

PROBIOTIC CELLULOSE: BIOMATERIAL FOR ANTIBIOTIC-FREE THERAPY OF ANY SKIN INFECTION

Probiotic cellulose has been developed, a new concept of biomaterial for medical care. This bacterial cellulose acts as the host of a huge amount of living probiotics which exhibits bactericidal activity against some of the pathogens involved in most skin infections. These living biomaterials represent a new class of device for the free-antibiotic therapy of topical bacterial infections, is a biomaterial for TODAY, in daily life, and for TOMORROW, in a hypothetical post-antibiotic era.

Technology for Licensing

Keywords:

Probiotic, cellulose, biomaterial, bacterial cellulose, antibacterial, antibiotic-free therapy, skin infection, healing of wounds

Description:

The dramatic increase of antibiotic-resistant bacteria is one of the biggest threats to global health. New antibiotic-free approaches are needed to address bacterial infections.

The use of probiotics is a very promising and hopeful alternative. Nonetheless, its viability and activity are affected by the hostile chemical environment of the infected tissue. Therefore, it is crucial the chose an appropriate matrix to host and protect them.

Bacterial cellulose (BC) is a biopolymer synthesized by various aerobic non-pathogenic bacteria, which has been explored for biomedical applications, in particular as a wound dressing material. However, BC itself has no activity against bacterial infection. In addition, this type of approach involves the previous isolation of bacterial cellulose, which makes the process more expensive.

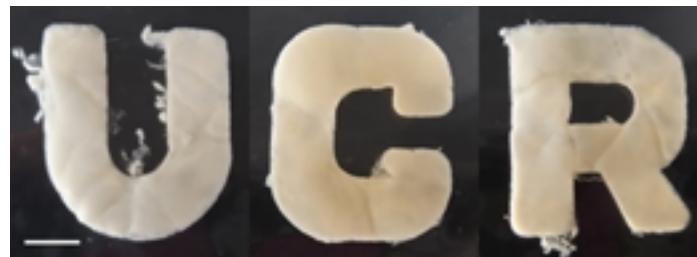
The developed technology, probiotic cellulose (PC), is a new concept of biomaterial for the antibiotic-free therapy of bacterial infections that would solve the yet unsolved problems in BC. In contrast to all previous cellulose-based materials, in PC the probiotics entrapped in the cellulose give to the biomaterial antibacterial activity by itself, capable to eradicate *Staphylococcus aureus* and *Pseudomonas aeruginosa*, the most active pathogens in severe skin infections. Moreover, it is produced by a smart one-pot synthesis which is more easy and economic than bacterial cellulose (BC).

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Advantages and Benefits

- » Non-toxic and fully biocompatible
- » Long term effectiveness
- » Reduces need for frequent dressing changes
- » Promotes the development of granulation tissue
- » Low specificity of producing microorganisms
- » High viability
- » Exceptional mechanical properties
- » Probiotic cellulose can be incorporated into textiles
- » Antibiotic-free antibacterial



Probiotic cellulose

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