Evaluation of the water quality through coliform bacteria in the Juturnaíba dam, Rio de Janeiro, Brazil

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The Juturnaíba dam provides drinking water for the Lagos Region, East of Rio de Janeiro that encompasses an area of over 1800 km^2, with a population of circa 450,000 people. The dam was constructed downstream in the São João River that is also fed by the Capivari and Bacaxá Rivers. The area is characterized by a singular ecological asset with a number of fish and animal native species. Within the São João River Basin, it is possible to find the seriously endangered species Golden-Lion-Tamarin that is protected in the Poço das Antas Biological Reserve. In this context, preservation of the water resources is a major issue for the region that is occupied by a number of conflicting activities. In the present work, we studied the temporal evolution of the coliform bacteria in the water as an indicator of the dumping of sewage in the basin. Sampling campaigns were carried out from March 2010 through March 2011 and samples were analyzed for potentially pathogenic coliform microorganisms (from the group coliform bacteria) that are responsible for the water transmission of a number of diseases. In each sampling campaign 10 water samples were collected in sterilized borosilicate flasks that were transported to the laboratory, where immediate analysis of the colimetric bacteria were made with the COLILERT® method. This method uses a chromogenic substrate, giving the results as most probable number of coliforms (MPN 100 mL^{-1}). The results indicate that the rivers have similar profiles concerning the possible sewage sources, which includes domestic and agricultural disposals. As observed, industrial sources are not present in the studied drainage basin. The measured values were not very elevated, when compared to neighboring areas (seldom higher than 1,000 MPN 100 mL^{-1}), but the concentrations should be constantly monitored, because the waters are treated for human use.

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