Determination of HBV DNA viral load in Serum positive Hepatitis B patients using Quantitative Real Time PCR (qPCR)

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Viral DNA quantification of Hepatitis B Virus (HBV) is crucial in treating and managing patients with chronic HBV disease. Although serological testing has contributed immensely to the disease diagnosis, molecular methods such as the quantitative Polymerase Chain Reaction (qPCR) are vital in viral load determination. This quantification technique is important for physicians to monitor the progress of antiviral therapy and determine future therapeutic options. In this study, we evaluated the detection efficiency of commercially available kits used in qPCR detection for the HBV viral load quantification. Serum cell-free circulating DNA of 37 patients that have been serologically confirmed positive for HBV and 13 healthy controls were extracted, and qPCR viral load determination was carried out. The results showed that only 13.51% of the total HBV-positive samples were sufficiently high to be detected with viral load ranges from 0.87 – 1012 IU/mL. The high number of undetected cases 86.49% may be attributed to the qPCR kit sensitivity as well as variations in the region of detection of viral genome found in the Nigerian population since these kits were designed for a different populace. This necessitates further studies that will validate the underlying mechanisms for the detection of the virus and see the need for indigenous detection kits to address the disease burden of HBV in Nigeria.