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Assessment of methods for determining viability
of *Giardia spp.* in freshwater and seawater.

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Abstract.

The determination of viability of *Giardia spp.* cysts is difficult.

At present the problem is that once detected it is not known whether this cyst is viable and therefore potentially infective for humans.

This study assesses two methods; Nomarski Differential Interference Contrast Microscopy (Nomarski DIC) and Fluorogenic Dyes (Fluorescein Diacetate and Propidium Iodide) as they compare to the current benchmark for viability Excystation.

In vivo Giardia muris and *Giardia intestinalis* cysts were assessed for viability at time intervals and different temperatures in two separate inactivation systems; chlorine at standard municipal treatment levels and seawater with a view to their use in routine viability testing of cysts detected in environmental samples. *G. muris* was trialled as it was thought it may prove to be a good model for *G. intestinalis*.

The effect of seawater as an environmental inactivation system is important due to current domestic waste disposal practises ie. sea disposal of treated waste. These effects were assessed in this study by Excystation, Nomarski DIC and Fluorogenic Dyes.

Seawater has a cysticidal effect on *Giardia* cysts. This is due mainly to osmotic and alkaline nature of seawater.

Nomarski DIC when compared to Excystation, has a limited capacity for determining viability of cysts from freshwater, seawater and chlorine inactivation systems. Fluorogenic Dyes seem more suited to determination of viability of cysts isolated from fresh and untreated waters.

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