THE USE OF RT-PCR TECHNIQUES FOR ESCHERICHIA COLI AND ENTEROCOCCI IN FAST DETECTION OF FECAL POLLUTION IN DRINKING WATER

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Recently new methods are developed to detect within four hours fecal pollution in drinking water. These methods are RNA-based and specially designed for the fecal target-organisms. For both E.coli and the intestinal Enterococci a detection limit is achieved of approximately 1 living cell/100 ml. This low-level detection in real water samples is very different from other publications and makes it unique in the field of polymerase chain reaction techniques (PCR). Experiments wherein a comparison is made with standardized ISO culture methods showed that the reverse transcriptase (RT) RNA methods for E.coli and Enterococci are more sensitive and accurate than the culture techniques.

By choosing RNA instead of DNA sequences for targeting both bacteria the focus is laid on potentially surviving organisms instead of dead or non-culturable. This makes it possible to use it in both situations with or without using chlorine in distributing drinking water. Experiences in practical situations in real fecal polluted drinking water situations confirmed the former findings with laboratory experiments. Nowadays the methods are being used in the north of the Netherlands to detect a fecal pollution in early stage and is used to build up a database with information about the effect of working on hygienic base in difficult situations.

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