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Advanced drug resistance SNP analysis and monitoring of liver physiological changes during Hepatitis B virus infection

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Nucleoside analogue therapy allows the safe and long-term suppression of HBV. Lamivudine is a common drug for the treatment of chronic HBV patients. Resistant hepatitis B virus occurs as natural genome variables in YMDD motif of Lamivudine-treated and untreated chronic hepatitis B patients. Resistance detection is mainly accomplished by conventional lab methods and commercial kits. In this study we aimed to establish a Next Generation Sequencing–based method to detect Lamivudine-resistance by designing probes for a specific region of HBV genome. Meanwhile we monitored the physiological changes of liver before and during the treatment. Genomic DNA from serum samples of 92 patients with chronic hepatitis B virus infection was extracted. All patients were tested for liver enzymes, HbsAg, HbcAg, HbeAg, anti-HBs, anti-Hbe, anti-HBc, Bilirubin, Albumin and liver biopsy. NGS was accomplished using MINI-20 Sequencer by use of a mixture of reversible terminated dNTPs and Biotinylated DNA sense and antisense probes. In mix population status some mutants are not detected using conventional methods such as RFLP, nested-PCR or even common sequencing. Thus in resistant patient Lamivudine treatment is led to disease recurrence. Based on our findings Next Generation Sequencing could be more efficient, less time consuming and more sensitive for detection of mixed population of all YMDD motif mutants even rare single nucleotide mutation. It is also more accurate, faster, and more low-cost for patients.

Biography

Samira Salehnejad has completed her M.Sc. in Animal Physiology from Shahrekord University, IRAN. She co-founded PooyaGene Biotech Company, 2008 in IRAN as a research-driven and knowledge-based company, focusing on molecular diagnostic, stem cell and biopharmaceuticals research and manufacturing, with a branch in INDIA. She is already working as Senior Manager of PooyaGene Biotech Co.

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