

**Title: EVALUATION OF THE SUSCEPTIBILITY TO ANTIMICROBIALS IN *Staphylococcus* spp. STRAINS FROM HOSPITAL EFFLUENTS.**

**Authors** Souza, C.M<sup>1</sup>, Prado, L.A<sup>1</sup>, Gerson, J.A<sup>1</sup>, Gomes, M.N<sup>1</sup>, Maia-Furlaneto, L<sup>2</sup>, Furlaneto, M.C<sup>3</sup>, França, E.J.G<sup>1</sup>.

**Institution** <sup>1</sup>UENP-Universidade Estadual do Norte do Paraná (Rua Portugal, 340 - Centro, 86300-000- Cornélio Procópio – PR),<sup>2</sup>UTFPR- Universidade Tecnológica Federal do Paraná (Estrada dos Pioneiros 3131 Jardim Morumbi,86036-370 - Londrina, PR – Brasil), <sup>3</sup>UEL- Universidade Estadual de Londrina (Rodovia Celso Garcia Cid - Pr 445 Km 380, s/n - Campus Universitário, 86057-970-Londrina – PR.).

**Abstract:**

Health centers produce high amounts of wastewater daily in Brazil and the majority of these wastewaters are discharged in urban sewage system or in water bodies without pre-treatment. These wastewaters are composed by several antimicrobial agents as well as high microbial counts. This dangerous combination makes the acceptor environments highly selective, resulting in an increase in the number of antimicrobial resistant microorganisms. *Staphylococcus* spp. is an opportunistic pathogen being considered as one of the main causative agents of nosocomial infections and has shown resistance to a wide variety of antibiotics. This study aimed to evaluate the antimicrobial susceptibility of *Staphylococcus* spp isolates collected from health center effluents. These isolates are stored at -20 °C as part of the collection of microorganisms of Microbiology Laboratory of State University of North Paraná (UENP). We evaluated 21 isolates which were initially cultured in Luria Bertani broth for 24 hours; subsequently the cells were pelleted and washed and bacterial suspensions were prepared with cell concentration adjusted according to the tube 1 of Mc Farland standard. The suspensions were uniformly spread in Petri dishes containing solidified Mueller-Hinton Agar. Then, commercially available antimicrobial disks were applied to each plate, according to disk diffusion method. Finally, five antimicrobials were intentionally chosen to this test - tetracycline, penicillin, erythromycin, gentamicin and oxacillin - which are the most widely used in the treatment for *Staphylococcus* spp infections. The plates were incubated at 37 °C for 24 hours and after the incubation the diameter of the *halos* were measured. Most of the isolates were resistant to penicillin, erythromycin and oxacillin (95.2, 85.7 e 81% respectively). Tetracycline also showed low effectiveness against *Staphylococcus* spp, with 33.3% of resistant isolates. Nevertheless, most of the isolates showed sensitivity to gentamicin. Our results show that, except for gentamicin, there was a high rate of resistance to the antibiotics tested, suggesting that the absence of an effective treatment of health center wastewater can provide a significant decrease in the range of antimicrobial effective to the treatment of *Staphylococcus* spp infections.

**Keywords:** *Staphylococcus* spp., susceptibility profiles, wastewater

**Financial support:** Fundação Araucária.