Silyl-lipid N-acyl L-homoserine Lactones (AHLs) as Quorum Sensing Molecules (for Biofilms)

Tech ID: 34362 / UC Case 2020-505-0

ABSTRACT

Researchers at the University of California, Davis have developed a potential therapeutic strategy aiming at disrupting intercellular communication of pathogens using quorum sensing molecules and silicon-based pharmacophores.

FULL DESCRIPTION

Quorum sensing is a process of microbial communication that involves releasing and detecting signaling molecules known as autoinducers. Many pathogens rely on quorum sensing to coordinate their virulence and colonize their hosts. Therefore, targeting quorum sensing stands as a potential therapeutic strategy to prevent or treat infections. Silicon-based pharmacophores are identified as potential candidates to interact with these signaling molecules, providing a new approach in the field of drug design.

APPLICATIONS

- Potentially applicable in the treatment of bacterial infections.
- Could pave the way for novel drug design in pharmaceutical industry.
- Possible use in research to further understand microbial communication and its implications in host-pathogen interactions.

FEATURES/BENEFITS

- Targeting quorum sensing can effectively disrupt the coordinated effort of pathogens.
- Silicon-based pharmacophores are stable under physiological conditions and have great potential to enhance the efficacy of the therapeutic strategy.
- Can potentially reduce toxicity through alteration of metabolic fate when silicon is incorporated.
- Addresses the need for novel therapeutic strategies against infections resulting from pathogenic colonization.
- Solves the issue of limited diversity in pharmacophores by introducing silicon-based pharmacophores.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2023/141364	07/27/2023	2020-505

Additional Patent Pending

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OTHER INFORMATION

KEYWORDS

antibacterial, biofilms, drug design, infection control, metabolic fate, microbial communication, pharmacophores, quorum sensing, silicon-based, therapeutic strategy

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Materials & Chemicals**
  - Chemicals
- **Medical**
  - Disease: Infectious Diseases

- Therapeutics

RELATED CASES

2020-505-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Silyl-lipid Cannabinoids with Enhanced Biological Activity
- Cationic Silyl-Lipids for Enhanced Delivery of Anti-viral Therapeutics

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