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# Dual Action, Unnatural Proline-rich Peptides Target Elusive Intracellular Pathogenic Bacteria

**A synthetic, broad-spectrum antimicrobial peptide effectively kills drug-resistant bacteria, including MRSA, and enters human cells without damaging red blood cells, offering a promising candidate for new drug development.**

Antimicrobial resistant microorganisms are those that have lost sensitivity to one or more antimicrobial drugs. The World Health Organization recognizes antimicrobial resistance as a current global threat that has an economic impact of about three times the direct healthcare expenditures or about 1 percent of Gross Domestic Product. The growing risks of antimicrobial resistant microorganisms, especially antibiotic resistant bacteria including methicillin-resistant Staphylococcus aureus, necessitate the development of a new generation of antibiotics. Posing an additional challenge to drug design, many bacteria, including Mycobacterium tuberculosis, Salmonella, Listeria, and Brucella, also have the ability to inhabit human cells, often macrophages.

Purdue University researchers have developed a broad-spectrum antibiotic that effectively enters human cells. This synthetic, proline-rich antimicrobial peptide has proven to kill a number of Gram-negative and Gram-positive bacteria including MRSA. This peptide effectively invades macrophages and exhibits strong intracellular activity while causing no damage to red blood cells as compared to most antimicrobial peptides. This effective peptide antibiotic shows promise as a candidate in the fight against antibiotic resistant bacteria.

**Advantages**:

-Effective against antimicrobial resistant bacteria including, MRSA

-Does not damage red blood cells

-Enters human macrophages

**Technology ID**
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**Category**
Biotechnology & Life Sciences/Synthetic Biology & Genetic Engineering
Pharmaceuticals/Small Molecule Therapeutics

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Potential Applications:

-Medical/Health

-Pharmaceutical industry

-Drug development for antibiotic-resistant bacteria

**TRL:** 2

**Intellectual Property:**

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**Keywords:** Antimicrobial peptide, broad-spectrum antibiotic, MRSA, antibiotic resistance, drug development, proline-rich, intracellular activity, Gram-negative bacteria, Gram-positive bacteria, pharmaceutical industry