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Abstract Book

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Antimicrobial susceptibility profiles of multidrug-resistant aeromonads isolated from Northern Portugal freshwater ecosystem

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The inappropriate use of antibiotics, one of the causes of the high incidence of antimicrobial-resistant bacteria isolated from aquatic ecosystems, represents a risk for aquatic organisms and the welfare of humans. This study aimed to determine the antimicrobial resistance rates among riverine Aeromonas, taken as representative of autochthonous microbiota, to evaluate the level of antibacterial resistance in the Tua River (Douro basin). The prevalence and degree of antibiotic resistance were examined using motile aeromonads as a potential indicator of antimicrobial susceptibility for the aquatic environment. Water samples were collected from the middle sector of the river, which is impacted by several anthropogenic pressures. Water samples were plated on an Aeromonas-selective agar, with and without antibiotics. The activity of 19 antibiotics was studied against 30 isolates of Aeromonas spp. using the standard agar dilution susceptibility test. Antibiotic resistance rates were fosfomycin (FOS) 83.33%, nalidixic acid (NA) 60%, cefotaxime (CTX) 40%, gentamicin (CN) 26.67%, tobramycin (TOB) 26.67%, cotrimoxazole (SXT) 26.67%, chloramphenicol (C) 16.67%, and tetracycline (TE) 13.33%. Some of the nalidixic acid-resistant strains were susceptible to fluoroquinolones. Multiple resistance was also observed (83.33%). The environmental ubiquity, the natural susceptibility to antimicrobials and the zoonotic potential of Aeromonas spp. make them optimal candidates for studying antimicrobial resistance in aquatic ecosystems. Aquatic environments may provide an ideal setting for the acquisition and dissemination of antibiotic resistance because anthropogenic activities frequently impact them. The potential risk of multi- and pan-resistant bacteria transmission between animals and humans should be considered in a “One Health-One World” concept.