew University of Jerusalem. Prof. Touitou is an internationally recognized authority in the field of drug delivery and design of novel and advanced technologies for cannabinoids and for nasal and transdermal products.





Yuki Akagi

Tokyo University of Agriculture and Technology, Japan

Biography

Yukitaka Kato graduated from Tokyo University

of Agriculture and Technology in 1985 with a B. Sc. He performed his graduate study at Tokyo Institute of Technology (Tokyo Tech) in the Department of Chemical Engineering obtaining his PhD in 1991. He then took up a position as an Assistant Professor and Professor at the Research Laboratory for Nuclear Reactors in Tokyo Tech. He has been Professor at the Laboratory for Advanced Nuclear Energy since 2016. He has been Professor at the Laboratory for Advanced Nuclear Energy since 2016. He is a Professor board member of Graduate Major in Nuclear Engineering, Department of Nuclear Engineering, Department of Environmental Science and Technology in Tokyo Tech. He visited at the Centre for Study of Environmental Change and Sustainability at the University of Edinburgh, UK, as a research fellow in 1997-1998





Mariam LOUIS EVA Pharma, Egypt

Biography

Mariam LOUIS is a senior researcher in Pharmaceutical R&D at EVA pharma. She M.Sc. Nanomedicine for drug delivery at Université d'Angers during 2020 - 2021 and B.Sc. Pharmacy from Faculty of pharmacy , Alexandria University, Egypt.





Susanne Muschert University of Lille, France

Drug release mechanisms from coated pellets: How non-invasive analytical tools can help to comprehend them

Drug release mechanisms from coated sustained release pellets can be very complex. However, they need to be fully understood in order to guarantee the safety of a pharmaceutical treatment.

Pellets coated with Kollicoat SR:Kollicoat IR 95:5 and 90:10 blends and loaded with verapamil HCl have been in the center of this study. Drug release from these coated pellets is highly dependent on the pH of the dissolution medium. To better understand the underlying drug release mechanisms, next to ensemble of pellets also single pellets have been analyzed. Raman spectroscopy and SEM were used to determine if crack or pore formation play a major role. An application of a mathematical modeling using a mechanistically realistic theory to describe drug release kinetics with this particular reservoir system, revealed that diffusion is rather unlikely to play a major role in mass transport mechanisms. The pH inside the pellets detected by means of pH sensitive fluorescence probes differed significantly upon exposure to acetate buffer pH = 3.5 and phosphate buffer pH = 7.4. Since verapamil is a weak base, drug solubility decreased at higher pH, this led to lower drug release rates in basic media from coated single pellets as well as ensemble of pellets. The swelling of single pellets, observed with optical light microscopy, indicated that crack formation in the polymeric film occurs. SEM and Raman imaging further confirmed this fact. Raman spectroscopy also permitted to observe changes in the coating and close core layers of the pellets non-invasively during dissolution.

Biography

Susanne Muschert received her PhD in Pharmaceutical Sciences in 2008 from the University of Lille. She joined the teaching staff of the University of Lille in 2010. Since then she is working as a Lecturer & Scientist in the Pharmaceutical Technology department. She was appointed Associate Professor in 2016 and performed a research stay at the University of Ghent in 2020.

Her current research focusses on formulating solid dosage forms for controlled release and takes place in the interdisciplinary research team INSERM U 1008 "Advanced Drug Delivery Systems". She having a particular interest in formulating these drug delivery devices with polymer blends in order to improve drug release rates at the site of action.

She involved in three professional organizations:

- Since 2019: Member of the board of the "Association de Pharmacie Galénique Industrielle" (APGI, International Society of Drug Delivery, Science and Technology, collaborating regularly with the APV),
- Since 2016: Member of the board and treasurer of the "Association Francophone des Enseignants en Pharmacie Galénique" (AFEPG, Association of French-speaking Teaching Staff



for Pharmaceutical Technology) &

- Since 2009: Member of the Physical Solid State Research Cluster (PSSRC). She also serve as a reviewer for scientific publications in the following international Journals:
- Since 2009: International Journal of Pharmaceutics
- Since 2013: Journal of Pharmaceutical Sciences & Since 2015 Journal Drug Delivery Science and Technology.
- She is the editor of the PSSRC website and part of an editorial board and section leader for an on-line textbook for pharmaceutical technology for graduate students (within the AFEPG). Since 2021, she serve as a guest editor for the MDPI journal Pharmaceutics.





Maddalena Sguizzato University of Ferrara, Italy

Ethosomes for transdermal delivery of natural antioxidant molecules: design and activity on 2D and 3D skin models

Ethosomes are novel smart transdermal vehicles suitable for the topical application of drugs. A wide range of natural active molecules, including coenzyme O10 and caffeic acid, are able to counteract oxidative stress, but their use is limited by the high physico-chemical instability. Hence, their encapsulation into ethosomes represents an interesting strategy to protect the antioxidant potential and promote the transdermal delivery thanks to the malleable properties of ethosomal vesicles. Ethosomes based on phosphatidylcholine were produced and characterized in terms of size, morphology and entrapment capacity, obtaining stable vesicles with mean diameter around 200 nm, a typical 'fingerprint' structure, and high encapsulation yields. In vitro and ex-vivo studies demonstrated the uptake of ethosomes in human skin fibroblasts and the passage of the vesicles through 3D reconstituted human epidermis. The protective effect of coenzyme Q10 against H2O2 employed as oxidative stress challenger has been evaluated by immunofluorescence, comparing the 4-hydroxynonenal protein adducts levels. The pretreatment with ethosomes containing CoQ10 exerted a consistent activity against oxidative stress, in both 2D and 3D models. The possibility to obtain a semisolid formulation suitable for cutaneous application was explored by thickening caffeic acid loaded-ethosome dispersion with poloxamer 407. The rheological behavior of the ethosomal gel was evaluated and the influence in drug diffusion was investigated by Franz cells experiments. Moreover, the addition of poloxamer slightly modified vesicle structure and size, while it decreased the vesicle deformability.

Biography

Maddalena Squizzato is currently working as Researcher at the University of Ferrara. Her research is focused on the design of novel drug delivery systems for natural molecules based on green approaches suitable as nutraceutical and cosmeceutical products. Dr. Squizzato obtained her PhD in Chemical Sciences at the University of Ferrara in February 2020. During the PhD and the Post-Doc she worked on the development of nanotechnological strategies for topical administration of active compounds. In the framework of the PhD program, Dr. Sguizzato was Visiting PhD student at North Carolina State University in 2018 working on the in vitro and exvivo evaluation of antioxidant and antiproliferative effects of loaded-nanoparticles and hydrogels.





Brian Huber ICON, USA

Gene therapy – affordability, access, and reimbursement

In the next 15 years, it is anticipated that 1.09 million patients may be eligible for or treated with gene therapies.

The FDA anticipates over 200 cell and gene therapy (CGT) IND applications in 2021. This growth is fuelled by a robust influx of capital, driven by the potential to generate more sustainable disease-modifying clinical outcomes. The new curative therapies promise to provide a shift from long-term disease management to one-time curative therapies, which may revolutionise the practice of medicine.

Even though gene therapy is one of the most exciting new frontiers in modern medicine, significant challenges have emerged. The exciting expansion of gene therapies intensifies pressure on insurers, health systems, and BioPharma companies to develop a framework for determining value, pricing, and payment options. Two of the biggest and interrelated challenges are cost/ affordability and equity access.

Biography

Brian Huber is based in the US with 35 years experience in the Biopharmaceutical Drug Development, CRO Service and Investment Sectors. Broad expertise from pre-IND to registration & commercialization with most forms of therapies including chemotherapies, targeted therapies, immuno-therapies, cell and gene therapies, and tumor vaccines. Expertise in innovative clinical and operational strategy to yield maximal value for patients, sponsors and investors. He is Board Certified in Clinical Pharmacology





Taher Nassar The Hebrew University of Jerusalem, Israel

How to improve safety and antitumoral activity of a new Platinum (IV) compound

Cisplatin, carboplatin and oxaliplatin (OXA) are widely used in chemotherapy. However, their clinical benefits are limited by side-effects attributed to the reactivity of these Pt(II) compounds and acquired resistance. Pt(IV) complexes with two different axial groups may have advantages over the reactive Pt(II) species. They are inert in plasma, reach cancerous lesions in their Pt(IV) form, and activate their Pt(II) analogs inside the cancerous cells. Unfortunately, clinical evaluation of Platinum(IV) complexes showed rapid elimination, less or equal efficacy than Pt (II) drugs. Therefore, no Pt(IV) drug has reached the market. We synthesized oxaliplatin palmitate acetate (OPA), a novel Pt(IV) chemical entity derived from OXA and containing both lipophilic and hydrophilic axial ligands. OPA was found 20 times more efficient in killing various cancer cells than OXA. Furthermore, OPA demonstrated significantly higher tumour growth inhibition than OXA in orthotopic and xenograft mice tumour models of ovarian, pancreatic, lung and liver. However, OPA was also eliminated before cellular uptake. OPA was incorporated in PEGylated liposomes to overcome this drawback to optimize therapeutic performance. In vitro studies showed OPA-loaded liposomes retain OPA potency against dilerent cancer cell lines.

Furthermore, liposomes altered PK parameters and biodistribution patterns favouring the liposome formulations and significantly extended the systemic exposure. Intravenous administration of OPA liposomes (60 mg/kg, twice weekly) demonstrated delayed response and higher survival than cisplatin in a mouse liver xenograft model (Hep-3B). Furthermore, in two identical orthotopic intraperitoneal models of metastatic ovarian cancer (SKOV3-luc-D3), OPA liposomes were administered intravenously at 15, and 30 mg/kg (twice weekly) exhibited delayed response and higher survival compared to Avastin. At the same time, a combination of OPA and Avastin showed a significant synergistic effect enlightening the potential of OPA liposomes in the treatment of various cancers.

Biography

Taher Nassar endeavours to apply his accumulated experience in the field of new Platinum (IV) complexes containing lipophilic moieties as novel anticancer prodrugs and using nanotechnology as a delivery system tool to improve its stability and safety.



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Pakatip Ruenraroengsak Mahidol University, Thailand

Dual delivery of doxorubicin and plant-based compounds from *Mangifera indica* L. for synergistic cancer therapy against hepatocellular carcinoma

Plant-based compounds have been used as alternative anticancer drugs or adjuvant therapy together with chemo-drugs without testing for their anticancer activities, toxicity and drug interaction. Here anticancer activities of 7 potential plants including Quercus infectoria Oliver. (QI), Ardisia pendulifera Pit. (AP), Mangifera indica L. (MI), Houttuynia cordata Thunb. (HC), Acanthopanax trifoliatus Merr. (AT), Tiliacora triandra (Colebr.) Diels (TT), and Eclipta prostrata L. (EP) were tested against human hepatocellular carcinoma (HepG2) cell line. MI and AP extracts exhibited the highest anticancer activities among all extracts with IC50 at 595.84 ± 9.12, 188.79 ± 8.97 µg/mL, respectively. A co-delivery system of mesoporous silica nanoparticles (MSNs) was developed using doxorubicin (DOX) and MI extract as model drugs. DOX encapsulated MSNs (DOX-MSNs) with diameter of 221.3 ± 2.6 nm offered % encapsulation efficiency (%EE) and %loading capacity (%LC) at 96.4 ± 2.5 % and 29.0 ± 0.7 %, respectively. MI-MSNs with diameter of 226.0 \pm 1.0 nm offered %EE and %LC at 97.1±1.0 % and 28.6 ± 0.3%, respectively. Anticancer activity of the co-delivery was evaluated using DOX:MI at 1 to 1 ratio with the concentration ranges between 5.93 - 50.33 µg/mL (0.1IC50- 1IC50) of DOX and between 74.48-595.84 µg/mL (0.1IC50-1IC50) of MI extract. The co- delivery of ratio 11.98 µg/mL of DOX: 74.48 µg/mL of MI exhibited the highest inhibitory effect at 80.0 ± 2.9%, while the co-delivery using DOX-MSN:MI-MSN at the same concentration ratio significantly inhibited (**p<0.01, n=3) HepG2 cells up to 89.2 ± 2.3 % indicating that a significant synergistic anticancer efficacy could be enhanced by MSNs.





Hanaa Wafaa King Abdulaziz University, KSA

Dose megaloblastic anemia lead to psychosis? A single-center study from saudi Arabia

The incidence of megaloblastic anemia (MA) has increased for the last two decades, particularly in underdeveloped countries. In addition, several previous studies reported an association between MA caused by vitamin B12 (VitB12) deficiency and psychosis. Thus, this study aims to determine the association between MA and psychosis among psychotic patients in the Mental Health Hospital at Taif, Saudi Arabia. A total of Fifty psychotic male patients, aged 48.58±1.72, were recruited from the Mental Health Hospital at Taif, Saudi Arabia, in addition to fifty-four sexmatched healthy controls. Blood samples were

withdrawn from both groups, and the following tests were run CBC, LFT, VitB12, Folate, and CRP levels. All data were statistically analysed using the IBM SPSS Statistics for Windows. The CBC results showed that RBCs count, hemoglobin, hematocrit, platelets count, MPV, and absolute lymphocyte count were significantly lower in psychotic patients versus healthy control (P= 0.007, P= 0.002, P= 0.001, P= 0.004, P= 0.0001, and P= 0.005, respectively). In contrast, the Eosinophil absolute count and Basophil percentage were significantly higher in psychotic patients (P= 0.009, P = 0.0001, respectively). C-reactive protein was significantly higher in psychotic patients (P= 0.003). Albumin was significantly lower in psychotic patients (P= 0.0001). Vitamin B12 levels were slightly lower in psychotic patients than in the healthy group, although it is not statistically significant. There were significant negative correlations between serum levels of VitB12 and Negative symptoms (r= -0.381, P =0.006) and Hallucination (r= -0.297, P=0.036). These findings indicate no link between MA induced by VitB12 insufficiency and psychosis among psychotic patients in Taif's Mental Health Hospital. However, low serum VitB12 can predict the severity of some psychosis signs, including hallucinations and negative symptoms. Therefore, monitoring VitB12 levels in psychotic patients is recommended to improve their symptoms.





Samira Aouichat University of Granada, Spain

Melatonin Improves Endoplasmic Reticulum Stress-Mediated IRE1α Pathway in Zücker Diabetic Fatty Rat

Background: Obesity and diabetes are linked to an increased prevalence of kidney disease. Endoplasmic reticulum stress has recently gained growing importance in the pathogenesis of obesity and diabetes-related kidney disease. Melatonin, is an important anti-obesogenic natural bioactive compound. Previously, our research group showed that the renoprotective effect of melatonin administration was associated with restoring mitochondrial fission/fusion balance and function in a rat model of diabesity-induced kidney injury.

Objectif: This study was carried out to further investigate whether melatonin could suppress renal endoplasmic reticulum (ER) stress response and the downstream unfolded protein response activation under obese and diabetic conditions.

Materials & Methods: Zücker diabetic fatty (ZDF) rats and lean littermates (ZL) were orally supplemented either with melatonin (10 mg/kg body weight (BW)/day) (M-ZDF and M-ZL) or vehicle (C-ZDF and C-ZL) for 17 weeks. Western blot analysis of ER stress-related markers and renal morphology were assessed.

Results: Compared to C-ZL rats, higher ER stress response associated with impaired renal morphology was observed in C-ZDF rats. Melatonin supplementation alleviated renal ER stress response in ZDF rats, by decreasing glucose-regulated protein 78 (GRP78), phosphoinositol- requiring enzyme1 α (IRE1 α), and ATF6 levels but had no effect on phospho-protein kinase RNAlike endoplasmic reticulum kinase (PERK) level. In addition, melatonin supplementation also restrained the ER stress-mediated apoptotic pathway, as indicated by decreased pro-apoptotic proteins phospho-c-jun amino terminal kinase (JNK), Bax, and cleaved caspase-3, as well as by upregulation of B cell lymphoma (Bcl)-2 protein. These improvements were associated with renal structural recovery.

Conclusion: Taken together, our findings revealed that melatonin play a renoprotective role, at least in part, by suppressing ER stress and related pro-apoptotic IRE1α/JNK signaling pathway.

Biography

Samira Aouichat received her Ph.D degree in Biological Sciences from the University of Sciences and Technology Houari Boumediene-Algeria in 2021. Her Ph.D research project was carried out in close collaboration with the Faculty of Medicine of the University of Granada-Spain. Her research focused on the role of melatonin therapy as well as intermittent fasting intervention as promising therapeutic tools to ameliorate obesity and related metabolic

disorders. Her future research interests are to expand and advance the current knowledge about melatonin's molecular target and mechanism of action in the context of cellular andmetabolic diseases networks. Currently, she is seeking research position opportunities relevant to her skills and interests.





Ignatius Dinshaw University of Malaya, Malaysia

A Review on the Conceptualization of Treatment for Psoriasis Using a 'Green' Surfactant

A recently published review in Pharmaceutics entitled "Nanoemulsions: A Review on the Conceptualization of Treatment for Psoriasis Using a 'Green' Surfactant.." highlights the fine line between natural and synthetic surfactants. In a gist, the review elaborates on natural surfactants and highlights its safety profile as compared to synthetic chemicals. Abundance in supply of the naturally forming surfactants also heighten their par in the comparative scale as they are produced by a sustainable bacterial source. Its biocompatibility to soil and water bodies complete the whole cycle of production to disposal. To add to this, its has a critical micellar concentration (CMC) 3 times lesser than Tween 80 and 14 times of Tween 20. The review also list prospective components for formulations opening a new horizon for researchers outside the colloidal field to get some exposure on the available organic oils and surfactants and suit it to their own research. Several low energy techniques were discussed with the newly founded D-phase emulsion method, all in the hopes of conserving energy in large scale productions.

Biography

Ignatius Julian Dinshaw is a researcher in the University of Malaya (UM), serving in the Chemistry field since 2016. He was awarded a Masters in Material Science by the University of Malaya (UM) and his research was center on fabrication of a carbon biosensor for bacterial detection. He is presently working on natural surfactants as a potential alternative to synthetic as a drug carrier. He is an accredited chemist, with experience in transdisciplinary fields of microbiology, biosensors and carbon lithography. He obtained his Bachelor's degree in Science accredited by Campbell University, United States in Chemistry and Biology (double major). He has co-authored in two grant proposals related to COVID prevention and food waste to usable carbon and is part of a biosensor patent. His ambition is to create a better world for the next generation and so his research focuses on natural alternatives to synthetic materials that are robust and Farth safe.





Federica Giuzio University of Basilicata, Italy

Biography

Despite her young age, Dr. Federica Giuzio has a very respectable curriculum, boasting three degrees! In 2005 she obtained a degree in "Cosmetological Sciences and Technologies" with honors at the Catholic University of the Sacred Heart of Rome. In those years she was able to work with numerous innovative dermocosmetic protocols at the "Columbus" dermatology department in Rome. She continues her studies at the University "Alma Mater Studiorum" of Bologna where in 2010 she graduated in "Industrial Pharmacy" with honors. In 2008 divine Scientific Director of the "Laboratoires Be Well" of the Republic of San Marino where he began his study of dermocosmetic formulas ever closer to the needs of aesthetic medicine, entering the training of highly specialized figures in the world of natural cosmetics and care of the body . In 2010 she was awarded the Business Culture Award by Confindustria Rimini for the best degree thesis of the Faculty of Pharmacy on "Thalassotherapy and uses in cosmetics and pharmacology" which Dr Giuzio has partly prepared at Agrimer Laboratories in France. You have been a cosmetologist pharmacist for many years, also obtaining a Degree in Medicine and Surgery at the University of Salerno in which since the third year he starts attending the Plastic Surgery department. He is morbidly passionate about reconstructive and aesthetic plastic surgery and obtains the certificate of Master of Aesthetic Surgery at the Humanitas University of Milan. She is also admitted to the postgraduate course in reconstructive and aesthetic plastic surgery at the Victor Babes University in Timisoara. In her path she has the opportunity to attend the American Academy Cosmetic Surgery for short periods in Dubai where she compares with colleagues from all over the world and she also goes to Rio de Janeiro at the Samaritan Hospital to visit Prof Volney Pitombo. He obtained the certificate for the "rhinoseptoplasty on cadaver" course at the University of Bordeaux. In 2018 she is also awarded by the "Nuova Scuola Medica Salernitana" as an "honorary member". You are actively involved as a surgeon in voluntary work with the Italian Relief Corps of the Order of Malta. She currently performs cosmetic surgery and aesthetic medicine in Potenza, Salerno, Naples, the Republic of San Marino, Palermo, Catanzaro and Milan with over 20 collaborations throughout Italy.



Upcoming Conferences

4th Edition Scholars Frontiers in Chemistry Forum

20-21 Jun 2022 | Berlin, Germany & Online chemistry@scholarscongress.org https://scholarsconferences.com/chemistry-frontiers/

3rd Edition Scholars International Conference on

Catalysis and Chemical Engineering

20-21 Jun 2022 | Berlin, Germany & Online catalysis@scmeetings.org https://scholarsconferences.com/catalysis-frontiers/

3rd Edition Scholars World Congress on Cancer Research and Oncology

14-16 Nov 2022 | Dubai, UAE cancerscience@scmeetings.org https://scholarsconferences.com/cancer-oncology/

Scholars International Conference on Personalized and Precision Medicine

14-16 Nov 2022 | Dubai, UAE personalizedmedicine@scmeet.org https://scholarsconferences.com/personalized-medicine/

Scholars International Conference on Gynecology, Obstetrics & Women's Health

14-16 Nov 2022 | Dubai, UAE gynecology@frontiersevents.com https://scholarsconferences.com/gynecology-obstetrics/

Scholars World Congress on Diabetes, Obesity and Endocrinology

14-16 Nov 2022 | Dubai, UAE diabetes@frontiersevents.com https://scholarsconferences.com/diabetes-endocrinology/

Scholars World Heart Congress

November 14-16 , 2022 | Dubai, UAE heartcongress@scmeetings.org https://scholarsconferences.com/heartcongress/

Scholars World Nursing and Healthcare Summit

14-16 Nov 2022 | Dubai, UAE healthcare@scholarsconferences.org https://scholarsconferences.com/healthcare/