LIPTIN

NOVEL ANTIBIOTIC COMPOUNDS

TECHNOLOGY FIELD

Biochemistry, Pharmaceuticals

IP PROTECTION

Patent Pending

RESEARCHER

Dr. Dennis Burns is a professor of organic chemistry at Wichita State University. His research involves pharmaceutical drug design, specifically the development and synthesis of new molecules to combat the emerging threat of drug-resistant bacteria. Support and funding for this research endeavor has came from programs such as NSF, NSF EPSCOR, ACS, as well as K-INBRE, a NIH program.

BACKGROUND

The development of antibiotic-resistant (AR) bacteria, or superbugs, is quickly becoming the largest threat to modern medicine, affecting the ability to treat or prevent even the most common types of infections. A growing list of infections, including pneumonia, tuberculosis, blood poisoning, and food-borne diseases, are becoming harder, and in some cases impossible, to treat as current antibiotics become less effective against AR infections. This will lead to higher medical costs, prolonged hospitalization, and ultimately increased mortality rates.

The antibiotics available today are inadequate to prevent and fight infections caused by AR bacteria. Current antibiotics only target a specific site in the bacteria, such as targeting the synthesis of the cell wall, protein, or DNA, to inhibit growth or even kill the bacteria. However, the bacterial genome can always find a way to reroute the antibiotic's single mode of action, leading to the development of antibiotic resistance.

ADVANTAGES

Researchers at Wichita State University developed a new class of antibiotic compounds, Liptin, which act on bacteria in an entirely new fashion. Initial testing included five of the six ESKAPE pathogens and showed bacterial results. The capabilities of these compounds are advantageous in the following ways:

- Effective against gram-positive and gram-negative bacteria
- Liptin compounds bind to plasma membrane and stay bound
- Binding causes a wave effect across the plasma membrane, disrupting numerous membrane and cellular functions

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