Abstract

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Title of thesis: Effect of the generation of amino-decorated polyamidoamine dendrimers with ethylenediamine core at the (trans)dermal delivery of 5-fluorouracil.

Dendrimers can be defined like highly branched, star-shaped macromolecules with nanometer-scale dimensions and unlimited applications in both biological and materials sciences.

Polyamidoamine (PAMAM) dendrimers have been used to effectively enhance the (trans)dermal drug delivery of several active substances. Inspired by the structure of PAMAM dendrimers, a new class of dendrimers was designed having amino-functionalized periphery and ethylenediamine core. A repeating motif of bis(2-aminoethyl)glycine was used for generation growth up to the third generation. The new dendritic molecules of zero, first, second and third generation were tested for their ability to enhance the deposition of 5-fluorouracil in the different layers of human skin *ex vivo* by using Franz diffusion cells.

The results suggest that the new dendrimers, at a concentration of 20 mg/mL in 60 % propylene glycol in water as vehicle, are able to deliver 5-fluorouracil at the different skin layers and at the acceptor phase of the Franz cells in a generation depended manner without any selectivity.