Title: ISOLATION AND IDENTIFICATION OF *Staphylococcus aureus* FROM WASTEWATERS OF HEALTH CENTERS IN PARANÁ STATE, BRAZIL.

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Abstract:

The Brazilian legislation concerning hospital wastewater treatment processes is defective and as a result these effluents are discharged within the common sewage in the majority of municipalities. Such residues contain high microbial counts as well as high concentrations of antimicrobial agents which are not effectively removed by conventional water treatment. Thus, contamination of treated water with hospital sewage can cause serious threats to human health. *Staphylococcus aureus* - a component of human microbiota – is an opportunistic pathogen and is often related to nosocomial infections. This study aimed to isolate *S. aureus* from wastewater of health centers from three different cities of Paraná, Brazil. Thirty milliliters were collected from each health center sewage which were promptly transported to the laboratory on ice. These samples were concentrated by filtration in a 0.22 µm ester cellulose membrane. After that, these membranes were incubated in 10 mL of peptone water for 2 hours at 37 °C and, finally, all suspensions were serially diluted (1:10) until 10^{-5}fold. The suspensions were spread on plates containing Luria Bertani Agar and the isolated colonies were submitted to presumptive identification for S. aureus. The identification was confirmed by PCR using the species-specific primers to the gen *Fem-A.* A total of 570 distinct microbial colonies were preserved in the collection of microorganisms of Microbiology Laboratory of State University of North Paraná (UENP). All microbial samples were submitted to Gram staining and to biochemical catalase test. We found that 15.2% of the stocked microorganisms are Gram-positive and catalase-positive. These microorganisms were then evaluated for in Mannitol Salt Agar, which is a selective and differential growth medium for *S. aureus*. Considering the total of microorganisms (570), 3,16% (18) were identified as *S. aureus*. The presence of *S. aureus* in health centers wastewater may be hazardous to human health considering the pathogenic potential of these microorganisms and the highly selective environment for resistant microorganisms that is provided by wastewaters.

Keywords: presumptive and molecular identification, *Staphylococcus aureus,* wastewaters of health centers

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