

CATIONIC CARBOSILANE DENDRIERS: INFLUENCE OF DENDRIMER FRAMEWORK AND CATIONIC CHARGE ON BIOMEDICAL APPLICATIONS

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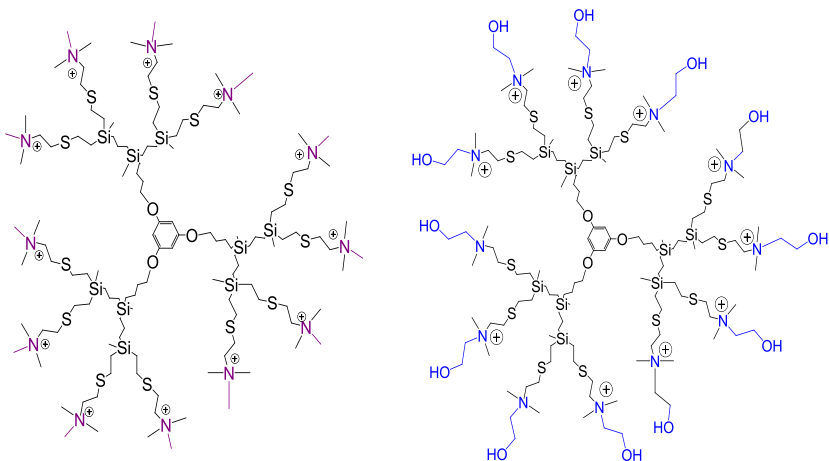
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Dendrimers are globular macromolecules with well-defined structure and multivalent surface. These characteristics give dendrimers particular and specific properties [1]. In the last years, dendrimers have found applications in different fields, highlighting their biomedical applications. In this way, dendrimers decorated with cationic moieties have been used as nucleic acids carriers for gene therapy [2] or as antibacterial agents [3]. In the first case, for example, dendrimers formed nanoconjugates with small interfering RNA (siRNA) to protect them from degradation enzymes, helping this genetic material to cross the cell membrane. In the second case, the positive charge of these macromolecules causes destabilization of bacterial membranes, killing the bacteria [4].

In this work, we present two type of cationic carbosilane dendrimers with different ammonium groups ($-\text{NMe}_3^+$, $-\text{NMe}_2(\text{CH}_2)_2\text{OH}^+$) and their effect on nucleic acids delivery, antibacterial activity and toxicity. The behavior of these compounds is clearly determined by the ability of carbosilane framework to establish hydrophobic interactions with RNA and cell membranes, by the charge exposure, and finally, by the possibility to formed hydrogen bonds.



References

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