Abstract

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Title of thesis: Formulation, characterization, and skin application of Imiquimod loaded liposomes in combination with dendrimers

The skin barrier formed in the uppermost skin layer by the *stratum corneum* - among many functions - restricts the penetration of drugs through the epidermis. Nanoparticles such as liposomes and dendrimers, used for (trans) dermal drug delivery, offer a solution how to overcome this limitation. Conventional liposomes with an encapsulated drug have proven increased effectiveness and prolonged drug release for local drug delivery across intact skin in comparison to free drug. In order to increase the effectiveness of liposomes, their combination with different delivery systems has been suggested.

In this study, Imiquimod was loaded to liposomes in the presence of different generations of in-house synthesized dendrimers forming novel advanced drug delivery nanosystems (aDDnSs). After an *ex vivo* permeation experiment on human skin, the lower generation of dendrimers was found to act synergistic with liposomes and delivered more active substance to the epidermis, while avoiding the undesired transdermal delivery.