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Topic of Research: - Expression, Purification of Y-domain and Characterization of Open Reading Frame encoded Proteins of Hepatitis E virus

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Hepatitis E virus (HEV) is a single-stranded RNA virus of the family *Hepeviridae*. HEV has become a major health concern across the globe. The present research work is divided into three objectives. In the first objective, the Y-domain protein was expressed and characterized for the first time in bacterial system. Maximal protein expression was observed with 0.25 mM IPTG after 5 hours of post-induction at 37°C in BL21(DE3) cells. The protein was purified from inclusion bodies using Ni-NTA chromatography. Further, Y-domain was characterized using biophysical and *in silico* methods that suggested stable secondary and tertiary structure at alkaline pH. It was concluded that biophysical and *in silico* data were in excellent agreement. In the second objective, the different open reading frame (ORF) encoded proteins were examined by analyzing their intrinsically disordered regions (IDRs). As IDRs play important roles in a variety of biological processes, therefore, the identified IDRs in ORFs highlighted their essentiality in the HEV pathogenesis. In the third objective, a bioinformatics approach was utilized to elucidate key genes and pathways correlated with chronic HEV infection (CHE) for possible identification of its therapeutic targets. This research work is significant and highlights its implications in drug designing strategies.