

Compounds for Prophylaxis and Treatment of Staphylococcal Skin and Soft Tissue Infections, Wound Infections and Pneumonia

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Technology description

Identification of compounds that inhibit *Staphylococcus aureus* quorum sensing in an animal model. These compounds can be a prophylaxis and treatment of *Staphylococcus aureus* infections, wound infections and pneumonia, through limiting progression and clinical signs of infection.

Background

In recent years, antimicrobial resistance has become a global health threat. Furthermore, infections from drug-resistant strains of the bacterium *Staphylococcus aureus* have reached pandemic proportions. *Staphylococcus aureus* is the cause of most skin and soft tissue infections and it is becoming more resilient to antibiotics. Currently, the National Institutes of Allergy and Infectious Diseases propose anti-virulence strategies to disarm bacteria to reduce pathogenesis, along with approaches to harness the host immune system to better fight infections. By disarming the bacterial pathogen, it has been proposed that infections could be managed without creating environmental pressure to develop resistance. However, there is presently a lack of small-molecule drug leads for such treatments.

There is a crucial need for small molecules that inhibit bacterial virulence in order to limit pathogenesis. A vast majority of pathogenic bacteria use a communication system called quorum sensing to coordinate gene expression. In *Staphylococcus aureus*, quorum sensing is regulated by the accessory regulator gene (*agr*) operon, which controls virulence factor production leading to invasive infection. Therefore, pathogenesis in the host system can be limited by targeting the *agr* system, thus disrupting quorum sensing and virulence factor expression.

Technology Description

University of New Mexico researchers, along with the University of North Carolina at Greensboro, and the University of Iowa have identified compounds that inhibit *Staphylococcus aureus* quorum sensing in an animal model. These compounds can be a prophylaxis and treatment of *Staphylococcus*

aureus infections, wound infections and pneumonia, through limiting progression and clinical signs of infection.

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Application area

Treatment and prevention of Staphylococcal infections, wound infections and pneumonia
Potential for development of new treatments for Methicillin-resistant Staphylococcus aureus (MRSA) infections

Institution

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