Abstract

The hepatitis B virus forms in a nuclei of infected hepatocytes a stable cccDNA resistant to degradation and capable to persist for many years. The main role in the persistence of cccDNA play the epigenetic mechanisms that regulates viral transcription and replication in various stages of the infection. Major epigenetic mechanisms involved in the regulation of HBV include CpG islands methylation, cccDNA-bound histone acetylation and methylation and RNA interference. CpG methylation is associated with the activity of capsid protein, which binds to the cccDNA and promotes transcription and structurally distinguishes viral and the host genome. HBx protein besides CpG methylation mainly affects histone modifications via its interaction with host proteins and thus eliminates the inhibitory effects and promotes the active modifications favoring virus transcription. This work summarizes current knowledges concerning the cccDNA epigenetic regulation.

Keywords: HBV, cccDNA, replication and transcription of HBV DNA, histone modifications, methylation of CpG, CpG islands, HBx, HBc, IFNα, IL-6