Design and synthesis of new dendrons for biomedical applications

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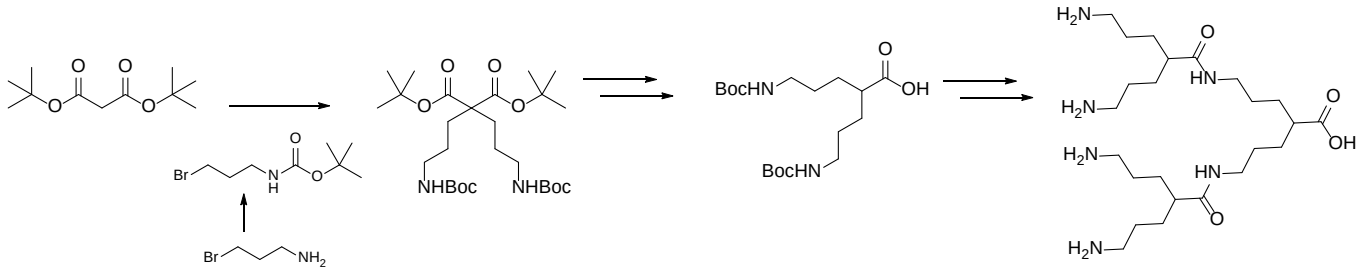
Dendrons are excellent multifunctional platforms for many different applications. In particular, the development of multivalent molecular nanostructures, with a well-defined size and shape, has an enormous interest in the field of biomedicine[1].

Great efforts are being made in the design of new dendritic structures since their precise structure, multivalency and the possibility of functionalizing their terminal groups makes them a useful tool for certain applications.

Recently, a new type of dendrimer (dendron) was designed and synthesized based on the iterative coupling of 2,2-Bis (AminoAlkyl) Propanamide units (BAPAD)[2,3]. This represents a versatile model when incorporating certain functionalities in its structure. However, the synthesis of these new dendritics structures was addressed using 3,3'-dichloropivalic acid as the starting substrate, which translated in the superficial amino groups of these new macromolecule being in relative positions 1,3. For certain applications, where the functionalization of the dendritics structures on its surface requires the introduction of relatively bulky groups, this may result in a problem of reactivity given the steric congestion.

Here, we present the design and synthesis of new dendrons where the surface amino groups are in relative positions 1,7. Formally, it involves the preparation of dendrons with longer arms that can minimize the problems of steric congestion.



These dendrons can be designed to modify surfaces superficially thanks to the versatility of the carboxylic acid which can be modified to introtoduce in the focal poin diferent functional groups (azido, amido, thiol, etc…).

References

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