Novel Anti-bacterial Agents

Researchers at the University of South Florida and Torrey Pines have synthesized novel compounds showing anti-bacterial activity against bacterial pathogens.

Bacterial diseases remain the second-leading cause of mortality worldwide. Almost a quarter of the number of deaths are caused by organisms for which there are no treatment options remaining. There is a need for new anti-bacterial compounds to find effective ways to combat easily mutated and resistant bacteria, such as Entecoccus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, Enterobacter cloaceae (ESKAPE).

By employing synthetic combinatorial libraries, our inventors have synthesized a class of bis-cyclic guanidine compounds found to have anti-bacterial activity against all six ESKAPE human pathogens. The mechanism of action for these compounds is currently being explored, but they may function by inducing membrane stress and interfering with DNA repair pathways. With limited toxicity to human cells and potent anti-biofilm properties, these compounds show a promising efficacy in combating bacterial infections.

ADVANTAGES:
- Low toxicity to human cells
- Potent anti-biofilm properties
- Effective against ESKAPE pathogens

Antimicrobial Agents
Effective Against ESKAPE Pathogens

Novel bis-cyclic guanidines are efficacious during in vivo infection: Mice were I.P. infected with a lethal dose of S. aureus. After 1h, they were then injected with either front-runner bis-cyclic guanidines, vancomycin (positive control) or vehicle alone (negative control). Mice were then monitored for five days, and the significance of mortality measured using a log rank and chisquare test with 1-degree of freedom. * = p > 0.05, ** = p > 0.01.

Tech ID # 14A010