TECHNOLOGY OFFER

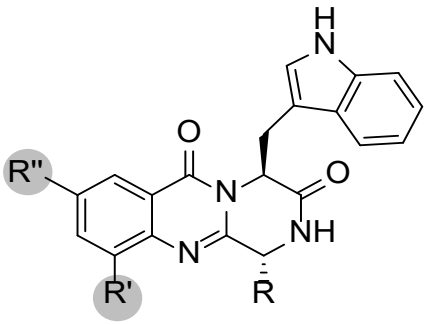
MARINE COMPOUNDS WITH ANTIMICROBIAL ACTIVITY

Background

Infectious diseases caused by microorganisms stand as a major threat to public health.
In particular, antibacterial resistance has increased dramatically, becoming an emergency in healthcare. Likewise, malaria represents a major threat to the public health worldwide.
The need to identify new chemical diversity is emergent, ideally with novel modes of action.

Technology

The invention describes the synthesis and the use of synthetic pyrazino [1,2-b]quinazoline-3,6-diones derivatives, a new class of compounds with antibacterial and/or antimalarial activities. The compounds are a subclass of alkaloids mostly isolated from marine and terrestrial sources.
Best lead compounds are potent antimicrobials against methicillin-resistant *Staphylococcus aureus* (MIC 4-8 µg/mL) and others against *Plasmodium falciparum* 3D7 (IC50 0.02-2 µg/mL). Molecular docking studies support the inhibition of gene expression of *Plasmodium* and *Leishmania* sp. via prolyl-tRNA synthetase.



Advantages

- Unique chemical structure with one-step synthesis from cheap building blocks;
- Potent antimicrobial activity against multi-resistant bacterial pathogens and antimalarial activity;
- Compounds had no hemolytic nor cytotoxic effects at MIC/IC50 concentrations.

PATENT STATUS

International Patent Application via PCT WO2021033159
Priority date: 20.08.2019
Granted in Europe
Pending in US

DEVELOPMENT STAGE

TRL 3 – Experimental proof of concept
Further research required

APPLICATIONS

Pharmaceutical;
Treatment of bacterial infections;
Treatment of malaria;
Antibacterial coatings and surfaces.

COOPERATION

Licensing agreement;
R&D partnership.

KEYWORDS

Antibacterial
Antimalarial
Plasmodium falciparum
Methicillin-resistant *Staphylococcus aureus*
Multidrug-resistant pathogens (MRSA)

DEVELOPED BY

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