

V. Symposium of Young Researchers on Pharmaceutical Technology, Biotechnology and Regulatory Science

18-20 January, 2023

Book of Abstracts



University of Szeged



V. SYMPOSIUM OF YOUNG RESEARCHERS ON PHARMACEUTICAL TECHNOLOGY, BIOTECHNOLOGY AND REGULATORY SCIENCE

18-20 JANUARY 2023

SZEGED, HUNGARY



General Information

Date: 18-20 January 2023

Location: Hybrid (University of Szeged, Faculty of Pharmacy, and online MS Teams)

Congress Topics: Pharmaceutical technology, biotechnology and regulatory science

Types of presentations:

1. Oral presentation (10 min + 5 min discussion)
2. Flash presentation (3-5 min, pre-recorded)

Submission of abstracts: gytfi.phd.pharm@szte.hu

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Edited: Patricia Varga, Boglárka Szalai, Luca Éva Uhljar

Image: Balázs Attila Kondoros

Photos: Tamás Sovány

Contacts

President of the Symposium

Prof. Dr. Ildikó Csóka
Head of Institute

Organiser

Institute of Pharmaceutical Technology
and Regulatory Affairs
University of Szeged
Hungary

Head of Organising Committee

Luca Éva Uhljar
gytfi.phd.pharm@szte.hu

Co-organiser

Foundation for the Development of
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- OP-02** – 13:30-13:45 **Luca Éva Uhljar, Rita Ambrus**
Process optimization of the preparation of PVP-based nanofibrous drug carrier loaded with ciprofloxacin
- OP-03** – 13:45-14:00 **Nikolay Zahariev, Milena Draganova, Plamen Zagorchev, Bissera Pilicheva**
Development of daunorubicin-loaded casein nanoparticles as a potential drug delivery system for the treatment of ALL
- OP-04** – 14:00-14:15 **Boglárka Szalai, Orsolya Jójárt-Laczkovich, Mária Budai-Szűcs**
Design and optimization of *in situ* gelling mucoadhesive eye drops containing dexamethasone
- OP-05** – 14:15-14:30 **Sandra Robla, Rubén Varela Calviño, Noemi Csaba, Rita Ambrus**
Development of rifabutin-loaded protamine nanocarriers for pulmonary drug delivery with improved aerodynamic properties

14:30-14:45 Coffee break

14:45-16:15 Session 2 – Chairs: Marina Tišma, Corina Danciu

- OP-06** – 14:45-15:00 **Fanni Falusi, Szilvia Berkó, Anita Kovács**
Influence of polymers and active substances on foam stability
- OP-07** – 15:00-15:15 **Balázs Attila Kondoros, Ildikó Csóka, Rita Ambrus**
Investigation of the feasibility and efficiency of solvent-free co-grinding with different active substances
- OP-08** – 15:15-15:30 **Silvija Šafranko, Stela Jokić**
Multifunctional biomass-derived and N-doped carbon quantum dots – the versatile nanoparticles for ion sensing with potential biological and pharmacological activity
- OP-09** – 15:30-15:45 **Eleonora Sofia Cama, Milena Sorrenti, Laura Catenacci, Sara Perteghella, Maria Cristina Bonferoni**
Preparation and characterization of binary systems with semisynthetic derivatives of β -cyclodextrin for dimethyl fumarate nasal delivery



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OP-08

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Multifunctional biomass-derived and N-doped carbon quantum dots – the versatile nanoparticles for ion sensing with potential biological and pharmacological activity

Silvija Šafranko, Stela Jokić

Faculty of Food Technology Osijek, University of Osijek, Osijek, Croatia



The aim of this study was to prepare, characterize and investigate the potential application of carbon quantum dots (CQD) derived from *Citrus clementina* peel. The prepared nanoparticles by hydrothermal synthesis using citric acid and amino acids of different complexity (Ala, Arg, Asn, Gln, Glu, Gly, His, Leu, Lys, Phe, Ser i Trp) represented model systems. The samples obtained from citric acid and amino acids Ala, Arg, His, Leu, Lys, and Trp showed great properties with calculated quantum yield (QY) from QY= 12.97% - 36.43% under investigated pH=7. Hence, these amino acids were selected for the biomass-derived CQD preparation from *Citrus clementina* peel. The results indicated the versatility among the prepared samples regarding optical, physical and chemical properties of nanoparticles, as well as on the biological activities, compared to the model systems. Furthermore, the best-performing samples from each series of synthesis were extensively studied regarding chemical (solubility, EDS), physical (AFM, FTIR, PXRD), optical (spectrofluorimetry, UV-Vis spectroscopy), biological and pharmacological properties. The biological activities of prepared samples were investigated by spectrophotometric methods of antiradical activity (DPPH method), inhibition of protein denaturation (bovine serum albumin and egg albumin), and biocompatibility/cytotoxicity was investigated on tumor cell lines (HeLa, NCI-H385, CaCo-2, D54). The samples were also utilized as fluorescent nanoprobe for selective and sensitive detection of Fe³⁺ ions and developed models were tested for the Fe³⁺ ion detection in real well-water samples. This research could be a good example of sustainable biomass waste utilization with potential for biomedical analysis and ion sensing applications.

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