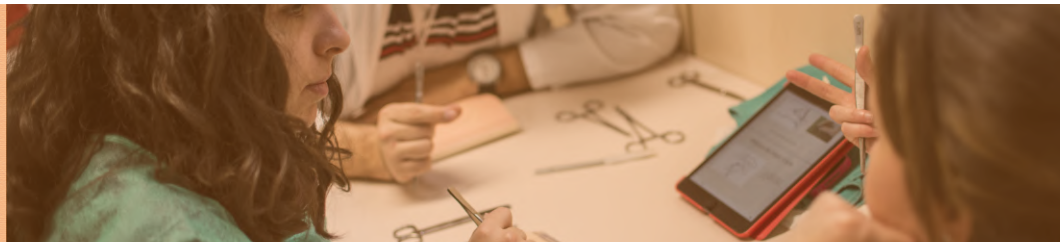




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## CARBOSILANE METALLODENDRIMERS CONTAINING RUTHENIUM AND COPPER IONS COORDINATED TO SCHIFF BASE LIGANDS, THEIR PREPARATION AND USES

**Patent**  
ES2735282

**Code**

BIO\_UAH\_32

### Application areas

- Biological Sciences
- Agrofood Industry
- Pharmaceutical and Cosmetics

### Type of Collaboration

- Technical cooperation
- Comercial agreement
- License agreement
- Manufacturing agreement

### Main Researchers

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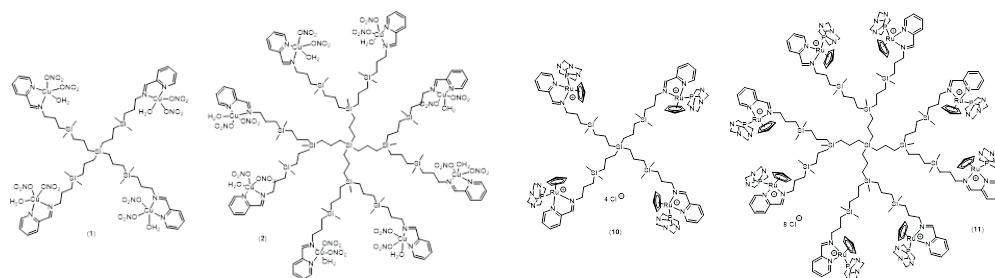
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### ABSTRACT

Preparation of metal dendrimers for their use in the treatment of various cancers, especially advanced prostate cancer, as well as infectious diseases caused by bacteria and other biomedical applications.

These systems are based on carbosilane dendritic skeletons functionalized on their periphery with Schiff bases capable of coordinating metal atoms, in this specific case the metals coordinated to the dendritic system are Cu(II) and Ru(II).

The preparation is carried out by coordinating the corresponding metal salt to the Schiff base groups of the precursor dendrimers, through simple synthetic routes with high yields.

In the metal dendrimers of the present invention, the dendrimer significantly increases the therapeutic activity with respect to the isolated metal complexes. Its antitumor activity in a variety of cell lines (derived from breast, cervix, prostate and colon tumours) is in the micromolar range and is selective, up to 16 times more active in tumour cell lines than in healthy ones. This antitumour activity is reproducible in in vivo assays, reducing up to 36% the volume of the subcutaneous tumour in immunosuppressed mice. In addition, they show bacteriostatic and bactericidal activity in both Gram+ and Gram- type bacteria. Therefore, these compounds are an interesting alternative for the use in the pharmaceutical industry, and can be employed as new drugs or formulations containing them, for the treatment of tumour diseases and as antimicrobial drugs.

### ADVANTAGES AND INNOVATIONS

- Due to the lipophilic nature of the skeleton, even small generation systems have a high interaction with biological membranes, resulting in high biological activity and synthetic cost savings.
- The preparation process is highly versatile and can easily generate metal dendrimers based on different metals and on demand depending on the application.
- The dendritic nature gives these derivatives a nanoscopic size and a multivalence (capacity to host multiple groups on its surface) that can favour the properties of these compounds and different from what it would be found in these same groups if they were individually.
- Biodistribution tests carried out by ICP, after several in vivo assays, show that they are eliminated by urine and faeces, presenting low cardiotoxicity and low-moderate liver damage.
- The necessary development, for the commercial exploitation of this patent, does not involve a high technical difficulty