

Scientists Find a New Toxin That May be Key to MRSA Severity

July 17 2010

A research project to identify all the surface proteins of USA300—the most common community-associated strain of the methicillin-resistant form of the bacterium *Staphylococcus aureus* (MRSA)—has resulted in the identification and isolation of a plentiful new toxin that laboratory studies indicate is a potent killer of human immune cells.

Scientists at the National Institute of Allergy and [Infectious Diseases](#), part of the National Institutes of Health, say the [toxin](#) could be a key factor in the severity of MRSA infections in otherwise healthy people. The toxin, named LukGH, consists of two small proteins found on the surface of the [bacteria](#) and is secreted freely into the surrounding environment.

The scientists identified 113 proteins associated with the surface of USA300 and began to examine the role of the previously uncharacterized proteins. *S. aureus* surface proteins are key indicators of how the pathogen will respond to contact with [immune system cells](#), such as neutrophils, which the body produces in large numbers to kill invading microbes. Some proteins can aggressively attack these immune cells, and the demise of the neutrophils ultimately enables the bacteria to replicate and thrive. When the LukGH toxin was removed from USA300, studies showed that the strain caused little to no damage to human neutrophils. With the toxin present, the bacteria began forming pores in neutrophils which eventually led to their destruction.

The scientists say they do not know the full contribution of LukGH to

the severity of MRSA infection. However, LukGH is the only MRSA toxin currently known to promote destruction of human neutrophils after the bacteria have been ingested by the immune cells designed to destroy them. Using animal models of MRSA infection, the NIH team is continuing to study the role of LukGH in disease.

More information: C Ventura et al. Identification of a novel *Staphylococcus aureus* two-component leukotoxin using cell surface proteomics. PLoS One [DOI: 10.1371/journal.pone.0011634](https://doi.org/10.1371/journal.pone.0011634) (2010).

Provided by National Institutes of Health

Citation: Scientists Find a New Toxin That May be Key to MRSA Severity (2010, July 17)
retrieved 17 April 2024 from
<https://medicalxpress.com/news/2010-07-scientists-toxin-key-mrsa-severity.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.