

TITLE: PROTEIN PROFILE OF *Staphylococcus aureus* MRSA EXPOSED TO A SUBLETHAL CONCENTRATIONS OF NISIN.

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Introduction: *Staphylococcus aureus* is a gram-positive human pathogen , and the widespread prevalence of strains with multiple antibiotic resistance determinants has made methicillin-resistant *S.aureus* (MRSA) a serious threat to human health. The limited development of antimicrobial agents in recent times has compounded the situation and increased the necessity to search for alternative remedies complementor replace antibiotics. Bacteriocins have many properties which suggest that they are viable alternatives to antibiotics, that include their action broad spectrum, their low toxicity and the fact that these peptides can be bioengineered. Nisin is a bacteriocin already used in the food industry as a preservative are produced by *Lactococcus lactis*. The aim of this study was to evaluate the protein profile of *S. aureus* MRSA exposed to sublethal concentrations of bacteriocin nisin. **Materials and Methods:** Previously it was determined the maximum sublethal concentration (MSC) of nisin against strain of *Staphylococcus aureus* MRSA ATCC from the microdilution method in Mueller Hinton Broth. Growth cells were harvested by centrifugation followed by extraction of proteins of *S. aureus* MRSA (Control) and exposed to sublethal concentrations of nisin (treatment). The extracted proteins were quantified by the Bradford method. After the measurement, the samples underwent a cleaning process and then 120 ug of each sample were subjected to the tape pI 4-7, 7 cm for overnight rehydration process. Then, isoelectric focusing was performed (first dimension). To perform the two-dimensional electrophoresis tape was positioned on top of a polyacrylamide gel (12.5% w / v). After separation in the second dimension, the proteins were visualized by staining with Coomassie Brilliant Blue. 2D gels of control and treated with nisin were scanned using scanner ImageScanner III (GE Healthcare Life Sciences). The images were analyzed by the software Image Master 2D Platinun v 5.7 (GE Healthcare Life Sciences). The authenticity of each "spot" has been validated by visual inspection. **Results and Conclusion:** In the control gel were found 83 spots and gel treated with nisin was found 56 spots. The results allowed to characterize the profile of the samples of *S. aureus* MRSA and will subsidize the identification and study of proteins expressed differently in each profile to elucidate possible mechanisms of action of bacteria studied.

Key words: Antibacterial, Nisin, Proteome, Resistance, *Staphylococcus aureus* MRSA

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