

BACTERIAL RESISTANCE PROFILE OF RAW SEWAGE ISOLATES FROM THE CITY OF RIO BRANCO, ACRE

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RESUMO

Bacterial resistance is a global concern that compromises the effectiveness of antimicrobials used to treat infections. In this sense, untreated wastewater represents a means of spreading this resistance, mainly impacting vulnerable populations. In the North of Brazil, only 16% of the population has access to treated sewage, representing a public health problem. This study evaluated bacterial resistance in a sewage sample from the Capital Rio Branco-AC against antibiotics used in medical clinics. Samples were collected in triplicate in a sterile Falcon tube near a Maternal and Child Hospital and refrigerated (0-4°C). Serial dilutions were carried out from 10⁻¹ to 10⁻⁵ and seeded in PCA culture medium (Himedia®), bacterial isolation in TSA medium (Kasvi®) in cultivation at 37 °C for 24h, followed by morpho-tinctorial and biochemical tests according to Bergey's key. The resistance test was carried out with 14 strains using the agar disk diffusion method. The choice of antibiotics was based on the bacterial genus identified. The antibiotics used were vancomycin (30 µg), tetracycline (30 µg), penicillin (1U), ciprofloxacin (5 µg) Amoxicillin + Clavulanic Acid (20/10µ) ampicillin (10 µg) and imipinem (10 µg); erythromycin (15 µg); chlorafenical (30 µg); gentamicin (30 µg); tetracycline (30 µg); cephalothin (30 µg) and amikacin (30 µg). Of the isolates identified, 07/14 (50%) were of the genus *Corynebacterium* sp., 02/14 (14.3%) were *Lactobacillus* sp., 03 /14 (21.4%) were *Bacillus* sp., and 02/14 (14.3%) were of the genus *Pseudomonas* sp. All strains of *Pseudomonas* sp. showed resistance to ampicillin, penicillin, and vancomycin. One strain of *Corynebacterium* sp was resistant to ciprofloxacin, and three strains to penicillin, of which two were also resistant to ampicillin. For *Lactobacillus* sp., only one of the strains was resistant to penicillin, while the other was sensitive to all antibiotics tested. For *Bacillus* sp., two strains were resistant to penicillin and ampicillin, and one strain to amoxicillin + clavulanic acid. This result is alarming as it demonstrated the presence of resistant bacteria in untreated sewage, representing a hot spot for the dissemination of resistance genes by horizontal transfer. The supply of adequate basic sanitation can be a preventive measure and an essential tool in controlling this problem, which has been increasing with high mortality rates. Funding source: process 2022/1437972 FAPESPA/CNPq and UFOPA

PALAVRAS-CHAVE: Bacterial resistance, Residual waters, Antibiotics

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