

## ANTIBACTERIAL ADJUVANTS AND APPLICATIONS THEREOF

**Small molecules that increase the susceptibility of multidrug-resistant bacteria to last resort antibiotics known as cationic antimicrobial peptides (CAPs) thereby providing a life-saving therapeutic option for patients.**

### Case ID:

ID2019-010

### IP Position:

Patent Pending

### Development Status:

TRL 3: Concept demonstrated on lab platform - analytical models to support lab design

### Opportunity

Partners sought for development and prototype testing.

### Category(s):

Antibiotics, Microbiology, Drug development, Infectious diseases

### Keywords:

Cationic antimicrobial peptides (CAPs), Antibiotic resistance, Antibiotic adjuvants, Gram-negative bacteria

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## Technology Overview

*Pseudomonas aeruginosa* is a pathogenic bacterium that causes severe infections, and cationic antimicrobial peptides (CAPs) are currently used as a last resort treatment for infections when other antibiotics fail, but the emergence of CAP-resistant strains has become a major concern. Researchers identified small molecules that act as antibiotic adjuvants, allowing CAPs to regain their effectiveness against the bacteria. The discovery of these small molecules is particularly significant because no approved antibiotic adjuvant for CAPs currently exists.

Overall, this technology represents a promising advancement in the fight against antibiotic resistance and opens up new possibilities for the development of effective treatments against multidrug-resistant bacterial infections.

## Key Features & Benefits

- **Enhanced Efficacy of Existing Antibiotics:** Enhances the susceptibility of multi-drug resistant *P. aeruginosa* to existing antibiotics such as colistin and polymyxin B.
- **Lower Doses and Reduced Side Effects:** By enhancing the effectiveness of CAPs, widens the therapeutic index by requiring lower dosages of the CAP, helping to minimize the side effects caused by CAPs.
- **Filling a Therapeutic Gap:** With no antibiotic adjuvant for CAPs currently approved for use, these small molecules offer a novel and much-needed therapeutic strategy for combating CAP-resistant strains.

## Potential Applications

- Treating CAP-resistant strains of *P. aeruginosa*.
- Treating *P. aeruginosa* infections in patients experiencing side effects from large CAP doses.
- Can be developed into antibiotic adjuvants thereby enhancing effectiveness of existing antibiotics.
- Potential for use in other gram negative pathogens that utilize similar resistance mechanism.
- Infection prevention in vulnerable populations susceptible to *P. aeruginosa* and other bacterial infections.

Fig 1.

An adjuvant compound and colistin treatment in *Pseudomonas aeruginosa* resulted in enhanced antibiotic activity.

