

B305 The Usefulness of PCR in determination of Viral contamination level in Aquatic Environment.

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Molecular biological methods for the detection and amplification of nucleic acid now are widely used to detect pathogenic microbes including viruses in environmental samples. However, these methods also have shortcomings that disable to differentiate non-infectious and infectious particles. Several water samples were collected to determine the level of enteric viral contamination in aquatic environment. The virus concentration was determined by both cell culture and PCR. The enteric viruses were detected in all raw water samples. Viral contamination was detected with the average of 10^2 particles per liter by PCR and 10^0 -particles by cell culture, respectively. These results indicate that the ratio of infectious particles to total viral RNA is about 100, PCR method is useful for the routine monitoring viral contamination of water environment, and severe viral contamination is occurring in some local areas of our aquatic environment

B306 Detection of *Staphylococcus aureus* in the groundwater contaminated with livestock wastewater by PCR-Southern hybridization

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A method for direct detection and enumeration of *Staphylococcus aureus* in groundwater was developed by using MPN-PCR and southern hybridization. Specific primer set amplifying coagulase gene of *S. aureus* and internal oligonucleotide probe were designed. The detection limits were approximately 6 cells when used PCR-southern hybridization methods. Particulated DNA was extracted from 1L groundwater samples of contaminated aquifer with livestock wastewater in Wonju collected during 1995 and 1996. *S. aureus* was detected in 38 samples of total 91 samples by PCR method and in 68 samples by PCR-dot blotting methods, respectively. Free-living *S. aureus* and particle-attached *S. aureus* were detected with similar frequency. *S. aureus* in the shallow side of monitoring wells was detected more than that in the deep side of it. This method could be applied for detecting and enumerating *S. aureus* in the surface water and soil as well as groundwater.