

## Prevalence of Pathogenic Parasites in Treated and Untreated Wastewater Samples from Wastewater Treatment Plants in the Durban Metropolitan Area

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### ABSTRACT

Waterborne parasitic infections caused by protozoa and helminths, have proven to put public health at risk serving as opportunistic infections, specifically in immunocompromised individuals. Monitoring the parasitic prevalence in wastewater effluent can provide an indication of the impact of pathogenic parasites on the communities depending on contaminated water bodies used for recreation and sanitation in which most wastewater effluents are discharged. In this study, the Modified Bailenger method and mini-FLOTAC techniques were used for microscopic analysis together with Polymerase Chain Reaction (PCR) applying species-specific primers for molecular detection of protozoa and helminth analysis. Of the 12 samples analyzed, the study identified the prevalence of protozoa parasites to be, 92% Microsporidia species (n=11), 25% *Cryptosporidium* species (n=3) and 58% *Cyclospora cayetanensis* (n=7) in the wastewater samples using PCR. Helminth species, however, were not detected using PCR but microscopic analysis revealed some organisms with morphology resembling that of *Trichuris* species in an effluent sample. Furthermore, the study uncovered that chlorination as a final step of sewer treatment is not as effective since parasite eggs were detected in the final effluent (8 EPG and 58 EPG for Plant A and Plant IS respectively) using mini-FLOTAC technique hence suggesting the presence and resistance of parasites in treated wastewater exuberating their transmittance through water.

**Keywords:** Protozoa, Helminths, Wastewater, Mini-FLOTAC, Modified bailenger method, PCR

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