

TITLE: Detection of antimicrobials resistance *Enterococcus sp.* in an aquatic environment in the State of Goiás, Brazil.

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ABSTRACT:

Enterococci are facultative anaerobic organisms and they have the ability to survive in a wide range of physical and chemical conditions, being broadly distributed in nature. Enterococci are found in high concentrations in human feces, thus, they have been adopted as indicators of human fecal pollution in water. Although the Brazilian legislation does not recommend using enterococci as indicators of fecal contamination of water, laws in different countries, such as European Union and United States, use these organisms. There are reports of high rates of environmental contamination of enterococci that increase risk of acquiring this pathogen in the hospital environment. Strains of multidrug-resistant enterococci have emerged as the major causes of nosocomial infections, cause urinary tract infections, bacteremia, endocarditis and bacterial meningitis. The surface water pollution can become a reservoir of antibiotic resistant fecal-origin bacteria, include enterococci species. In this way, it facilitates the spread of resistance genes. Isolates of *Enterococcus sp.* were acquired during previous studies that were isolated from samples of raw surface water of the Meia Ponte River, Goiás State, Brazil. There was performed an antimicrobial susceptibility test by agar disk-diffusion testing, using 21 isolates phenotypically identified as *Enterococcus sp.* There were used seven antimicrobials (ciprofloxacin, chloramphenicol, erythromycin, penicillin G, rifampicin, tetracycline and vancomycin). There were also detected a profile of resistance of 4.76% to vancomycin, 9.52% to ciprofloxacin, chloramphenicol and penicillin G, 19.04% for tetracycline, 42.85% for erythromycin and 57.14% for rifampicin. To the intermediary resistance profile, there were found 4.76% for rifampicin and vancomycin, and 19.04% for ciprofloxacin and erythromycin. To the multiple resistance profile, there were found 4.76% for 3 antibiotic classes' resistance, and 14.28% for 2 or 4 antibiotic classes resistance. The results demonstrated concerns about health people, who use these waters contaminated by resistant enterococci, and about the environment, that water can represent a source of dissemination of these microorganisms and spread their resistance genes. This present study adds in the identification of antibiotic-resistance isolates in the environment that should require greater attention due to the alarming spread of resistance genes, reaching the environment, biodiversity and human health.

Keywords: Water, Antibiotics, Antibiogram, Environment.

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