

TITLE: INFLUENCE OF EFFLUENTS IN THE *Escherichia coli* ANTIBACTERIAL RESISTANCE IN THE SÃO FRANCISCO RIVER

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ABSTRACT:

As a direct consequence of pollution of water resources, caused mainly by industrial growth and development, we have an increase in the community of microorganisms capable of causing diseases. Currently, antibacterials are the most successful agents in the fight against infectious diseases, but when used improperly, it favors the emergence of bacteria, which can transmit resistance genes to other bacteria through plasmids. *Escherichia coli* is one of the microorganisms that has been found in the literature with the presence of antibiotic resistant plasmids. *Escherichia coli* strains were isolated from two different points of the Rio Francisco, in the municipality of Petrolina-PE, one near the center of the city, anthropized and with the presence of a sewage dump in the river bed (point A - 9°24'20.38 " S / 40°29'44.82 "W), and another far from the center of the city, with predominance of farms and without wastewater disposal (Point B - 9°27'03.49" S / 40°33'53.55 "W). The isolates were then tested for antibacterial resistance by the disc diffusion method. (30 µg), ampicillin (30 µg), streptomycin (10 µg), gentamicin (10 µg), neomycin (30 µg), tetracycline (10 µg), ampicillin (10 µg), amoxicillin + clavulanic acid (30µg), azithromycin (5µg), nalidixic acid (30µg), ciprofloxacin (5µg), chloramphenicol (30µg) and imipenem (10µg). The Multiple Antibacterial Resistance Index (IRMA) and the presence of plasmid were also made. Eight strains of *E. coli* were isolated and identified at each collection point, totaling sixteen bacteria, of which 68.75% showed resistance to at least one antibacterial. For isolates at point A, where there is a sewage disposal, 87.5% of the microorganisms were resistant to some antibacterial drugs, showing resistance azithromycin (62.5%), tetracycline (25%), sulfazotrim (25%), streptomycin 25%) and chloramphenicol (12.5%). 25% of these microorganisms presented multiresistance, with resistance to at least three antibacterials. For collection point B, only 50% of the isolates showed resistance only to azithromycin. Point A had IRMA of 0.180 and 6 isolates with plasmid, point B with IRMA of 0.080 and all isolates with plasmid. Thus, we verified that the presence of contaminants in the environment, such as domestic sewage in water resources, can influence the resistance profile of the local microbial community, putting human and animal health at risk.

Keywords: antibiotics, *Escherichia coli*, plasmid, resistance.