

NANODEVICE TO TREAT INFECTIONS CAUSED BY BIOFILMS

The Need

Treatment of infections caused by pathogens forming biofilms.

The Solution

The present invention provides a new nanodevice that breaks, with high efficacy, the matrix of biofilms formed by infectious microorganisms, and allows the release of therapeutic agents from the nanodevice into the biofilm.

Innovative Aspects

The present invention provides a new nanodevice comprising a nanoparticle containing a therapeutic agent with, both, a molecular drill and a self-propulsion system linked to the surface of the nanoparticle.

Synergistic effect of the mechanical action of the self-propulsion system with the catalytic action of the molecular drill breaks the matrix of biofilms.

Controlled delivery of the therapeutic agent inside the biofilm at the place of infection.

Versatility of the nanodevice to be easily functionalized with different biomolecules and, therefore, to treat different kinds of infections caused by biofilms.

Drastic reduction of both, the extracellular matrix of the biofilm and cellular viability. High efficacy reducing the dose of antibiotics and antifungal, respectively, needed at the place of infection.

Stage of Development:

Nanodevice has demonstrated disinfection of both, *in vitro* and *ex vivo* samples.

Intellectual Property

PCT application (May 5, 2023)

Priority date: May 26, 2022

Available for:

- Licensing
- Further development



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