USF Available Technologies

Technology Transfer Office

Novel Classes of Antibiotics for Multidrug Resistant Bacteria

Researchers at the University of South Florida have developed multiple novel classes of small antibiotic molecules to treat multidrug resistant bacterial infections.

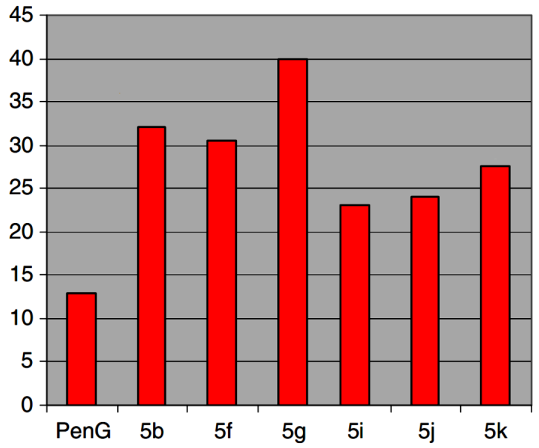
Drug resistant pathogens are one of the greatest challenges in modern medicine because these pathogens cannot be treated with common drugs or antibiotics. The ESKAPE pathogens (*E. faecium, S. aureus, K. pneumoniae, A. baumannii, P. aeruginosa*, and Enterobacter species) are a notorious group of deadly pathogens known to be the leading cause of hospital infections worldwide. Moreover, most of these ESKAPE pathogens have now developed resistance to conventional antibiotics. Due to such high infection rates, new antibiotics need to be developed to combat these drug resistant pathogens.

USF researchers have developed three novel families of antibacterial small molecules that have exhibited effectiveness against ESKAPE pathogens and other drug resistant bacteria including *S. aureus*, methicillin-resistant *S. aureus* (MRSA) and *F. tularensis*. They are known as beta-lactams, oxazolidones, and disulfides, and a variety of small molecules belonging to each of these families have been synthesized. Each of the antibiotic agents are able to fight a host of bacteria which have developed resistance to drugs that are already in use, making them highly valuable as potential constituents in new antibiotic regimens. The chemical synthesis of these molecules is relatively simple, meaning their scale up in manufacture will not be difficult. In addition to being used as treatments for infections, these compounds may be used as antibacterial agents in animal feed, or as preservatives for food, water, and other materials.

ADVANTAGES:

- **Antibacterial activity against drug resistant ESKAPE pathogens**
- **Also targets other drug resistant bacteria including MRSA**
- **Relatively easy synthesis**

Multiple Antibiotic Small Molecules to Fight Drug Resistant Infections



Increased Antimicrobial Activity (% Inhibited) of Various Novel Compounds Compared to Standard Penicillin (PenG)

Tech ID # 99B058, 05A047 06A017, 06B096, 07B118

Patent #s: 6,476,015/6,946,458/ 7,332,611/7,482,467/7,846,920/ 8,404,671/8,722,937/9,096,635/ 9,512,160/9,949,480/10,080,725

University of South Florida | Technology Transfer Office
813.974.0994 (office) | 813.974.8490 (fax)
patents@research.usf.edu
http://www.usf.edu/research-innovation/pl/