CENTER FOR DERMAL RESEARCH

SEMINAR SERIES

"Design and studies on semi-solid systems for topical delivery of anti-inflammatory drugs"

Dr. Tomasz Osmalek, Poznan University of Medical Sciences, Poland

January 27th at 5:30pm – Life Sciences Building, 145 Bevier Road, Piscataway NJ

Dr. Tomasz Osmałek graduated in pharmacy at Poznan University of Medical Sciences (PUMS) in Poland. His early scientific activity was related to the photochemical properties of active substances, including mostly the spectroscopic evaluation of drugs photodegradation pathways. Later, his interests focused on spectroscopic studies of photosensitizing compounds with the potential use in photodynamic therapy (PDT) of localized tumors. In 2010 he defended the PhD thesis entitled: *Modified porphyrazines, phthalocyanines and subphthalocyanines as potential photosensitizers in photodynamic therapy*. In the same year he moved to the Department of Pharmaceutical Technology at PUMS. At that time started working on the delivery systems for non-steroidal anti-inflammatory drugs with special care to minimize the possible side effects, increase bioavailability and improve the safety of the therapy. In this area two purposes can be distinguished. The first one, aiming at the technology of semi-solid dosage forms for topical administration, and the other one, to use the ionotropic gelation technique for encapsulation of drugs into polysaccharide matrices. Currently, Dr. Osmałek is participating in the international and intersectoral project ORBIS *(Open Research Biopharmaceutical Internships Support*) Marie Sklodowska Curie Action - Research Innovation Staff Exchange – European Union Framework Programme Horizon 2020. He has started a four-month training at the Center for Dermal Research and is working on the development of poloxamer-based hydrogels with photoactive dyes for potential use in PDT.

Abstract: The subject of the seminar will be related to the past and current research projects implemented by our group and will focus on the achievements and experiences with semi-solid formulations. The topic will cover the design stage and preformulation studies of polymer-based hydrogels and organogels containing various inti-inflammatory drugs, intended for dermal or mucosal administration. The issues discussed will include the selection of the gelling polymers or additional ingredients and their compatibility with APIs. Also various tools for the detailed characteristics of semi-solid materials will be presented mostly in relation to their mechanical properties. The importance of rheological analysis will be discussed, including the steady-flow experiments and advanced oscillatory measurements. Also the textural measurements of semi-solids will be presented.

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