A Multiple Set of Primers for the Detection of Human Adenovirus Species A, B, C, D, E and F

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Summary

Human adenoviruses (HAdVs) have been identified as etiologic agents responsible for numerous outbreaks of waterborne diseases (i.e., conjunctivitis, respiratory illness, and acute gastroenteritis). Several hexon-gene-based PCR primer pairs have been proposed for the detection of HAdVs in diverse samples. Many of them, however, have drawbacks and are not able to detect all 51 serotypes of HAdVs in environmental samples because of mismatches with hexon gene sequences (and also because natural water bodies usually contain low HAdV concentrations and possibly some PCR inhibitors).

In this study, we designed six primer sets (one forward primer combined with six reverse primers) to more efficiently amplify a section of the hexon gene (241-349 bps) for all serotypes among the six HAdV species. The HAdV 31 (ATCC # VR-1109), 21 (ATCC # VR-1099), 6 (ATCC # VR-1083), 36 (ATCC # VR-913), 4 (ATCC # VR-1572), and 41 (ATCC # VR-930) pure cultures from American Type Culture Collection (ATCC) were used as representative serotypes for species A, B, C, D, E, and F, respectively, to test the six primer sets. The PCR products were ran in electrophoresis gels and visualized under a UV light.

Results

The developed PCR primer sets can amplify low-concentration HAdV hexon genes that can be further cloned for sequencing and identification of HAdV serotypes in environmental samples.

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References