



MODELING THE OCCURRENCE OF ENTERIC VIRUSES IN STREAMS: EFFECTS OF URBANIZATION AND LIMNOLOGICAL PARAMETERS

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Enteric viruses constitute significant public health concerns due to their role in waterborne and foodborne outbreaks. Primarily transmitted via the fecal-oral route, these entities exhibit diversity, persistence, and concentration in aquatic ecosystems that vary with environmental conditions, particularly abiotic factors. However, the drivers shaping their occurrence in freshwater systems remain poorly understood. This study assessed the occurrence of adenoviruses (HAdVs), rotavirus A (RV-A), and hepatitis E virus (HEV), and their association with limnological parameters across an urbanization gradient in 13 freshwater ecosystems in the metropolitan region of Florianópolis, SC, Brazil. Urbanization was quantified using a 100 m buffer around sampling sites through geoprocessing tools. Viral sampling was conducted in triplicate using direct water analysis and sponge-based collection methods. Samples were processed through viral concentration (polyethylene glycol precipitation or the filtration-adsorption method), followed by qPCR/RT-qPCR detection. HAdVs were the most frequently detected (92.3%, 24 samples), followed by RV-A (42.3%, 11 samples) and HEV (34.61%, 9 samples). Although urbanization was associated with significant changes in water physicochemical parameters, generalized linear modeling revealed no significant association with viral load. In contrast, MANOVA showed a significant effect of pH, dissolved oxygen, and turbidity on viral load. These findings reveal the widespread circulation of enteric viruses in aquatic environments in Florianópolis, and suggest that, although urbanization *per se* did not explain variations in viral load, certain environmental conditions may shape viral distribution patterns. Nonetheless, the complexity of these interactions indicates that additional environmental and ecological factors are likely involved.

Financial support: CNPq Universal Grant Number 408073/2023-3; FAPESC Universal Grant Number 2024TR002259

Keywords: *Viral contamination; Stream water; Urban gradient; Environmental drivers; Spatial variability*