TITTLE: ANTIMICROBIAL RESISTANCE IN URBAN SEWAGE FROM BUENOS AIRES, ARGENTINA

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The spread of antimicrobial-resistant Gram-negative bacteria is an urgent and critical public health priority according to the World Health Organization. Antibiotics and resistant bacteria are discarded in large quantities into the environment as a result of the increase and frequent indiscriminate use of antibiotics in medical, veterinary and agricultural practices. Untreated wastewater discharge into the environment is one of the main causes of contamination. The hospitals release in their sewage a variety of substances including drugs, antibiotics, disinfectants, anesthetics, heavy metals and non-metabolized drugs, that can provide the development of multi-resistant bacterial communities. The objective of this study was to evaluate the dissemination of β-lactamase (Bla) producing microorganisms in urban wastewater from Buenos Aires, Argentina. A 1000-mL sample of raw wastewater collected at a municipal sewage treatment plant. Prevalence of resistant Gram-negative bacilli to β-lactam antibiotics was determined by the agar dilution method. Dilutions of the samples were inoculated in Agar Violet Red Bile medium with and without ceftriaxone, ceftazidime, imipenem, meropenem and colistin and the percentage of resistant bacteria was calculated. .Antibiotic susceptibility testing and phenotypic detection of extended spectrum -βlactamases (ESBL) and carbapenemases for selected Gram negative bacteria was performed by the disk diffusion method according to CLSI. Bacteria resistant to all the antibiotics used were detected. Wastewater samples showed prevalence of ceftazidime and ceftriaxone resistance (4,5%) followed by carbapenem resistance (1%). Among isolated bacteria, an carbapenemase *Escherichia coli* producer was identified. The isolates were resistant to four antibiotics. lo-β-lactamases blaIMP and blaVIM were detected as a cassette gene of a class 1 integron in isolates of K. oxytoca and P. aeruginosa. The occurrence of genes encoding for resistance to last-choice antimicrobials, in potentially relevant MDR pathogens in raw sewage may contribute to the spread of bacterial resistance.