

Insights of Interaction Studies between HSP-60, HSP-70 Proteins and HSF-1 in Bubalus bubalis

Authors : Ravinder Singh, C Rajesh, Saroj Badhan, Shailendra Mishra, Ranjit Singh Kataria

Abstract : Heat shock protein 60 and 70 are crucial chaperones that guide appropriate folding of denatured proteins under heat stress conditions. HSP60 and HSP70 provide assistance in correct folding of a multitude of denatured proteins. The heat shock factors are the family of some transcription factors which controls the regulation of gene expression of proteins involved in folding of damaged or improper folded proteins during stress conditions. Under normal condition heat shock proteins bind with HSF-1 and act as its repressor as well as aids in maintaining the HSF-1's nonactive and monomeric confirmation. The experimental protein structure for all these proteins in Bubalus bubalis is not known till date. Therefore computational approach was explored to identify three-dimensional structure analysis of all these proteins. In this study, an extensive in silico analysis has been performed including sequence comparison among species to comparative modeling of Bubalus bubalis HSP60, HSP70 and HSF-1 protein. The stereochemical properties of proteins were assessed by utilizing several scrutiny bioinformatics tools to ensure model accuracy. Further docking approach was used to study interactions between Heat shock proteins and HSF-1.

Keywords : Bubalus bubalis, comparative modelling, docking, heat shock protein

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