

TITLE: GENE SIMILARITY OF BIOFILM ISOLATES AND WATER OF LOTIC ENVIRONMENT

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ABSTRACT:

Disorganized and unplanned population growth has had major impacts on the environment, especially on water bodies. This is due, in part, to the release of effluents, which cause pollution and contamination of the water, which may make it unfit for consumption or bathing. The objective of this study was to evaluate the genetic similarity of the bacterial isolates present in the biofilm and water, in a lotic environment. The samples were collected monthly during the rainy season (November / 2014 to April / 2015) of an urban stream in the municipality of Cuiabá-MT, at two sampling points, source and outfall. The density of heterotrophic bacteria was analyzed from the biofilm collection, formed in glass plates, incubated at 20 cm from the surface of the water slide, during a period of nine days and from water samples. Colonies with distinct macroscopic characteristics were isolated, submitted to extraction, quantification and DNA purity, for genotypic characterization using the BOX-PCR primer. The Bionumerics 7.0 application was used to analyze the bacterial community profile and gene diversity of the isolates. To compare the diversity among the isolates, groupings were generated, using UPGMA (Unweighted Pair Group Method) and Jaccard coefficient, with tolerance of 1%, being considered similar to strains that obtained profiles $\geq 70\%$. The results showed that of the total of 26 biofilm isolates, 12 corresponded to the isolates from the source and 14 from the outfall, and BN50, BN52 and BN56 were similar; and between strains BF62 and BF63, all of which were isolated in the month of November; and similarity between strains BF217 (April) and BN83 (December). On the other hand, the number of isolates in water from the source and outfall (48 strains) was higher than that found in the biofilm. Among the isolates, AF42, AF43 and AF44 (November) strains were similar among strains AF77 and AN70 (December) and between AF109 and AN98 (January). The month of November was the one that presented the highest similarity among the isolates, this fact may be related to the high rainfall index, in that month, propitiating the transport of microorganisms from other habitats. The few biofilm isolates, compared to water, may be related to biofilm detachment and transport, due to the high flow rate of the sample period. It was concluded that there was little similarity between the organisms present at the source and the outfall, both in the biofilm and in the water.

Keywords: heterotrophic bacteria, outfall, spring, urban stream.