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CARBOSILANE DENDRIMERS WITH POLYPHENOLIC GROUPS. USES AS ANTIOXIDANTS AND ANTICANCER

Patent

ES2651114

Code

BIO_UAH_20

Application areas

- Biological Sciences
- Agrofood Industry
- Pharmaceutical and Cosmetics



Type of Collaboration

- Technical cooperation
- Commercial agreement
- License agreement

Main Researcher

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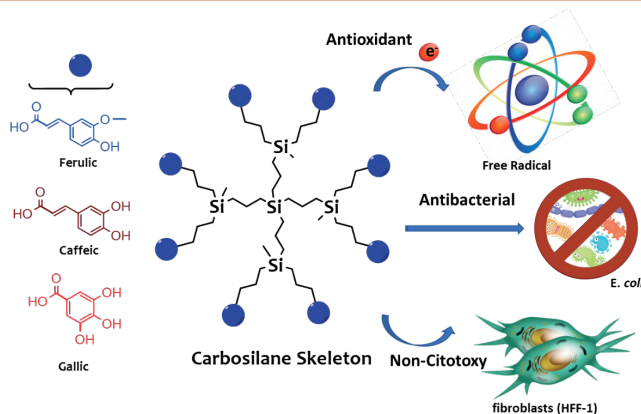
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ABSTRACT

The present invention provides metal nanoparticles coated with dendrons of carbosilane structure which are functionalized at their periphery with anionic groups (such as carboxylate, sulfonate or sulfate), that give the macromolecule a negative net charge, or cationic (ammonium) that give the dendrimer a positive net charge. Preferably, the nanoparticles are made of gold and silver and the carbosilane dendrons have been functionalized by thiolene addition.

The process of obtaining the NPs of the invention allows, by a simple process, the synthesis of cationic or anionic systems, and also the possibility of synthesizing heterofunctionalized NPs, that consists in introducing also some dendron with one or more of its branches substituted by different groups, such as chromophore groups. Useful in biomedicine, specifically in the treatment of infectious diseases or cancer. These include the use of cationic derivatives as non-viral transport agents for the transfection or internalization of nucleic material within different cell lines in gene therapy processes or also the use of these cationic or anionic compounds as therapeutic agents, for example, as antibacterial, antiviral or antiprionogenic agents.

Cationic compounds are used as antimicrobial agents. Thus, they can be used for the prevention and/or treatment of bacterial infections. It can be used for the prevention and/or treatment of diseases of viral origin, such as AIDS, Herpes, Influenza or others.

ADVANTAGES AND INNOVATIONS

- The dendritic nature gives these derivatives a nanoscopic size and a multivalence (capacity to accommodate multiple groups on its surface) that can favor the properties of these compounds.
- The carbosilane nature of these derivatives gives them a hydrophobic character which can help them to interact with biological membranes, enhancing their activity. By having polyphenolic groups (GPF) in their structure, they are able to give characteristic properties to the dendritic molecule by functionalizing its surface, in such a way that they can act as powerful antioxidants and free radical scavengers.
- The compounds of the invention may be used alone or in combination with one or more compounds of the invention, or in combination with one or more different drugs (or any combination thereof).
- Greater stability against degradation and Ease of diffusion through biological barriers, and therefore access to target cells.