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Immunomodulatory and antibacterial effect of new peptides with potential for therapeutic use against *Staphylococcus aureus* infections

Laura Andrea Barrero Guevara, Carolina Muñoz Camargo and Helena Groot de Restrepo
Universidad de los Andes, Colombia

Multi-resistant *S. aureus* is the principal cause for skin and soft tissue infections, but the deficiency in treatment can allow the microorganism to infect other tissues and even cause death. The increase in the lack of options for therapeutic treatments for this infection is a major concern worldwide that needs to be addressed with the search for new antimicrobial agents and therapeutic approaches. The objective of this ongoing study is to determine the antimicrobial and immunomodulatory potential of new peptides individually and in combination in the search for a therapeutic treatment against *S. aureus* skin infections. First, stability related features, described proteins and antimicrobial peptides with sequence similarities and immune related features of the 8 new peptides were analyzed with a broad repertoire of databases and bioinformatic tools. Secondly, cytotoxic activity was determined by MTT assays with the 3 cell lines: African green monkey fibroblast-like kidney cells (VERO), Human monocytic cell line (THP-1) and macrophages that were obtained exposing THP-1 cells with 150 nM PMA. Thirdly, to ascertain the integrity of *S. aureus* strains resistant profile, antibiotic sensitivity assays were developed with a qualitative and a quantitative method. Then, a reference strain, a nonresistant clinically isolated strain and 3 multi-resistant clinically isolated strains were challenged to the eight peptides individually and in combination in microdilution assays. Finally, after differentiating the THP-1 monocytes cell line to macrophages as mention previously, cells were exposed to the peptides and the concentration of 13 cytokines was determined with the LEGENDplex™ Human Inflammation Panel (BioLegend).

Biography

Laura Andrea Barrero-Guevara has completed her undergraduate studies in Microbiology and Biology from Universidad de los Andes and she is pursuing her master studies in Biological Sciences in Universidad de los Andes in 2016.

la.barrero1854@uniandes.edu.co

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