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## TITLE

### Transdermal and Topical Drug Delivery: A Mathematical Modeling Aspect

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Two aspects of mathematical modeling are essential in understanding topical drug delivery: 1. Predicting in-vivo and in-vitro transdermal penetration using physicochemical properties of drugs and 2. Using mathematical models to describe the rate of penetration of drugs through skin, following different topical applications and consequent drug distribution in different skin layers. Prediction of penetration using physicochemical properties of solutes will be discussed in terms of maximum flux as a main predictor of percutaneous drug penetration. For modeling the rate of percutaneous penetration the application of multi-compartmental approach will be considered in some detail. This model retains the realistic approach of the diffusion model, while allowing the flexibility of the compartmental approach. This flexibility is essential in particular to account for the dynamic nature of the dependence of transport parameters of the drug on concentration of the vehicle excipients in the SC.

#### Biography

Dr Yuri Anissimov completed his Ph.D in bio-mathematics at the Department of Mathematics, University of Queensland (Australia) in 1998. From 1998 to 2006 he worked in the Department of Medicine, University of Queensland, on different NH&MRC Projects in the area of drug delivery through skin and mathematical modeling of liver kinetics. From 2006 he works as senior lecturer in mathematics in the school of Bimolecular and Physical Sciences, Griffith University, Australia. He has published more than 35 papers and 5 book chapters. His research continued to be focused on Mathematical modeling of liver kinetics and drug transport through skin.