Abstract

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Title of the thesis: Formulation of Imiquimod loaded liposomes in the presence of dendrimers

Dendritic molecules, as highly branched polymers, are very attractive nanosystems for broad biomedical applications. Their specific properties include the ability to increase transdermal permeation of active ingredients as well as the ability to increase the water solubility of poorly soluble drugs.

The main purpose of this thesis was the utilization of dendrimers to raise the concentration of the chemoterapeutic drug imiquimod inside liposomal formulations. Solutions of dendritic molecules zero, first, second and third generation were prepared, each at concentrations of 5 mg/ml and 10 mg/ml. These were subsequently used for the hydration of thin film lipid during the preparation of liposomes with the encapsulated drug. Two methods of the incorporation of imiquimod to liposomes were used. The first method represented insertion of the drug to lipids, the second was dissolution of the drug in the dendrimer solution. The concentration of encapsulated imiquimod, including the encapsulation efficacy, was detected in relation to generations of dendrimers.

It has been found that dendritic molecules truly increase the concentration of imiquimod within liposomes. Despite this fact, no correlation has been noticed to suggest the influence of dendrimer generations on the concentration value of the active substance.