

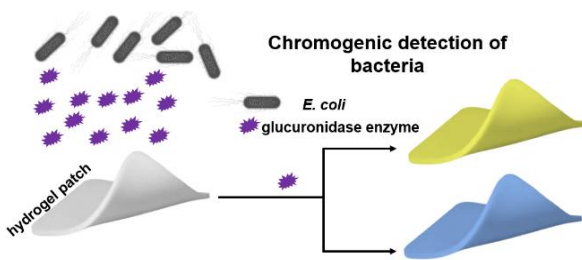
SmartCoverCare

Intelligent antimicrobial coating with indicator function for tissue contact surfaces

Invention

The increasing prevalence of chronic and infected wounds poses significant challenges to healthcare systems worldwide. In particular, the growing resistance to antibiotics (AMR) necessitates alternative, locally acting treatment approaches.

The invention “SmartCoverCare” offers an intelligent, antimicrobial coating for tissue contact surfaces that combats infectious agents and indicates their early presence through a color change of the coating.



E. coli can secrete two forms of the glucuronidase enzyme, one of which can produce the yellow color by converting substrate 1, and the second can produce the blue color by converting substrate 2.

The system based on a functionalized polymer network with covalently bound antimicrobial peptides (e.g., SAAP148) and integrated color indicators that react to bacterial enzymes. Optionally, a digital component can record and evaluate the color reaction to enable objective infection analysis.

This innovation aligns with the guidelines of the current WHO Health Product and Technology Innovation Report (2024), which emphasizes the need for safe, affordable and locally producible MedTech solutions for the global health sector.

Antimicrobial and diagnostic effects of the material:

- Antimicrobial: Combats pathogenic and multi-resistant bacteria locally
- Infection detection: Visible function indicates bacterial activity
- Digitally expandable: Color change can be evaluated by app/reader
- No release of active antimicrobial ingredients into the contact surface
- Increases biocompatibility

Commercial Opportunities

The versatility of this therapeutic hydrogel offers advantages for companies and institutions in the medical, nursing, veterinary, cosmetic, and research sectors.

The polymer network is ideal for coating catheters (e.g., for diabetic foot ulcers), tubes with an increased risk of infection, and permanently implanted subcutaneous instruments and sensors.

Current Status

This development took place within the framework of the EU project STIMULUS, which promotes innovations in the field of wound healing. A patent application has been filed with the German Patent and Trademark Office, and subsequent international applications have been submitted. We offer interested companies the opportunity to license and further develop this technology in collaboration with the University of Siegen and the Amsterdam University Medical Center. Furthermore, research into the technology can be conducted within the framework of a project in which interested companies can participate.

Relevant Publications

Atif, Babuççu, Riool, Zaat, and Jonas, doi.org/10.1002/marc.202400785

Atif, Babuççu, Riool, Zaat, and Jonas, https://doi.org/10.1039/D5MA00580A.

An invention from the University of Siegen and the Amsterdam University Medical Center.

Advantages

- No antimicrobial substance leaching
- High safety due to covalent bonding of integrated color indicator
- Dual function: Antimicrobial effect and infection detection
- Wide range of applications

Technology Readiness Level

1 2 3 4 5 6 7 8 9

Technology validated in lab

Sector(s)

- Hospitals and clinics
- Homecare
- Wound care manufacturers
- Veterinary medicine
- Sports medicine and rehabilitation

Ref.-No.

7031



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