Hepatitis is a medical condition defined by the inflammation of the liver and characterized by the presence of inflammatory cells in the tissue of the organ. Hepatitis may occur with limited or no symptoms, but often leads to jaundice, anorexia and malaise. Hepatitis is acute when it lasts less than six months and chronic when it persists longer. Acute viral hepatitis is more likely to be asymptomatic in younger people. Symptomatic individuals may present after convalescent stage of 7 to 10 days, with the total illness lasting 2 to 6 weeks. A small proportion of people with acute hepatitis progress to acute liver failure, in which the liver is unable to clear harmful substances from the circulation leading to hepatic encephalopathy, and also produce blood proteins leading to peripheral edema and bleeding which is life threatening. Chronic hepatitis is defined as inflammatory disease of the liver lasting for more than six months; and was previously medically categorized as chronic persistent hepatitis, chronic active hepatitis and chronic lobular hepatitis. The histological stage differentiation between chronic persistent hepatitis (no cellular necrosis), chronic active hepatitis (cellular necrosis) and chronic lobular hepatitis (without piecemeal necrosis) alter over time and don’t correlate with prognosis and are therefore now much less used. The simpler term 'chronic hepatitis' is now preferred in association with the causative agent (when known) and a grade based on the degree of inflammation, piecemeal or bridging necrosis (interface hepatitis) and the stage of fibrosis. Chronic hepatitis often leads to nonspecific symptoms such as malaise, tiredness and weakness, and often leads to no symptoms at all. It is commonly identified on blood tests performed either for screening or to evaluate nonspecific symptoms. Jaundice is a very late symptom of chronic hepatitis, and is indicative of advance or severe liver disease. Hepatitis can be caused by either immune cells in the body attacking the liver and causing autoimmune hepatitis, infections from viruses (such as hepatitis A, B, C or E), bacteria, or parasites, liver damage from alcohol, poisonous mushrooms, or other poisons, medications, such as an overdose of acetaminophen, which can be deadly. Hepatitis B is a potentially life-threatening liver infection caused by the hepatitis B virus. It is a major global health problem and the most serious type of viral hepatitis. It can cause chronic liver disease and puts people at high risk of death from cirrhosis of the liver and liver cancer.

Hepatitis B virus (HBV) infection is a major public health problem with over 360 million chronically infected people worldwide accounting for about 600,000 deaths from HBV-related liver disease or hepatocellular carcinoma (HCC) annually (Shepard et al, 2006). HBV is at the origin of severe liver disease like chronic active hepatitis, liver cirrhosis and hepatocellular carcinoma. India houses the second largest
pool for chronic hepatitis B and moderately endemic area in terms of carrier state. In India, HBsAg prevalence among general population ranges from 2% to 8%, placing India in intermediate HBV endemicity zone and the number of HBV carriers is estimated to be 50 million, forming the second largest global pool of chronic HBV infections (Dutta SN, 2008). Systematic meta-analysis of HBV epidemiology from Indian population shows higher point-prevalence of hepatitis B in tribal population (11.85%) compared to non-tribals (3.07%), with an overall point-prevalence of 3.70 corresponding to a chronic carrier rate of 2.96% (Batham et al, 2009).

Based on more than 8% genetic variability among HBV strains found worldwide, eight HBV genotypes namely A-H have been well established (Okamoto et al, 1988 Norder et al, 1994, Stuyver et al, 2000, Arauz-Ruiz et al, 2002). Accumulating evidences clearly indicate that HBV genotypes can significantly influence HBeAg seroconversion rates, viremia levels, mutational patterns that could significantly influence the heterogeneity in clinical manifestations and even response to antiviral therapy (Osiowy 2006, Schaefer 2005, Echevarria and Avellon 2006). Predominantly prevalence of HBV genotype D (~90%) in northern, western and southern India, followed by genotype A has been reported. Presence of Genotype C has been reported only form eastern and sporadic reports from north-eastern India (Dutta SN, 2008).

The risk of HCC is six times higher in patients who are persistently HBeAg positive than in HBeAg negative patients (Yang et al, 2002) and twelve times higher in patients with high DNA viral load (>10^6 copies per ml) (chen et al, 2006). The absence of e-antigen, however, does not necessarily exclude active viral replication. Some patient groups have mutant viruses that do not give rise to e-antigen. Patients with negative e-antigen, but detectable viral DNA, are traditionally thought to be more resistant to conventional treatment than those who have positive e-antigen levels.

The available data in Indian context shows HBeAg negativity in 90%; HBeAg positivity in 1-10%; Normal ALT in 80%, prevalence of mainly genotype D; with low prevalence of precore (PC) and basal core promoter (BCP) mutations (Dutta SN, 2008). Northeast India has a distinctly diverse population with distinct lifestyle, socio-economy, culture and ethnicity compared to any other parts of India with predominantly tribal population. Exceptional higher HBsAg positivity has been reported in some North Eastern states (~7%); however, data on the molecular epidemiology of HBV in northeast India is scanty (WHO 2002).
There is a very limited data available on viral factors like HBV genotype, HBeAg status and viral load in chronic HBV related advanced liver disease from Northeast India. Moreover, no data is available from Northeast India on family based seroprevalence of HBV in family contacts of index patients suffering from different grades of severity of liver disease due to underlying chronic HBV infection. Therefore the present study was aimed to evaluate the molecular epidemiology of HBV in chronic HBV infected individual cases and family contacts from northeast India.