Indoline Sulfonamide Inhibitors of DapE as an Antibiotic

A Non Strain-Specific Antimicrobial Compound

Contact
Loyola University Chicago
1032 W. Sheridan Road
Chicago, IL 60660
[illegible]
Research Services
Director (773) 508-24
[illegible]@luc.edu

Inventors
Daniel P. Becker, Ph.D.
Richard C. Holz, Ph.D.

Field
Medicinal Chemistry

Technology
Antimicrobials/Inhibitors of DapE

Key Features
- Not thiol dependent
- Non strain-specific
- Allows for combination usage

Key Benefits
- Not prone to oxidation
- May overcome antimicrobial resistance
- Many routes of administration

Stage of Development
In vitro data

Status
Seeking licensing partner

Patent Status
Provisional Patent

Indoline Sulfonamide Inhibitors of DapE

Antimicrobial resistance (AMR) is a major, growing health and economic problem worldwide for humans and animals alike. Researchers at Loyola have synthesized and characterized novel compounds that specifically target N-succinyl-L,L-diaminopimelic acid desuccinylase (DapE), an enzyme that is required for cell wall synthesis. The claimed compounds will be toxic to bacteria by blocking the action of this vital enzyme. Inhibiting cell wall synthesis with these small molecules is a new approach that has the potential to overcome AMR in an array of disease causing bacteria. Broad spectrum effectiveness widens the possibilities for clinical applications of these new antibiotics. An additional advantage over many currently available antimicrobials is that these DapE inhibitors can be used in combination with additional therapeutic agents and can be administered via many different routes. Until now, undesirable oxidation has been a stumbling block for thiol-containing DapE inhibitors but these newly synthesized compounds are non-thiol inhibitors, thus avoiding that problem. In addition, drug toxicity should be of diminished concern since mammals have no comparable enzymatic pathway.

Market

With the World Health Organization's recent report that called AMR a global health crisis, the FDA, the EMA (Europe's FDA), Infectious Diseases Society of America, and several others have stepped in to address the issue of industry interest and lobbied to provide market incentives. A few years ago, the GAIN act was signed into law to incentivize new drug development. Drugs that fall under the GAIN provisions receive fast track status and enjoy added five years of market

Richard C. Holz

Dr. Holz is Professor and Dean, Helen Way Klingler College of Arts & Sciences, at Marquette University in Milwaukee, Wisconsin. Dr. Holz received a B.S. degree in Chemistry from Bemidji State University with minors in biology and mathematics, an M.S. degree in Chemistry from the University of Minnesota Duluth, and a Ph.D. in Chemistry from The Pennsylvania State University under the direction of Dr. William DeW. Horrocks, Jr. He was an NIH Postdoctoral Research Fellow at the University of Minnesota under the direction of Dr. Larry Que who is the 3M/Alumni Distinguished Professor of Chemistry. He subsequently joined the faculty at Utah State University before moving to Loyola University Chicago as the Chair of the Chemistry Department, and finally moving to Marquette. Dr. Holz