TECHNOLOGY

Stable Enzyme for the Prevention of Bacterial Biofilm Formation

OVERVIEW

Background

Antibiotic-resistant bacteria are becoming a major health concern in the United States. While a major factor in the development of antibiotic resistance is due to the improper use of antibiotics, the formation of biofilms can also decrease the effectiveness of antibiotics. Biofilms form when free-moving bacteria undergo a cellular change and adhere themselves to surfaces forming, colonies that limit antibiotic access to the bacteria. Some biofilms even allow bacteria to pass acquired antibiotic resistance on to neighboring bacteria.

Bacterial infections often involve the formation of biofilms. When bacteria first enter into a wound site, biofilm formation allows the bacteria to stay within the wound and colonize the host. Medical implants are also a common source of biofilm formation within the body. These solid synthetic surfaces limit immune system monitoring while creating a useful scaffold for biofilm formation. With an increase in medical implants, bacterial biofilm formation is becoming an increased concern in medicine. Currently, there is no way to treat biofilm formation on medical implants short of the replacement of the implant. This requires additional surgeries and costs for new implants. The development of an in vivo treatment for bacterial biofilm will help lower rates of bacterial infection in health care settings and may have uses in other industries as well.

Innovative Technology

A researcher at the University of Maryland has identified a bacterial enzyme that can interfere with the ability of bacteria to adhere to surfaces and form biofilms. Through continued research, a recombinant enzyme has been developed and expressed in bacterial strains commonly used in cell culture. Initial research has shown the recombinant enzyme to be as efficient in disrupting S. epidermidis biofilms as a commercially available product. Additionally, the new recombinant enzyme is stable at a wider range of temperatures, increasing bioavailability and shelf life.

APPLICATIONS

· Treatment of bacterial infection at wound sites
· Treatment/prevention of biofilm formation on medical implants
· Prevention of biofilm formation on other non-medical surfaces

ADVANTAGES

· Disrupts biofilm formation, allowing for proactive treatment of biofilms
· Stable across broad range of temperatures, increasing usability

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Pending

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CATEGORIES

- Biologics

EXTERNAL RESOURCES

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