



TITLE: Gallium-salophen Antimicrobial Compounds and Methods of Use Thereof

Key Investigator

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Field

Pharmaceuticals
Clinical Medicine

Technology

Antimicrobial compounds
Pseudomonas aeruginosa

Advantages

Targets multidrug-resistant
Pseudomonas.

Novel approach to treating
infection.

Status

Available for license

Patent Status

PCT/US2023/035892
US Patent Appl. 18/000,802

UMB Docket Reference

FX-2020-101

External Reference

[Antibiotics Market Size,
Growth & Trends Report,
2021-2028
\(grandviewresearch.com\)](#)

Summary

This technology presents a novel approach in combating multidrug-resistant bacterial infections. Based on gallium-salophen compounds, the invention targets the HasA protein and the iron uptake system of *Pseudomonas aeruginosa*, an opportunistic bacterium notorious for causing life-threatening infections, especially in immunocompromised patients. Potential licensees will find this technology particularly appealing due to its wide application scope and the urgent need to address the increasing antibiotic resistance crisis.

Market

The global antimicrobial market is continuously expanding driven by the increasing prevalence of multidrug-resistant bacterial infections and the urgent need for innovative solutions. The global antibiotics market, valued at USD 40.7 billion in 2020, is expected to expand at a compound annual growth rate (CAGR) of 4.5% from 2021 to 2028, driven by rising prevalence of infectious diseases and supportive government legislation.

Pseudomonas aeruginosa infections, the specific target of this technology, are a serious public health threat due to their resistance to many current treatment strategies. Given the bacterium's ability to cause a wide range of infections, including sepsis, pneumonia, and urinary tract infections, the potential market for this technology is extensive.

Furthermore, the technology is particularly relevant in the cystic fibrosis community. *P. aeruginosa* is a leading cause of respiratory infections in cystic fibrosis patients, often persisting for decades and leading to life-threatening chronic infections. With the limited effectiveness of current treatment options, novel therapies targeting this bacterium are in high demand, making this technology a potentially significant addition to the market.

Technology

The technology involves the use of gallium-salophen compounds to inhibit the HasA protein and the *P. aeruginosa* siderophore iron uptake system, both crucial for the bacterium's survival and pathogenicity. The compounds are designed with a specific structure, represented by formula (I), which allows flexibility in the substituents and hence the creation of different gallium-salophen compounds.

The gallium-salophen compounds can be administered to patients in the form of a pharmaceutical composition to treat or prevent a wide range of conditions. These include, but are not limited to, sepsis, meningitis, endocarditis, osteomyelitis, otitis media, sinusitis, pneumonia, chronic respiratory tract infection, urinary tract infection, severe burns, cystic fibrosis, and various bacterial infections.

Additionally, the technology provides methods of treatment by inhibiting HasA protein activity, the *P. aeruginosa* siderophore iron uptake system, or both in patients in need of such treatment. This approach offers a new way to combat these infections, particularly problematic in immunocompromised patients and those with cystic fibrosis.