



Surface Coating with Novel Antimicrobial Peptide DGL13K

Family of antimicrobial peptides, based on the core peptide GL13, that directly attack the bacterial cell membrane.

IP Status: US Patent Issued # 11,147,746, US Patent Pending Application# 17/098,629

Applications

- Novel peptide-based antibacterial therapeutic
- Treatment of chronic wound infections, oral infections and burn wound infections
- Prevention and treatment of bacterial biofilms

Key Benefits & Differentiators

- **Broad antibacterial activity:** GL13K acts against Gram-positive and Gram-negative bacteria and biofilms, in solution and as an implant coating
- **Recalcitrant to resistance:** GL13K does not cause de novo drug resistance
- **Active against priority pathogens:** GL13K has activity against Enterococcus, Staphylococcus, Klebsiella, Acinetobacter, Pseudomonas Escherichia, Streptococcus and Porphyromonas
- **Low toxicity:** GL13K peptide has low mammalian cell toxicity and low hemolytic activity

Technology Overview

Antimicrobial resistance is a significant global public health challenge associated with nearly 5 million deaths worldwide in 2019. An increasing number of infections including pneumonia, gonorrhea, hospital-acquired infections and foodborne illnesses are becoming difficult to treat due to antibiotic resistance. The economic costs of antibiotic resistance are enormous due to increased medical costs, long periods of hospitalization and increased mortality. In addition to judicious use of antibiotics, it is imperative to develop new, efficacious therapeutics, which do not cause new bacterial resistance.

Researchers at the University of Minnesota have developed a family of antimicrobial peptides, based on the core peptide GL13, which exhibit several desirable characteristics for a novel antibiotic. These peptides directly attack the bacterial cell membrane making them less susceptible to bacterial resistance. Briefly, in vitro studies of the D-enantiomer of GL13K showed that the peptide is effective against multidrug-resistant *Pseudomonas aeruginosa*, methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant Enterococci (VRE), ESBL-producing Enterobacterales and carbapenem-resistant Enterobacterales (CRE) (1,3). GL13K kills established biofilms (Fig. 1) and GL13K peptide coating of titanium implants and on dental tissues prevented biofilm formation (4,5) without impeding bone or dental tissue healing (6). In vivo studies in a mouse burn-wound infection model showed that DGL13K reduced infection (2) while increasing wound healing. Taken together, the GL13K peptide has desirable characteristics that make it suitable for development into an antibacterial therapeutic and surface coating.

Phase of Development

TRL: 3-5

Technology ID

20160093, 2019-312, 2019-364

Category

Life Sciences/Biologics
Life Sciences/Biochemicals &
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Life Sciences/Human Health
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