DETECTION OF ENTEROVIRUSES, ADENOVIRUSES AND HEPATITIS A VIRUSES IN RAW SEWAGE AND TREATED EFFLUENTS BY NESTED-PCR

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Abstract. To determine the good working condition of the biological treatment plant of the University Hospital of Patras, Greece, twenty-four raw sewage samples and twenty-four effluent samples were analyzed for the presence of enteroviruses, adenoviruses and Hepatitis A virus (HAV), during the period of March 1995 to March 1996. We used a nested-PRC approach, to increase the sensitivity of the detection. Enteroviruses and adenoviruses were detected in twelve samples (50%) and fourteen samples (58.3%) of raw sewage, respectively. HAV was not detected in any of the raw sewage samples. The more frequent isolation of adenoviruses in raw sewage, indicates their stability as virological indicators of the pollution of the environment. In addition, a seasonal distribution of the detection of enteroviruses and adenoviruses was observed. The absence of HAV is in agreement with the lack of HAV infections in the hospital during that period of time. In contrast with the raw sewage, we were unable to detect the presence of enteroviruses, adenoviruses in samples collected after the biological treatment plant. This fact indicates the effective treatment of sewage by the local biological purification plant.

Keywords: adenoviruses, enteroviruses, detection, effluents, nested-PCR, sewage

1. Introduction

Enteric viruses have been associated with outbreaks of waterborne nonbacterial gastroenteritis and are of important concern for public health (Blacklow and Greenberg, 1991). Significant number of viruses can be isolated from feces and urine of humans as well as from sewage and polluted waters (Lucena *et al.*, 1988; Tartera *et al.*, 1989).

The enteric viruses are known pathogens for human. At least 37 different human viruses have been isolated from drinking water round the world. The group that has been studied the most in sewage and polluted waters is the family Picornaviridae and especially the genus of enteroviruses (Polioviruses, Koxsackie viruses A and B, Echo-viruses and Enteroviruses 68–71). Enteroviruses may cause various symptoms, varying from asymptomatic infection to gastroenteritis, myocarditis and aseptic meningitis (Melnick, 1984, 1990).

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