

**TITLE:** EVALUATION OF PROTEASE ACTIVITY IN *Staphylococcus aureus* ISOLATED FROM FOOD HANDLERS

**AUTHORS:** SOARES, J. S.; MARCOLAN, C. C.; CAVALCANTE, R. G.; BARBOSA JUNIOR, A. M.

**INSTITUTION:** <sup>1</sup>UNIVERSIDADE FEDERAL DE SERGIPE - UFS; <sup>2</sup>COLEÇÃO DE CULTURA DE MICRO-ORGANISMOS DE SERGIPE - CCMO/SE. (AV. MARECHAL RONDON, S/N - JARDIM ROSA ELZE. CEP: 49100-000 - SÃO CRISTÓVÃO – SE, BRAZIL).

**ABSTRACT:**

Consumption of food contaminated with *Staphylococcus aureus* is the third leading cause of food poisoning in the world, and most of the time the meal contaminated due to a failure to sanitize food handlers. *S. aureus* is a Gram-positive bacterium, resident in the flora microbial of the majority of the population, it mainly colonizes the oropharynx, nasal cavities, and the skin, especially the hands, corroborating for greater ease in the contamination of foods. Among the main virulence factors of this bacterium are the presence of a polysaccharide capsule in the cell wall, production of hemolysis and enterotoxins. The production of extracellular proteins is associated with the increase of the pathogenicity of this bacterium, since it promotes greater damage to the tissues of the host. Thus, the objective of the present work was to evaluate the production of proteases and gelatinases in strains of *S. aureus* isolated from food handlers. 15 strains of *S. aureus* were cultivated, seven of which were of nasal origin, seven collected from the hands and standard strain, used as quality control. The enzymatic characterization analyzed through the formation of halos in plates with specific media (albumin agar, gelatin agar and milk agar). Colonies that had a clear halo around them considered positive proteases; those without halo formation considered negative. To obtain the data, the size of the halo in each colony used as a measure. The results showed that 85% isolated from the nasal mucosa had proteolytic activity, whereas for the isolates from the hands, 70% were positive. As for the gelatinase production, only 29% of the nasal mucosa isolates were positive, and for those of the skin, 14%. When comparing the treatments, it observed that the albumin medium obtained higher productivity. In relation to the specimens, those with high proteolytic activity were SANL23, SAN2 and SAML13, respectively, originating from nasal mucosa and skin. These results show that most of the isolates have proteolytic activity, evidencing that these lineages have high pathogenic potential. Another contribution of this study is that this proteolytic activity must be tested in the laboratory and used as an indicative test of virulence factor in *S. aureus*.

**Keywords:** *Staphylococcus aureus*, virulence factor, proteolytic activity

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