

Abstract

Detection and genotyping of *Toxoplasma gondii* oocysts in environmental samples in Gaza, Palestine: A combined parasitological and molecular approach

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Objective:

This study evaluated the prevalence and genotypes of *Toxoplasma (T.) gondii* oocysts, the infectious environmental stage, in soil and water samples collected from Gaza, Palestine.

Methods:

A total of 290 environmental samples (200 soil, 90 water) from diverse sites in Gaza, including Wadi Gaza, residential areas, markets, wells, and the main sewage plant. Samples were analyzed using polymerase chain reaction (PCR) and Sheather's flotation, with genotyping via Mse I endonuclease.

Results:

Out of 290 environmental samples, 22 (7.6%) were positive by PCR and 31 (10.7%) were positive by Sheather's flotation. The prevalence of *T. gondii* significantly varied by location, with residential yards showing the highest contamination and public squares and gardens the lowest. Among soil samples, 26 (13.0%) tested positive by Sheather's method, while PCR detected contamination in 18 (9.0%). Water had lower contamination rates, with 4 (4.4%) testing positive by PCR and 5 (5.6%) by Sheather's. All positive water samples were from Wadi Gaza. Genotyping confirmed all four tested samples belonged to *T. gondii* Type I.

Conclusions:

The study demonstrated a statistically significant relationship between oocyst contamination prevalence and the source location of the samples. It concluded that *T. gondii* contamination is present in the soil and water in the study area, with soil showing higher contamination levels than water.