Title: Novel Peptide Inhibiting A. baumannii Biofilm Formation

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KEYWORDS: Acinetobacter baumannii, biofilm, peptide
DOMAIN: Biotechnology

SUMMARY:

The de novo peptide targets Acinetobacter (A) baumannii-related infections. A. baumannii is a prominent nosocomial pathogen and causes hospital-acquired infections. Its pathogenicity is reinforced due to the formation of a biofilm on biotic and abiotic surfaces. The Biofilm obstructs the administration of antimicrobial agents due to the extracellular polymeric surface matrix. Also, frequent antibiotic administration can disrupt the natural balance of the microbiome and develop resistance to antibiotics. Hence, the emerging peptide-based technology is predicted to be an alternative to antibiotics because the synthesized peptide targets biofilm-specific factors, making it a promising candidate for therapeutic strategies targeting the multi-drug-resistant variants of A. baumannii.

ADVANTAGES:

1. The Peptide has a multifaceted mode of action, by targeting "biofilm-specific factors".
2. Potentially replacement of over-the-counter availability of antibiotics and reduction of its extensive use.
3. The peptide effectively targets both the planktonic and biofilm forms of A. baumannii.
4. Precise design and efficient work against A. baumannii-related infections.

APPLICATION:

1. Antimicrobial therapy: the peptide is incorporated as a coating of biomedical devices (e.g. catheters)
2. Peptides can serve as a candidate for peptide-based vaccines.
3. Targeted peptides are crucial in personalized medicine by tailoring treatments to an individual's specific genetic and molecular profile.

SCALE OF DEVELOPMENT: The peptide is fabricated and tested at a lab scale.

TECHNOLOGY READINESS LEVEL: TRL 3

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