

Multiplex Microarray for Simultaneous Detection of Hepatitis C Virus, Hepatitis B Virus, and Human Immunodeficiency Virus Type-1

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Technology description

Summary

Four specific probes (30-45 bp oligonucleotides) for each of these three viruses as well as the two internal controls were designed. Totally, each microarray consists of 20 probes immobilized on silylated glass slides. The single-stranded Cy5-labeled samples for microarray hybridization were obtained from labeling the amplicons using primer extension thermocycling. The multiplex microarray assay was able to detect and discriminate as low as 3 copies of genotypes A, B, C, D, and 10 copies of genotype E of HBV, 10 copies of HCV (genotype 1b), and 20 copies of HIV-1 (group M, subtype B) in a single multiplex reaction. The microarray assay could also detect the coexistence of two or three of these viruses and discriminate them simultaneously. The results of this study demonstrated the feasibility and performance of microarray-based multiplex detection of the three viruses, HCV, HBV, and HIV-1 in comparison with conventional individual PCR and gel electrophoresis technique.

Institution

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