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Investigation of resistance mutations in the HBV DNA samples that isolated from patients with chronic Hepatitis to Nucleoside/Nucleotide analogues by INNO LIPA HBV DR and ultra deep pyrosequencing methods

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There are about 400 billion of people infected by Hepatitis B virus (HBV). 15-40% percent of chronic hepatitis B (CHB) patients lost their life due to mortal liver diseases such as liver deficiency, cirrhosis and hepatocellular carcinoma. Thus, HBV infections have to be treated carefully. Although nucleoside/nucleotide analogues are being used successfully, resulting antiviral resistance due to mutations is the most important reason for failing of the treatment.

INNO LIPA HBV DR test is often being used for detecting antiviral resistance mutations which are developing in CHB patients. Although well known that with this method it is possible to detect only the variants have less than 5% of viral population, the detection of known mutations is considered as the disadvantages of the method. Ultra Deep Pyro Sequencing method which is one of the next generation sequencing methods (UDPS), is a method has a high working capacity that can detect even the variants with about 1% percent in a short time.

In this study antiviral resistance mutations in CHB patients are investigated using INNO LIPA HBV DR and UDPS methods. The research related antiviral resistance mutations using INNO LIPA HBV DR method is done within routine applications in the Molecular Biology laboratory of the University of Istanbul, Medical Faculty of Istanbul, Department of Virology and Fundamental Immunology Branch. Analysis of the mutations with UDPS is done in Whole Genomic Laboratory of University of Istanbul, Medical Research Institute. 23 serum samples, which are belong to 9 naive and 14 treated CHB patients, are included in this study.

While resistance mutations could not detect in serum samples from naive patients by INNO LIPA HBV DR method, compensation mutations which caused lamuvidine resistance in 3 samples are detected using UDPS method. In treated patients (drug-experienced patients) 19 mutations in 8 samples are detected by INNO LIPA HBV DR (the frequency range; 100.0%-10%) and 29 mutations in 12 samples by UDPS (the frequency range; 100.0%-1.1%). All the mutations detected by INNO LIPA HBV DR test are also detected by UDPS. There are no mutations which are detected by INNO LIPA HBV DR but not by UDPS. The average frequency of 10 mutations which could not detected by INNO LIPA HBV DR is obtained as 14.7%.

In conclusion the common used method INNO LIPA HBV DR is identified as a sensitive and easy applicable method. However, it is considered that the detection of genotypic resistance in early stage by UDPS will provide important contribution to the direction the treatment.

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Biography

Sevim Mese has completed her Medical Faculty at the age of 23 years from Dicle University. She has worked in Health Center as a general practitioner from 1995 to 2003. Then, she has specialized on Microbiology at Medical Microbiology Department, Medical Faculty, University of Dicle from 2005 to 2008. After completing her specialising she has worked in Hospital of Batman as a Specialist of Microbiology for one year. Then, she has done a second specialisation on Virology at the University of Istanbul, Istanbul Medical Faculty, Department of Virology an Fundamental Immunology for two years. Now, she works at the same department as a virologist. She has published about 20 papers in reputed journals.

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