Title: SUSCEPTIBILITY EVALUATION TO ANTIMICROBIAL DRUGS OF CLINICAL AND ENVIRONMENTAL ISOLATES OF *Pseudomonas aeruginosa*

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Abstract:

Pseudomonas aeruginosa presents resistance mechanisms such as the production of enzymes able to hydrolyze antimicrobial molecules like beta-lactamase, the ability to upregulate the expression of efflux pumps, and mutations at specific sites that cause reduction in antimicrobial activity. Objective: This study aimed to evaluate the antimicrobial susceptibility of clinical and environmental isolates of *P. aeruginosa*. Methods: Seventeen environmental strains and 23 clinical samples were assessed for the antimicrobial susceptibility profile, determined by MIC (minimum inhibitory concentration) in accordance with the Clinical and Laboratorial Standards Institute (2014). Results: The MIC of the clinical isolates to ciprofloxacin ranged from 0.03 to 512 µg/mL, gentamicin ranged from 0.5 to 512 µg/mL, levofloxacin ranged from 0.25 to 64 µg/mL, meropenem ranged from 0.25 to 512 µg/mL, norfloxacin ranged from 0.25 to 64 µg/mL, ofloxacin ranged from 0.25 to 64 µg/mL, polymyxin B ranged from 0.25 to 512 µg/mL and cefazidime ranged from 1-128 µg/mL. For the environmental isolates, the MIC for ciprofloxacin ranged from 0.25 to 4 µg/mL, gentamicin ranged from 0.25 to 8 µg/mL, levofloxacin ranged from 0.25 to 32 µg/mL, meropenem ranged from 0.25 to 16 µg/mL, norfloxacin ranged from 0.25 to 4 µg/mL for ofloxacin, 25-16 µg/mL, polymyxin B ranged from 0.25 to 128 µg/mL and cefazidime ranged from 0.5 to 512 µg/mL. Detection assays of β-lactamase genes indicated the presence of $bla_{\text{OXA-24}}$, bla_{ampC} and bla_{TEM} in clinical strains. For environmental strains, genes for $bla_{\text{OXA-23}}$, $bla_{\text{OXA-24}}$, $bla_{\text{OXA-58}}$, bla_{ampC}, $bla_{\text{CTX-M}}$ and bla_{SHV} were detected. Conclusion: In this study it was observed that 12 clinical isolates and 6 environmental strains were classified as MDR due to resistance to antimicrobial groups of cephalorosporins (cefazidime), carbapenems (meropenem), aminoglycosides (gentamicin), quinolones (ciprofloxacin, levofloxacin, ofloxacin and norfloxacin), and polymyxin B, along with the ability of hydrolyzation of betalactamics, becoming more multiresistant.

Key words: *P.aeruginosa*, antimicrobial drugs susceptibility.