

# CURRENT RESEARCH TOPICS IN PHARMACY: *Drug Delivery*

February 28th, 2023 12.00 PM ISTANBUL

FOR REGISTRATION:



## First Session- Moderator: Gülşah GEDİK 12.00-13.30 PM

Welcome- Prof. Oya Kerimoğlu  
Marmara University, Istanbul, Türkiye

Core-shell type lipid-polymer hybrid nanocarriers as novel-generation drug delivery platform – Assoc. Prof. Ceyda Tuğba Şengel Türk  
Ankara University, Ankara, Türkiye

Drug delivery systems used for biological products- Assist. Prof. Ongun Mehmet Saka  
Ankara University, Ankara Türkiye

Viral delivery systems within the gene therapy landscape- Dr.Ceyda Ekentok Atıcı  
Marmara University, Istanbul, Türkiye

## Second Session – Moderator: Ongun Mehmet SAKA 14:00-15.30 PM

Nanobiomaterials for drug delivery- Assist. Prof.Gülşah Gedik  
Trakya University, Edirne, Türkiye

Microneedles : A smart approach for intradermal and transdermal drug delivery systems-Assist.Prof.Ebru Altuntaş  
Istanbul University, Istanbul, Türkiye

Nose-to-brain drug delivery of nanoformulations:Preparation and in vitro evaluation– Dr.Özge Gün Eşim  
Ankara University, Ankara, Türkiye

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**Third Session- Moderator: Ceyda EKENTOK ATICI 16.00-18.30 PM**

**Microemulsion utility in pharmaceuticals: An overview and pharmaceutical applications- Assist.Prof.Emre Şefik Çağlar**  
University of Health Sciences, Istanbul, Türkiye

**Journey of the saponin from the plant to the formulation for the blocking tumor activities – Dr.Burcu Üner**  
The University of Health Science and Pharmacy in St. Louis, MO, USA

**Development of injectable ROS responsive nanoparticles with identified protein for improvement of the cardiac repair following myocardial infarction- Dr. Renuka Khatnik**  
Washington University in St.Louis, MO, USA

**Groundbreaking delivery systems: Liposomes-microbubbles complexes - Dr. Pankaj Dwivedi**  
University of Health Sciences and Pharmacy in St. Louis, MO, USA

**Breaking the barriers with cutting edge intradermal delivery towards pain-free skin therapy: Dissolvable microneedle devices for localized therapy – Dr.Monica Dwivedi**  
Birla Institute of Technology, Mesra, India

**Chair**

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# JOURNEY OF THE SAPONIN FROM THE PLANT TO THE FORMULATION FOR BLOCKING TUMOR ACTIVITIES

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Pancreatic ductal adenocarcinoma (PDAC) is an aggressive and incurable malignancy that is anticipated to be the second leading cause of cancer-related death by 2030. Several signaling pathways involved in growth and proliferation are activated in PDAC. Notwithstanding the progress in pancreatic cancer research over the past decade, effective treatment regimens are lacking. Chemotherapy and radiation therapy are often ineffective [1, 2]. Saponin-derived compounds have proven to be promising in treating many types of cancer, and it is anticipated that they can be used as drugs [3,4]. In this study, mycelial formulations were created based on a DoE perspective with triterpenoid saponins obtained from the marketed product (ABX-Abraxane)[5]. *Aesculus hippocastanum* L. has used to get saponin. Following characterization studies of micelles (FT-IR, DLS, and TEM), cell-binding and Papp values were analyzed using the human pancreas adenocarcinoma ascites metastasis cell line (AsPC-1).

In addition, the levels of proto-oncogenes (KRAS, CTNNB1 ( $\beta$ -catenin), PIK3CA, and AKT) involved in pancreatic carcinogenesis were measured by using ELISA, and the

mitochondrial membrane permeability and alterations of oxidative stress levels have been measured by flow cytometry. As a result of the treatment with the control group and micelle formulations on AsPC-1 cells, Annexin-V positive stained areas showed a positive result in PI (late apoptotic). When the apoptotic effect on AsPC-1 cells as a result of the application of micelle formulation was evaluated in flow cytometry at the end of 12 (AsPC-1 72.3% to 47.2%) and 24 (AsPC-1 47.2% to 16.3%) hour treatments, a decrease in cell viability percentage was observed, while an increase in the percentage of necrotic cells was determined. Besides, it was determined that there was a significant increase in ROS levels with micelle formulation compared to the control (13.5 to 67.8).

**Keywords:** Pancreatic ductal adenocarcinoma, micelle, saponins, AsPC-1.

## REFERENCES

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- [3] Xu XH, Li T, Fong CM, Chen X, Chen XJ, Wang YT, Huang MQ, Lu JJ. Saponins from Chinese medicines as anticancer agents. *Molecules.* 2016;21(10):1326 [[CrossRef](#)].
- [4] Celep AGS, Yilmaz S, Coruh N. Antioxidant capacity and cytotoxicity of *Aesculus hippocastanum* on breast cancer MCF-7 cells. *J Food Drug Anal.* 2012; 20 (3): 17 [[CrossRef](#)].
- [5] Boateng-Marfo Y, Dong Y, Ng WK, Lin H-S. Artemether-loaded zein nanoparticles: An innovative intravenous dosage form for the management of severe malaria. *Int J Mol Sci.* 2021; 22(3):1141 [[CrossRef](#)].