Title: BIOFILM-FORMING ABILITY OF *Staphylococcus aureus* COLLECTED FROM DIFFERENT SOURCES.

Authors Souza, C.M.[1], Prado, L.A.[1], Gerson, J.A.[1], Gomes, M.N.[1], Silva, P.C.[1], Bocatti, C.R.[1], França, E.J.G[1].

Institution [1]UENP-Universidade Estadual do Norte do Paraná (Rua Portugal, 340 - Centro, 86300-000- Cornélio Procópio – PR).

Abstract:

Staphylococcus aureus is frequently related to nosocomial outbreaks and can causes invasive infections with significant morbidity and mortality rates. The use of catheters or other invasive medical devices is a risk factor for infections by *S. aureus* due to its biofilm-forming ability. This study aimed to evaluate the biofilm-forming ability of *S. aureus* collected from different sources: health center effluents and nasal microbiota of healthy individuals. We evaluated 54 isolates - 20 from health center effluents and 34 from nasal microbiota. The isolates were previously identified as *S. aureus* by biochemical and molecular methods and partake part of the bank of microorganisms of Microbiology Laboratory of UENP. For the analyses cells were inoculated from stock in Tryptone Soy Brothand cultured at 37 ° C for 24 hours. The cells were pelleted by centrifugation (3000 rpm / 7 min) and the cell concentration was adjusted in saline solution according to the turbidity of 0.5 tube of McFarland scale. Bacterial suspensions were placed (200 uL) in triplicate in polystyrene microplate wells and incubated at 37°C for 48 hours without shaking. TSB broth was used as negative control. After incubation, planktonic cells were aspirated and the wells were washed to remove non-adherent cells. The adhered cells were fixed and stained with crystal violet 1% solution; the wells were washed and dried. Next, acetic acid solution at 33% was added to each well and the plates were read in a spectrophotometer at 540 nm. The isolates were classified regarding to their potential for biofilm formation according to criteria previous described in the literature. All the isolates showed high potential for biofilm formation ranging from moderate to strong. We verify that 80% of the health center effluents isolates had moderate biofilm production whereas 20% were strongly producers. The normal flora isolates showed a greater biofilm production in relation to isolates from effluents with 32.3% strongly producers and 67.6% moderately producers. Our results showed high potential for biofilm formation of *S. aureus* isolates regardless their origin.

Keywords: biofilm-forming ability, health centers effluents, normal microbiota, *Staphylococcus aureus*

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