

TITLE: MICROBIOLOGICAL EVALUATION OF WATER QUALITY AND THE PROFILE OF ANTIMICROBIAL RESISTANCE IN RIVERS OF RURAL AND URBAN AREA OF BAHIA.

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ABSTRACT:

Inadequate disposal of antimicrobials in aquatic environments and the selective pressure of the natural microbiota transform water bodies into a suitable setting for the selection of resistant bacteria and therefore a potential risk to human health. In order to evaluate water quality and resistance in *Escherichia coli* and *Klebsiella pneumoniae* isolates from natural water environments, a longitudinal study was carried out in rivers of a rural community and three urban areas of Bahia. The the Jiquiriçá and Brejões rivers in the rural community were evaluated for the presence of enterobacteria. In Salvador, the urban locality, the Dique do Cabrito, Dique do Tororó and Lagoa do Abaeté were analyzed. Samples were initially screened for resistant enterobacteria with cefotaxime and imipenem in MacConkey agar. All samples had total coliforms (median for Jenipapo: 74 CFU/mL; Dique do Cabrito: 194 CFU/mL; Dique do Tororó: 79 UFC/mL and Lagoa do Abaeté: 121 CFU/mL) and *Escherichia coli* (median for Jenipapo: 9 CFU/mL, Dique do Cabrito: 378 CFU/mL, Dique do Tororó: 1 CFU/mL and Lagoa do Abaeté: 6 CFU/mL). *E. coli* tend to correlate best with human fecal contamination. In all evaluated points, some type of bacteria with tolerance to the antibiotics identified in the screening stage were isolated. The results indicate that the natural waters of the rural and urban areas evaluated are unfit for human contact due to the presence of fecal contamination. The environment appears to be strongly associated with the selection and dissemination of resistance genes. Thus, caution is necessary with the incorrect disposal of organic and antimicrobial waste in the water environments, as well as its relation with the environment, so that more measures that are effective can be taken. Next human fecal contamination will be further assessed by microbial source tracking, and enterobacteria selected at screening will be identified through MALDI-TOF and Vitek.

Keywords: bacterial resistance, fecal contamination, enterobacteria, surface water

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