

Abstract

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Title of the thesis: The evaluation of the effect of PAMAM dendrimers in the solubility of Imiquimod

Dendrimers are highly branched polymeric compounds with defined properties. They are used as a nanoparticle delivery system, however concurrently they have significant potential in enhancing the solubility of poorly water soluble drugs. Dendrimers work as drug carriers either by encapsulating the drug in their branched internal structure or they create interactions with the drug in the outer layer via terminal functional groups.

The aim of this work was to evaluate the effect of polyamidoamine (PAMAM) dendrimers on the solubility of the hydrophobic drug imiquimod.

Solutions of zero, first, second and third generation dendrimers were prepared at six different concentrations. During the experiment, the pH of the solutions was measured before and after addition of excess amount of imiquimod. Subsequently, analysis was performed by high-performance liquid chromatography. The measured results show that the first generation of PAMAM dendrimers is able to increase the solubility of imiquimod in aqueous medium the most among the used generations. In the future, the experiment should be repeated to investigate the possibility of changing the pH of the medium to obtain even higher effect.