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Staphylococcus aureus pore-forming toxins: the interface of pathogen and host complexity

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Abstract

Staphylococcus aureus is a prominent human pathogen capable of infecting a variety of host species and tissue sites. This versatility stems from the pathogen's ability to secrete diverse host-damaging virulence factors. Among these factors, the *S. aureus* pore-forming toxins (PFTs), α-toxin and the bicomponent leukocidins, have garnered much attention for their ability to lyse cells at low concentrations and modulate disease severity. Although many of these toxins were discovered nearly a century ago, their host cell specificity has only been elucidated over the past five to six years, starting with the discovery of the eukaryotic receptor for α-toxin and rapidly followed by identification of the leukocidin receptors. The identification of these receptors has revealed the species- and cell type-specificity of toxin binding, and provided insight into non-lytic effects of PFT intoxication that contribute to disease pathogenesis.

Keywords: *Staphylococcus aureus*; alpha-toxin; hemolysin; leukocidin; pore-forming toxins; *S. aureus* vaccines and therapeutics