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# An improved reverse dot hybridization for simple and rapid detection of adefovir dipivoxil-resistant hepatitis B virus

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**ABSTRACT.** Early detection of adefovir dipivoxil-resistant mutants during long-term treatment of chronic hepatitis B virus (HBV) infection with this drug is of great clinical importance. We developed an improved reverse dot hybridization test for simple and rapid detection of the rtA181V/T and rtN236T mutations associated with adefovir dipivoxil resistance in chronic hepatitis B patients. Probes were designed for genotypes B, C, and D of this resistance characteristic; a total of 70 clinical samples were analyzed with this improved reverse dot hybridization assay. Its usefulness was validated by comparing with sequencing data. Discordant results were confirmed by subclone sequencing. This reverse dot hybridization assay was sufficiently sensitive to detect $10^3$ copies/mL; it also detected adefovir dipivoxil-resistant mutant strains when they comprised more than 5% of a mixed virus population. This reverse dot hybridization array correctly identified adefovir dipivoxil-resistant mutants; it had high concordance

 

(98.5%) with direct sequencing data. There was no clear relationship between the HBV genotype and the development of adefovir dipivoxil-resistant mutants. This reverse dot hybridization assay proved to be simple and rapid for detection of rtA181V/T and rtN236T mutations associated with resistance to adefovir dipivoxil.

**Key words:** Hepatitis B virus; Reverse dot hybridization; Mutant; Adefovir dipivoxil

 