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Novel Antimicrobial Peptide DGL13K

An antimicrobial peptide DGL13 that exhibits several desirable characteristics for a novel antibiotic.

IP Status: US patents issued and pending

Applications

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

Key Benefits & Differentiators

- **Broad antibacterial activity,** DGL13K acts against Gram-positive and Gram-negative bacteria and biofilms.
- **Active against priority pathogens,** DGL13K kills Enterococcus, Staphylococcus, Klebsiella, Acinetobacter, Pseudomonas, Escherichia, Streptococcus and Porphyromonas.
- **Active against drug-resistant bacteria,** including MRSA, VRE, MDR, and XDR strains.
- **Recalcitrant to resistance,** DGL13K does not cause de novo drug resistance in Gram-negative or Gram-positive bacteria.
- **Low toxicity,** DGL13K has low mammalian cell toxicity, low hemolytic activity and low in vivo toxicity.
- **No hypersensitivity** after repeated topical application.
- **Neutralizes bacterial endotoxin**
- **DGL13K forms bioactive hydrogels**
- **Stable in solution for at least 2 years**

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 judicial use of antibiotics, it is imperative to develop new classes of antimicrobial therapeutics, which can overcome existing resistance without causing new bacterial resistance.

Researchers at the University of Minnesota have developed the antimicrobial peptide DGL13, which exhibits several desirable characteristics for a novel antibiotic. The peptide overcomes several bacterial resistance mechanisms, without causing new resistance. Briefly, in vitro studies of DGL13K showed that the peptide is effective against multidrug-resistant Pseudomonas aeruginosa, methicillin-resistant Staphylococus aureus (MRSA), vancomycin-resistant Enterococci (VRE), ESBL-producing Enterobacterales and carbapenem- resistant Enterobacterales (CRE). DGL13K eradicates established biofilms. In vivo studies in a mouse burn-wound infection model showed that DGL13K reduced infection while increasing wound healing. Taken together, the DGL13K peptide has desirable characteristics that make it suitable

Technology ID

20160093, 2019-312, 2019-364

Category

Life Sciences/Biologics
Life Sciences/Biochemicals & Small Molecules
Life Sciences/Human Health
Life Sciences/Therapeutics

Learn more

for development into an antibacterial therapeutic.

Phase of Development

TRL: 3-4

In vivo studies.

Desired Partnerships

This technology is now available for:

- License
- Sponsored research
- Co-development

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Researchers

- **Sven-Ulrik Gorr, PhD** Professor, School of Dentistry
- Conrado Aparicio, PhD
- Zhou Ye, PhD

References

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