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Molecular and Culture Based Detection of Enteric Viruses in Oysters Cultivated in Korea

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Human enteric viruses were examined in oysters cultivated in Goheung, Seosan, and Tongyeong monthly between January 2002 and March 2003. Enteroviruses and adenoviruses were detected by cell culture assay, integrated cell culture-PCR (ICC-PCR) assay and RT-PCR assay. In total 55 oyster samples, enteric viruses were detected in almost oyster samples (96.4%) and infectious viruses were detected all year round. Six of the 55 samples (10.9%) showed a cytopathic effect (CPE) in BGMK cell line and 10 of the 55 samples (18.2%) showed CPE in A549 cell line when examined microscopically. Nineteen of the 55 samples (34.5%) were determined by positive in ICC-PCR with BGMK cell line and 29 of the 55 samples (52.7%) were determined by positive in ICC-PCR with A549 cell line. The results showed that ICC-PCR method with both A549 cell and BGMK cell, was more effective for recovery of infectious enteric viruses. Compared direct PCR results to ICC-PCR results, the number of oyster samples positive for adenoviruses was increased from 50.9% to 89.1%, however, the number of oyster samples positive for enteroviruses was decreased from 29.1% to 10.9%. Adenoviruses concentrated in oysters were quantified using real time-PCR method. Enteric adenovirus levels were $1.80 \times 10^{1} \sim 1.12 \times 10^{4}$ copies per gram and total adenovirus levels were $1.09 \times 10^{2} \sim 5.78 \times 10^{5}$ copies per gram. The enteric viruses concentrated in oysters cultivated in Korea were recovered throughout all seasons and the contamination degree of enteric viruses was so high.