

Title: Susceptibility testing to sanitizer agents of diarrheagenic *Escherichia coli* strains isolated from the beaches of São Luís, Maranhão, Brazil

Authors: Pinheiro, N. C.A ¹, Barros, A. L. R. ², Arouche, S. P. ², Ferro, T. A. F. ³, Moraes, F. H. R. ³, Figueiredo P.M. S. ⁴

Institution

1 Mestre em Sustentabilidade de Ecossistemas, Universidade Federal do Maranhão (UFMA).

2 Graduado em Engenharia Ambiental, Universidade Ceuma.

3 Professor da Universidade Ceuma.

4 Professora da Universidade Federal do Maranhão

Endereço para correspondência: Flávio H. R. Moraes, Rua Josué Montello, 01, Renascença II, Uniceuma Campus I, Laboratório de Ciências do Ambiente. São Luís – MA. CEP: 65075-120.

E-mail: fhrmoraes@yahoo.com.br / figueiredo.patricia@gmail.com

ABSTRACT

The city of São Luís, capital of Maranhão state (Brazil), provides ineffective treatment of its effluents, which are released in natura straight into the water resources. Official data from government institutions indicate about 10% of all sewage treatment. In order to search for indicators of fecal contamination at the coastal environment we collected samples from different sites. Samples from Ponta de Areia, São Marcos, Calhau and Olho d'Água beaches were analyzed aiming to detect pathogens and diarrheagenic strains of *Escherichia coli*; in addition to test the susceptibility of diarrheagenic *E. coli* strains to sanitizer agents. In all analyzed areas, species of *Escherichia coli*, *Serratia liquefaciens*, *Hafnia alvei*, *Salmonella* spp., and *Serratia* sp were identified. Strains of diarrheagenic *Escherichia coli* isolates were identified thorough the Polymerase Chain Reaction (PCR), 82% corresponded to enterotoxigenic *E. coli* (ETEC), 9% to enterohaemorrhagic *E. coli* (EHEC) and 9% to enteroaggregative *E. coli* (EAEC). The sanitizers tested were detergent, domestic alcohol and sodium hypochlorite, the latter presented higher bactericidal effect for all *E. coli* strains. The study showed that the local sanitation problems contributed to the contamination of the beaches in São Luís by microorganisms isolates resistant to sanitizers which pose risks to public health and cause of direct changes in ecological communities of marine microorganisms. This is the first report of the presence of *Escherichia coli* isolates originating from the beaches of São Luís - Maranhão, resistant to sanitizer agents.

Key Words: Enterobacteriaceae; *Escherichia coli*; Public Health.

Development Agency: FAPEMA - Fundação de Amparo à Pesquisa e ao Desenvolvimento Científico e Tecnológico do Maranhão