

**TITLE:** EVALUATION OF THE RESISTANCE PROFILE OF ENTEROBACTERIA ISOLATED IN THE WATERS OF ARROIO DILUVIO, PORTO ALEGRE, RIO GRANDE DO SUL, BRAZIL

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**ABSTRACT:**

The Arroio Dilúvio is known as one of the main watercourses of the city of Porto Alegre. Along of its route it receives annually a large volume of wastewater and about 50 thousand cubic meters of garbage, being considered one of the most polluted streams in the city. In recent years, studies have investigated the relationship of aquatic environments contamination with processes of dissemination of antimicrobial resistance. The presence of pollutants in the water increases the selection pressure on the microorganisms, contributing to the mechanisms related to the evolution and dispersion of resistance genes. Due to its high biological connectivity, the aquatic environment can be considered a potential genetic reactor, promoting the increase of the genetic variability of the microorganisms. Thus, it ends up acting in the interaction of bacterial communities, allowing the maintenance and dispersion of mobile genetic element and, consequently, contributing to the development of resistance. The present study aimed to evaluate the resistance profile of Enterobacteriaceae isolated from Arroio Dilúvio in order to understand how these microorganisms are responding to the effects of aquatic contamination. A total of 40 isolates belonging to the Enterobacteriaceae family were identified by mass spectrometry using MALDI-TOF Microflex (Bruker). The species identified were *Escherichia coli* and *Klebsiella pneumoniae*. To analyze the antimicrobial susceptibility profile, the disc-diffusion method was performed with 16 antibiotics. As a result, seven isolates showed resistance to at least one antibiotic, two of which were resistant to three distinct classes of antimicrobials, which characterizes a multiresistance profile. Among the resistant microorganisms, the majority were resistant to the class of  $\beta$ -lactam antibiotics. To verify the production of extended spectrum  $\beta$ -lactamases enzymes (ESBL), the double disc synergism test was performed. Six isolates showed positive results for the test, indicating that resistance to  $\beta$ -lactams was conferred by ESBL production. The results illustrate the strategy of resistance adopted by the enterobacteria present in the Arroio. Monitoring of resistant isolates is crucial for controlling the spread of resistance and for preventive measures to be taken. In the future, the study will seek to identify the presence of resistance genes in the isolates analyzed.

**Keywords:** antimicrobial resistance, enterobacteria, ESBL, Arroio Dilúvio

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