Detection and Molecular Characterization of Enteroviruses in Korean Surface Water by Using Integrated Cell Culture Multiplex RT-PCR

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Objective To identify waterborne enteric viruses in Korean surface water. **Methods** Integrated cell culture(ICC)-multiplex reverse transcription-polymerase chain reaction (RT-PCR) was simultaneously designed to detect coxsackieviruses (CV), polioviruses (PV), and reoviruses (RV). ICC-multiplex RT-PCR and phylogenetic analysis were conducted using 21 total culturable virus assay (TCVA)-positive sample-inoculated cell cultures. **Results** CV and RV were detected in 9 samples each, and 3 samples were positive for both CV and RV. PV was not detected in any sample. Molecular phylogenetic analysis of the VP1 gene sequences revealed that CV types B2 and B4 predominated in Korean surface water, and the nucleotide sequences of CV type B2 were clustered with those of CVs isolated from China and Japan. The results suggested that the evolution of these viruses occurred in a region-specific manner. **Conclusion** CV and RV are detectable in Korean surface water, with a predominance of CV type B2, and the evolution of CV type B2 occur in a region-specific manner.

Key words: ICC-multiplex RT-PCR; Coxsackieviruses; Molecular phylogeny

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