TITLE: INFLUENCE OF EFFLUENTS ON *ESCHERICHIA COLI* PHYLOGENETIC CLASSIFICATION IN SÃO FRANCISCO RIVER

AUTHORS: SANTOS, L., DIAS, C.H.A.; FRANÇA, C.A.; RIBEIRO, H.L.C.; COSTA, M.M.

INSTITUTION: UNIVERSIDADE FEDERAL DO VALE DO SÃO FRANCISCO, PETROLINA, PE (RODOVIA BR–407, KM 12 LOTE 543, S/N – PROJETO DE IRRIGAÇÃO NILO COELHO, 56300-000, PETROLINA–PE, BRAZIL)

ABSTRACT:

Water is one of the most important substances on earth and its quality is indispensable. Population and industrial activity growth increased the impact on water resources, which leads to the emergence of pathogens with potential to cause diseases. *Escherichia coli*, when present in the aquatics environments, it's an indicative of fecal contamination. On the other hand, the phylogenetic classification of these bacteria enable inferences about the water contamination. Thus, water samples were collected to verify the phylogenetic classification of *E. coli* in the São Francisco River in Petrolina-PE. For this, it was used amber glass bottles (sterile) to collect the samples in two different points: P1 - Located in a non-urbanized area, upstream of the city center; and P2 - Located downstream of the city center, under the influence of wastewater. At the laboratory, the isolation and identification of *E. coli* were then performed. DNA extracted from the isolates was used to perform the Polymerase Chain Reaction (PCR) to determine the phylogenetic classification of the strains. The genes selected were chuA, yjaA and tspE4.C2. PCR products were analyzed by 2% agarose gel electrophoresis, stained with ethidium bromide and visualized in transiluminador under UV light. Eight strains were isolated and identified at each collect point, totaling sixteen isolates. In the phylogenetic classification analysis, the present study demonstrated a variation in the *E. coli* community among collection points. In P1, three isolates belonged to the group A while five isolates to the group B1, both groups related to commensal bacteria. For P2, all eight strains belonged to the group B2, group of *E. coli* with potential pathogenic and related to extraenterais infections. This difference can be explained by the regions where were performed the collections. The point 1 is located in a non-urbanized area and upstream of the river, where can't be visualized wastewater discharges. The point 2, on the other hand, it's located downstream from the domestic sewage discharges of the city, being under the influence of the contaminants. The pathogens transmission through water resources is already quite evident in the literature, mainly when there are discharge of effluents in places used for recreation by the community. This work, evidence like the wastewaters interferes on the bacteria community, increasing the population of potential pathogen bacteria were highlighted.

Keywords: contaminants, *Escherichia coli,* phylogenetic classification, water.