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EVALUATION OF THE RESISTANCE OF *PSEUDOMONAS AERUGINOSA* ISOLATED FROM ENVIRONMENTAL SAMPLES FROM WEST PARÁ - EASTERN AMAZON

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RESUMO

The Gram-negative bacterium *Pseudomonas aeruginosa* is an opportunistic pathogen and is present in diverse habitats such as water, soil, plants, and animals. In clinical settings, it can cause severe infections in immunocompromised patients. It is recognized by its numerous multiantibiotic-resistant strains, making the treatment of infections caused by *P. aeruginosa* more difficult. In this sense, this study aimed to analyze the resistance profiles of *P. aeruginosa* strains isolated from various environmental samples from the western region of Pará. The strains were isolated from anthropogenic Terra Preta soil (TPA), macrophytes (*Eichhornia crassipes*), rainwater, and open sewage. These bacteria were selected from the bacteriological collection of the Bacteriology Laboratory (LaBac) at the Federal University of Western Pará (UFOPA), where they were reactivated in test tubes containing the liquid culture medium Brain Heart Infusion (BHI) and incubated in a bacteriological oven (30°C ± 2°C/24 hours). Subsequently, the bacteria were purified and cultured in Tryptone Soy Agar tubes (TSA). The resistance test was carried out with 13 strains of *P. aeruginosa* using the agar disk diffusion method. Each isolate was suspended in 0.85% saline solution and calibrated spectrophotometrically for an absorbance between 0.08 and 0.13 at 600nm. Inoculation was done on Mueller-Hinton Agar plates using a sterile swab. The antibiotics with action against *P. aeruginosa* used were representatives of the 6 classes most recommended for this species, which are Ampicillin (AMP), Cephalothin (CFL), Imipenem (IMP), Amikacin (AMI), Vancomycin (VAN) and Ciprofloxacin (CIP). The antibiotic discs were distributed on the plates that were incubated at 37 °C for 18 hours, and the diameters of the inhibition zones were measured using a digital caliper. The results demonstrated that all *P. aeruginosa* strains were resistant to VAN, AMP, and CFL; all had intermediate resistance to IMP and were sensitive to AMI. 11/13 (84%) of the isolates showed intermediate resistance to CIP, and another 2/13 (15%) resisted this antibiotic. Our results highlight the potential for acquiring resistance in *Pseudomonas aeruginosa* strains, highlighting the presence of multidrug-resistant strains in environmental samples. It is essential to continuously monitor the environment and carry out studies on the horizontal transfer of resistance genes to facilitate the development of effective strategies to combat infections caused by this pathogen. Conjugation tests are already being conducted to determine whether this resistance is present in plasmid or chromosomal genes. Funding source: process 2022/1437972 FAPESPA/CNPq and UFOPA

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PALAVRAS-CHAVE: P aeruginosa, Antibiotic resistance, macrophytes, sewage, Anthropogenic black earth soil

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