

# Detection of *Cryptosporidium* species in stools of HIV/AIDS patients in Bela-Bela, South Africa.

by

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## Abstract

*Cryptosporidium* species are common protozoan pathogens with worldwide distribution, and have been known to cause severe and life-threatening diarrhea in immunocompromised hosts. *Cryptosporidium* is found to be of greater frequency in patients living with AIDS, particularly in those with advanced disease. Transmission of this protozoan is by person-to-person, animal-to-animal, animal-to-human, food-borne and water borne.

In the present study, the prevalence of *Cryptosporidium* spp and other intestinal parasites from the stool of 151 HIV/AIDS patients from Bela-Bela, Limpopo Province, South Africa was determined using standard parasitological methods. Scanning electron microscopy was used to identify *Cryptosporidium* oocysts in the samples. Different molecular methods including conventional PCR and real-time PCR were used for the confirmation of *Cryptosporidium* in the stool samples. The loop isothermal amplification method (LAMP) was assayed for its application in the detection of *Cryptosporidium* in 24 stool samples.

Standard parasitological methods indicated that *Cryptosporidium* (26.5%), *Entamoeba* species (26.5%) and *Giardia lamblia* (12.6%) were the most common protozoan parasites while *Ascaris lumbricoides* (8%), *Schistosoma mansoni* (6%) and *Trichuris trichiura* (4.6%) were the most commonly found helminths. The application of the three molecular methods indicated that 53/151 (35.1%) with the real-time PCR, 30/106 (28.3%) with conventional PCR and 14/24 (58.3%) with LAMP method were positive for *Cryptosporidium* spp. Multiple infections (33.8%) were commonly found in the study population. Females above 45 years had the highest *Cryptosporidium* prevalence (58.3%).

The present study has demonstrated that persons infected with HIV in Bela-Bela are at increased risk of *Cryptosporidium* infection. *Entamoeba* spp. is a major cause of diarrhea among HIV and AIDS patients in this region. The LAMP method is a simple, specific and sensitive method for the detection of *Cryptosporidium* in stool samples.

However, the problem with reagent stability needs to be addressed. Further studies are needed to determine the different genotypes infecting the patients in the study site. Prevention measures should be implemented in order to curb the negative impact of *Cryptosporidium* diarrhoea among HIV and AIDS patients in the study area.