

Prevalence of enterohaemorrhagic *Escherichia coli* O157:H7 in drinking water and its predicted impact on diarrhoeic HIV/AIDS patients in the Amathole District, Eastern Cape Province, South Africa

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Abstract

Immunosuppressed persons such as HIV/AIDS patients are at risk of acquiring diarrhoeal infections from water-borne *E. coli* O157:H7. In the present study, we investigated the prevalence of *E. coli* O157:H7 in drinking water collected from selected distribution systems within the Amathole District of the Eastern Cape and its predicted impact on diarrhoeic conditions of HIV/AIDS persons living in this area. One hundred and eighty water samples and 360 stool swabs from confirmed and non-confirmed HIV/AIDS diarrhoeic patients were analysed. *Escherichia coli* O157:H7 were isolated using enrichment culture and confirmed using molecular techniques.

Of the 180 drinking water samples, 46 (25.56%) were positive for *E. coli* O157. The prevalence of *E. coli* O157 in the stools was at 36.39% (131/360) of which 56.5% (74/131) and 43.5% (57/131) were from stools of confirmed and non-confirmed HIV/AIDS patients, respectively. Molecular analysis of 27, 25 and 29 representative presumptive *E. coli* O157 from water and stools of confirmed and non-confirmed HIV/AIDS patients, respectively, revealed that 14.81%, 36% and 17.24% of the isolates were *E. coli* O157:H7. The findings predicted a possible link between *E. coli* O157:H7 isolated from drinking water and diarrhoeic conditions of both confirmed and non-confirmed HIV/AIDS patients visiting Frere Hospital for treatment.

Keywords: prevalence, drinking water, HIV/AIDS, stool specimens, *Escherichia coli* O157:H7 and PCR