Abstract

Dendrimers are characterized as synthetic, spherical macromolecules with tree-like branched structures. Their well-controlled sizes (3 - 10 nm), ease of functionalization, high water solubility, well-defined chemical structure, and biocompatibility make these nanomaterials attractive for a wide spectrum of promising biomedical applications.

Peptide dendrimers and polyamidoamine (PAMAM) dendrimers have been used to date as effective transdermal or topical drug delivery systems, with the latest in a much greater extent. The structural characteristics of the aforementioned molecules guided us to design a novel repeating unit for dendrimers (monomer) possessing amino branching point and able to afford generation expanding through repeating amide bonds.

The novel monomer, after appropriate modifications, was used to develop lower generations of polyamidoamino dendritic structures having amide groups and amino-branching points in their interior. The new dendrimers were isolated and fully characterized by typical spectroscopic technics.

The final molecules will be used in human skin permeation experiments and will be evaluated for their effect on skin permeability.