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Teixobactin O-Acyl Isopeptide Prodrugs

Tech ID: 32940 / UC Case 2022-718-0

BRIEF DESCRIPTION

Recently, teixobactin was investigated to treat antibiotic-resistant pathogens, but the drug has yet to reach clinical trial due to its tendency to form gels which prevents accurate dosing. To address this, researchers at the University of California, Irvine have invented a new library of teixobactin related prodrugs which show improved solubility and efficacy versus teixobactin.

SUGGESTED USES

This invention is intended to treat Gram-positive bacterial infections, particularly those caused by antibiotic resistant pathogens.

FEATURES/BENEFITS

- The prodrugs are far more soluble than the parent teixobactin and teixobactin derivative antibiotics and do not form gels.
- The prodrug molecules show stronger antibiotic activity versus the parent molecules.

TECHNOLOGY DESCRIPTION

Increasing rates of antibiotic resistance is a growing public health issue. Specifically, Gram-positive bacteria, like methicillin-resistant Staphylococcus aureus (MRSA), cause 35% of deaths globally. Recently scientists have discovered the novel antibiotic drug, teixobactin, which was shown to inhibit Gram-positive bacteria. When dissolved in aqueous environments, teixobactin and its analogues assemble into gels. This aggregation makes it difficult to effectively administer teixobactin therapeutically. Lowering concentrations may prevent gelation, but may also prevent adequate therapeutic dosage.

To address these challenges, researchers at the University of California, Irvine have developed a new library of teixobactin and teixobactin derivative prodrugs. Upon introduction of the prodrugs into cellular cultures, the prodrug is converted to the active antibiotic. These prodrugs have better solubility versus the parent compounds, imparting improved pharmacological properties. Additionally, the prodrugs show an improvement in antibiotic activity over the parent drug.

STATE OF DEVELOPMENT

The efficacy of this invention has been demonstrated with in vitro studies.

PATENT STATUS

| Country | Type | Number | Dated | Case |
|---------------------------|-----------------------|----------------|------------|----------|
| Patent Cooperation Treaty | Published Application | WO 2023/039482 | 03/16/2023 | 2022-718 |

CONTACT

Richard Y. Tun
tunr@uci.edu
tel: 949-824-3586.



INVENTORS

- » Jones, Chelsea
- » Nowick, James S.

OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
 - » Disease: Infectious Diseases
 - » New Chemical Entities, Drug Leads
 - » Therapeutics

RELATED CASES

2022-718-0

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ [Cyclic Peptide Inhibitors of The SARS-Cov-2 Main Protease](#)

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5270 California Avenue / Irvine, CA
92697-7700 / Tel: 949.824.2683



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