

TITLE: ROLE OF PNEUMOCOCCAL SURFACE PROTEIN A (PspA) ON THE BACTERICIDAL ACTION OF LL-37 AGAINST *Streptococcus pneumoniae*

AUTORS: OLIVEIRA, S.¹; LIMA, R.²; DARRIEUX, M.³

INSTITUTION: 1, 2, 3. UNIVERSIDADE SÃO FRANCISCO - AV. São Francisco de Assis, 218, CEP 12916-900, Bragança Paulista – SP, Brasil.

ABSTRACT

Streptococcus pneumoniae is a Gram-positive encapsulated bacterium, and the leading cause of infections of the respiratory tract, especially pneumonia, with significant morbidity and mortality across the world. Pneumococcal surface protein A (PspA) is an important virulence factor in *S. pneumoniae*; it is an exposed protein able to interact with different innate immune molecules. Studies from our group have shown that PspA is able to inhibit the bactericidal action of lactoferrin and indolicidin – two antimicrobial peptides. Antimicrobial peptides (AMPs) are part of the innate immune system primarily killing bacteria via membrane interactions. Another cationic peptide with similar action is LL-37, a cathelicidin with bactericidal effects against bacteria. Pneumococci display variable resistance to LL-37; however, the role of PspA on the lytic actions of LL-37 has not been characterized. The present work aimed to determine the role of PspA on the lytic actions of LL-37 over *Streptococcus pneumoniae*. An *in vitro* bactericidal assay was designed to evaluate pneumococcal resistance of LL-37, comparing wild type and mutant, PspA-negative strains. The results show the mutant is significantly more sensitive to lysis by LL-37 than the wild type strain, suggesting a protective effect of PspA against the activity of LL-37. This confirms previous data from our group using other AMPs, and suggests that PspA acts by preventing the bactericidal effects of cationic peptides on pneumococci. Further experiments using recombinant PspA fragments and anti-PspA antibodies will be conducted to confirm this hypothesis.

Keywords: Antimicrobial peptide; LL-37; PspA; *Streptococcus pneumoniae*.

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