



RESEARCH SEMINAR SERIES

The Center for Dermal Research Welcomes

Norman Richardson, BASF

“Excipients for Human Skin Permeation Enhancement of Topical Drugs”

February 24th; 5:30pm – Life Sciences Building, 145 Bevier Road, Piscataway NJ



Norman Richardson is currently Technical Services Manager for Skin Delivery in the North America region (US, Canada, Mexico), supporting the development of dermatological products in pharmaceutical companies with BASF Pharma Solutions' excipients (including oleochemicals, PEGs, poloxamers, polyvinylpyrrolidones and coating chemistries). Norman began his industrial career at Unilever Research where he worked for 13 years supporting brands such as Dove, Lever 2000, Vaseline Intensive Care lotions and other personal care products. He investigated the metabolic fate of fatty acids deposited on skin, the regulation of epidermal hyperplasia, skin deposition of antimicrobials, hydration and biomechanics of the stratum corneum, water behavior in topical products, cellulite fat metabolism and topical product physical chemistry.

In 2001 he joined Pfizer Consumer Healthcare and supported numerous product development projects, supporting all topical product brands by managing medical device design control processes and providing technical support to solve problems.

From 2006 to 2012 he worked for J&J Consumer and Personal Products Worldwide and lead development of topical brands with a new emphasis on wound care (e.g. Band Aid Brand) as well as projects to scout for, identify, and evaluate technologies for topical healthcare applications.

At BASF (2012-2019) Norman opened and managed the BASF Pharma Skin Delivery Lab at the Tarrytown NY Tech Center and led the development of the Skin Delivery Platform and technical data to support the derma excipients. Through his contact with the global market, BASF's presence in the derma formulating world was widely expanded and recognized.

Norman earned a BS in Biology from Montclair State University and MS Biology from Fairleigh Dickinson University.

Abstract: Functional oleochemical excipients, (e.g. oils, esters and fatty alcohols) can play a very significant role in the performance and critical quality attributes of pharmaceutical topical semi-solids, including dermal drug permeation. In this presentation we will review the fundamentals of skin permeation and the roles that the stratum corneum micro-anatomy, the API physico-chemistry, and excipient chemistry can play in affecting the flux rate of APIs through the skin barrier. Studies conducted at BASF and collaborating labs (e.g. TRI Princeton) using Raman FTIR microscopy demonstrate how excipients like octyldodecanol (KollicreamR OD) and cocoyl caprylocaprate (KollicreamR 3C) can penetrate into the stratum corneum and how they can potentially increase rate of flux of APIs like lidocaine and clotrimazole, in model formulations. FTIR studies also suggested that these two excipients could disrupt or fluidize the lamellar lipid domains in the stratum corneum, thus potentially enhancing API permeation. Further studies funded by BASF (conducted at Topical Product Testing LLC, Oxford, MI, under the leadership of Dr. Narasimha Murthy) investigated the effect of cocoyl caprylocaprate (KollicreamR 3C), isopropyl myristate (KollicreamR IPM), octyldodecanol (KollicreamR OD), oleyl alcohol (KollicreamR OA) and mineral oil on human skin permeation of APIs having a range of polarities (Azelaic acid, Log P = 1.33; Lidocaine HCl, Log P = 0.7 and Metronidazole, Log P = -0.013). Results demonstrated the benefits of using these materials as penetration enhancers. Measurements of specific critical quality attributes also helped guide a hypothesis for a mechanism of action of these materials.



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