



## TITOLO

Materiali nanocompositi formati da una matrice polisaccaridica e nanoparticelle metalliche, loro preparazione ed uso

Three-dimensional nanocomposite materials consisting of a polysaccharidic matrix and metallic nanoparticles preparation and use thereof

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## TITOLARI

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## DESCRIZIONE E SETTORI DI APPLICAZIONE

La presente invenzione è relativa a materiali nanocompositi formati da una matrice polimerica consistente in una composizione polisaccaridica tra polisaccaridi neutri o anionici e polisaccaridi cationici ramificati, in cui nanoparticelle metalliche sono disperse uniformemente e stabilizzate, alla loro preparazione ed uso in campo biomedico, farmaceutico ed alimentare.

In the present invention nanocomposite materials in form of three-dimensional structure formed by a polymeric matrix consisting of a polysaccharidic composition of neutral or anionic polysaccharides and a branched cationic polysaccharides, in which metallic nanoparticles are uniformly dispersed and stabilized, are described. Using appropriate techniques of gelification or by



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means of an appropriate dehydration, the nanocomposite materials are three-dimensional matrices having different shapes in hydrated form as hydrogels, or in non-hydrated form. These nanocomposite materials have a broad-spectrum of strong bactericidal activity, but do not show any cytotoxicity. The particular antibacterial properties associated with metallic particle nano-scale and the presence of biological signals on the polymeric chains along with the lack of cytotoxicity may be exploited in developing new-generation biomaterials provided with antimicrobial properties and for many other applications in biomedical, pharmaceutical and food field.

## VANTAGGI

Three-dimensional nanocomposite systems, where size-controlled metallic nanoparticles are homogeneously dispersed into polysaccharide matrices, are provided as matrices in the gel or in the solid form, and the properties of which are particularly suitable for biologic applications in the biomedical field.

Such a three-dimensional nanocomposite is obtainable by a simple and economically convenient chemical approach, and in particular, but not exclusively, by producing biocompatible and bioactive hydrogels and dehydrated hydrogels.

## STATUS

Concesso in Italia

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