

TITLE: ENTERIC VIRUSES IN SURFACE WATER OF BELO STREAM, CAXIAS DO SUL – RS

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ABSTRACT: The Belo Stream belongs to Caí River Watershed, Caxias do Sul municipality (Brazil) and is used for recreation by local population, although receives discharge of domestic and industrial effluents. Enteric viruses excreted by animals and humans could serve as markers of fecal contamination in surface water. Among the most studied enteric viruses are Adenovirus (AdV), Rotavirus (RV) and Enterovirus (EV), which may be associated with environmental fecal contamination. Furthermore, these viruses could cause a wide variety of diseases including acute febrile pharyngitis, respiratory infections, acute conjunctivitis, cystitis, gastroenteritis, and systemic infections in immunocompromised patients. In the present study, the aim was to evaluate the AdV, EV-G and RV presence, along the Belo Stream. For water quality assessment were used four sampling points (P1, P2, P3 and P4) along Belo Stream (Caxias do Sul-RS), with monthly collections for 14 months (March / 2015-April / 2016), totaling 55 samples. The samples were submitted to the concentration method by ultracentrifugation. DNA / RNA extraction was performed with Biopur kit. The extracted genome was submitted to the real-time polymerase chain reaction (qPCR) for analysis of the presence of HAdV genomes of groups C and F and conventional for EV-G and RV analyzes. For AdV assay, HAdV-C genomes with quantifications ranging from 2.35×10^5 to 1.67×10^7 gc/L (genomic copies per liter) were detected in 23.6% (13/55) of the samples, with the highest positivity in P2 (50% - 7 / 14). HAdV-F genomes were detected in 43.6% (24/55) of the samples with quantifications ranging from 1.30×10^5 to 4.49×10^8 gc/L, with P1 showing the highest number of positive samples (77% - 10/13). In the month of September / 2015, a greater number of positive samples were measured for both HAdV-C (75% - 3/4) and F (100% - 4/4). On the other hand, in relation to EV-G and RV analyzes, no positive samples were detected. The results show human fecal contamination along the Belo Stream, suggesting a risk to human health and environmental quality, since part of this stream is used for leisure and recreation by the local population. Furthermore, the results evidence the lack or inefficiency of sewage treatment processes adequate for the removal of these pathogens.

Keywords: HAdV-C, HAdV-F, Belo Stream, recreation water

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