Antimicrobial susceptibility profile and extended-spectrum beta-lactamases (ESBL) of *Escherichia coli* isolated of human consumption water from four municipalities from Marajó archipelago, Pará State

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Abstract

Infectious diarrhea is a major waterborne disease. The aim of this study was to determine antimicrobial susceptibility profile and extended-spectrum beta-lactamases (ESBL) of *Escherichia coli* isolated of human consumption water from four municipalities from Marajó archipelago, Pará State. Analyses were carried out on 140 samples of *E. coli* isolated from municipalities Chaves (28), Portel (12), Anajás (50) and São Sebastião da Boa Vista – SSBV (50). *E. coli* samples were isolated and identified in specifics culture media according to the methodology previously described. Antibacterial susceptibility testing as well as enzymes assays were performed by disk diffusion method on Mueller-Hinton agar according to criteria recommended by Clinical and Laboratory Standards Institute (CLSI). Susceptibility profile of *E. coli* in Chaves and Portel have shown high incidence of samples sensitive to tested antibiotics. However, four isolates (14%) from Chaves have demonstrated intermediate sensitivity to Ceftriaxone and Imipenem, and two samples (7%) were resistant to ampicillin. In Portel, three isolated bacteria (25%) have shown intermediate susceptibility to Ampicillin. In Anajás and SSBV was observed high incidence of samples with intermediate susceptibility and resistant to the tested antibiotics. In Anajás, all tested strains were sensitive to Amikacin, Gentamicin, Levofloxacin and Piperacillin + Tazobactam. In SSBV, results have shown 100% of isolated bacteria were susceptible only to Piperacillin + Tazobactam. In ESBL determination, samples from Chaves and Portel were negative, however, Anajás and SSBV have shown three (6%) and one (2%) samples producing of this enzyme, respectively. The susceptibility profile of ESBL producers from the municipalities of Anajás and SSBV have found that all enzyme producing samples were multiresistant to the tested antibiotics. ESBL determination has shown circulation of producers of these enzymes in drinking water from communities in Marajó Archipelago that can be a risk to human health.

Key words: Water; *Escherichia coli*; ESBL; Marajó Archipelago; Pará.

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