

TITLE: Evaluation of the pathogenicity of methicillin-resistant *Staphylococcus aureus* (MRSA) isolated from samples of health professionals at a health institution in southwestern Bahia.

Authors: GOMES, C.P.¹; SILVA, L. S. C. da.¹; JUNIOR, M. N. S.¹; SOUZA, E.P.²; ALMEIDA, J.B.²; MARQUES, L.M.²

INSTITUTION: ¹UESC - State University of Santa Cruz (Soane Nazaré de Andrade Campus, Jorge Amado Highway, Km 16, Bairro Salobrinho CEP 45662-900. Ilhéus-Bahia). ²UFBA - Federal University of Bahia (Rua Hormindo Barros, 58 - Candeias, Vitoria da Conquista - BA, CEP 45029-094, (77) 3429-2709)

ABSTRACT:

Staphylococcus aureus is a microorganism of clinical importance, due to the variety of infections and also the high rate of resistance to antibiotics, especially those of the beta lactam class. This resistance was due to the acquisition of the *mecA* gene, carried by a mobile genetic element called the staphylococcal chromosome cassette *mec* (*SCCmec*). Expression of this gene leads to the production of a low affinity protein to beta-lactams (PBP2a), and strains that display this gene are known as methicillin-resistant *Staphylococcus aureus* (MRSA). The pathogenicity of *S. aureus* is attributed to several substances called virulence factors. Virulence factors allow the bacteria to adhere to the cells to avoid an immune response of the host. These molecules stimulate a proliferation of T lymphocytes, which results in increased levels of pro-inflammatory cytokines. Was chosen fourteen isolates bases on a previous molecular characterization(PFGE). Fourteen isolates were reactivated and a standard inoculum 0.135 Abs (660nm), equivalent to 10⁸ CFU, was performed. The obtained inoculum was used for infection in peritonsillar macrophages obtained from BALB / C mice (MOI 100: 1). The infection period lasted six hours, after this period the cells were removed to perform the gene expression for the cytokines TNF- α , IL-1, IL-6, IL-10 and IL-17. Data were analyzed by comparative method (^{2 $\Delta\Delta$ Ct}) and normalized based on GAPDH expression. Induction of gene expression in infected macrophages was observed for the proinflammatory cytokines TNF- α , IL-1, IL-6. However, the cytokines IL-10 and IL-17 had gene expression in a greater number of isolates when compared to pro-inflammatory cytokines. In conclusion, a response of monocytic cells to *S. aureus* infection was observed. Stressing the need to reinforce infection control measures in hospitals, once pathogenicity was identified in the circulating isolates.

Keywords: *Staphylococcus aureus*; pathogenicity; cytokines

Development Agency: CNPq, FAPESB