Abstract

Hepatitis B virus (HBV) is a *Hepadnaviridae* virus infecting mammals. Its infection can result in an acute or chronic infection. Chronic infection can result in hepatocellular carcinoma and liver cirrhosis, potentially leading to death of the patient. HBV is a small 42 nm virus with a genome length of 3.2 kb encoding seven viral proteins. HBV Core protein (HBc) is a capsid forming protein which is pleiotropic in function. We have identified two ubiquitin ligases which could interact with this protein: F-box only protein 3 (FBXO3; E3 ubiquitin ligase) and Ubiquitin conjugating enzyme E2 O (UBE2O; E2/E3 ubiquitin ligase). By employing multiple methods we have confirmed these interactions. Co-immunoprecipitation and further western blot analysis unveiled multiple new insights into the ligases′ impact on HBc: FBXO3-mediated HBc polyubiquitination stimulation and UBE2O-mediated HBc monoubiquitination promotion. FBXO3´s and UBE2O´s role in HBV life cycle was investigated as well. By silencing the expression of FBXO3 and UBE2O respectively, we have observed changes in HBV replication levels: FBXO3 serves as an inhibitor of HBV replication, while UBE2O stimulates the course of HBV life cycle. Further investigation of these newly-discovered understandings may lead to a whole new HBV - host interplay perception.

Key words

Hepatitis B virus, Core protein, Ubiquitin, F-box only protein 3, FBXO3, Ubiquitin conjugating enzyme E2 O, UBE2O