Abstract

Helicases are proteins that provide strands-unwinding of polystranded conformations of nucleic acids. DHX9 is a representative of helicases with a DExD/H-box motif. It accepts molecules of RNA, DNA and hybrid strucutures as a substrate. Inside the nucleus of the eukaryotic cell, DHX9 participates in the formation of the replication fork or it acts in a complex of trancriptional factors and it connects other proteins with RNA polymerase II. Subsequently DHX9 regulates post-transcritional RNA processing. After a shuttle to the cytoplasm it assists in a correct course of translation of structurated mRNAs.

Since DHX9 is involved in nucleic acids-related processes, its role in viral life cycles is investigated. Also it is a part of antiviral signaling pathways of the cell. DHX9 provides an advantage for RNA viruses and retroviruses in their replicative cycle in various manners. The binding of DHX9 on secondary structures of viral RNAs and their eventually remodelation, which causes promotion of viral replication, transcription and translation, is significant. In contrast to that, DNA viruses use DHX9 to regulate host protein expression and minimize its antiviral fuction. Understanding of relationship could lead to more effective aiming of the therapeutic drugs against viral infections.

Key words: helicases, DExD/H-box motif, DHX9, viruses, viral life cycle