Abstract

THESIS: CID 2950007 as an inhibitor of *Staphylococcus aureus* infections

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Staphylococcus aureus (*S. aureus)* infections are deleterious to the body, sometimes leading to sepsis. Sepsis is a state of whole-body inflammation that occurs when a body begins fighting an infection. *S. aureus* is emerging as one of the more common sources of bacterial infection. Statins, a class of drugs meant to lower cholesterol, have had unexpected effects in the protection against *S. aureus* infections. However, concerns have been expressed over the depletion of mevalonate, which occurs with the use of statins. A compound called CID 2950007 has recently emerged as a possible adjunctive therapy for protection against *S. aureus*. CID 2950007 has a high specificity for binding to the GTPase CDC42, which plays a major role in *S. aureus* host cell invasion. Through several cytotoxicity assays, fluorescently-labeled bacteria, and western blot analysis, this research shows that CID 2950007 is non-toxic to cells and provides protection against *S. aureus* invasion.