

TITLE: DETERMINATION OF THE TOLERANCE OR PERSISTENCE PROFILE IN ISOLATES OF *Staphylococcus aureus* FROM GOAT MASTITIS

AUTHORS: FRANÇA, C. A.; ROSA, D. S.; DO É, G. N.; CAVALCANTI, T. R.; LIMA, M. C.; MOREIRA, M. A. S.; SOUZA, R.F.S; COSTA, M.M.

INSTITUION: UNIVERSIDADE FEDERAL DO VALE DO SÃO FRANCISCO-UNIVASF, CAMPUS CIÊNCIAS AGRÁRIAS, PETROLINA, PE (RODOVIA BR407, KM 12 – LOTE 543 – PROJETO DE IRRIGAÇÃO SENADOR NILO COELHO, S/N, “C1”, PETROLINA-PE, BRAZIL, 56300-000)

ABSTRACT:

Staphylococcus aureus is the main agent of intramammary infections in small ruminants and the persistent occurrence of this disease has long been observed. Many bacteria can infect and persist within their hosts for long periods of time, due to host immunosuppression, pathogen evasion of the immune system, and antibiotic inefficacy. Microorganisms have the potential to survive to antibiotic treatment if they are resistant (caused by inherited mutations) or tolerant / persistent (transient survival of a population or subpopulation at high bactericidal concentrations and no changes in MIC) to a drug. Eradication of persistent infections is difficult, often requiring prolonged or repeated cycles of antibiotics treatment. Studies that identify these isolates contribute to the elucidation and better understanding of the mechanisms inherent to these phenomena, as well as to the development of alternative therapies. Therefore, the objective of this study was to identify the persistence or tolerance profiles of *S. aureus* isolates from caprine mastitis. For this purpose, the correlation of the optical density and colony forming unit (DOxCFU/mL) of the isolates was used to establish a specific bacterial population (5.5×10^6 CFU/mL) for subsequent steps. Then, through the broth microdilution test, minimum inhibitory (MIC) and bactericidal (MBC) concentrations were evaluated for enrofloxacin, an antimicrobial widely used in the properties from which the microorganisms were acquired. Finally, survival curves were performed using 2xMIC of the antimicrobial analyzing the surviving bacterial population at two hour intervals of a total period of 10 hours. The tests were performed on three independent days. The bacterial strains showed MIC and MBC varying between 0.12 and 1.95 µg/mL in both. In the survival curve, the isolates tested showed subpopulations surviving the maximum test period, except for one isolate that reached a period of 8 hours of survival. Thus, these data allow us to infer the occurrence of the persistence/tolerance phenomenon in the tested isolates, but more analyzes are necessary to distinguish them. This information will be relevant to the adoption of more effective mastitis treatment protocols.

Keywords: chronicity, dormancy, fluoroquinolone, MIC.

Development Agency: Fundação de Amparo à Ciência e Tecnologia do Estado de Pernambuco (FACEPE)