Abstract

In this study, we have reported a full length of small heat shock protein 37 (designated MrHSP37) gene, identified from the transcriptome database of freshwater prawn *Macrobrachium rosenbergii*. The complete gene sequence of the MrHSP37 is 2,425 base pairs in length, and encodes 338 amino acids. MrHSP37 contains a long heat shock protein family profile in the amino acid sequence between 205 and 288. The mRNA expressions of MrHSP37 in healthy and the infectious hypodermal and hematopoietic necrosis virus (IHHNV) challenged *M. rosenbergii* were examined using quantitative real time polymerase chain reaction (qRT-PCR). MrHSP37 is highly expressed in hepatopancreas and all the other tissues (walking leg, gills, muscle, stomach, haemocyte, intestine, pleopods, brain and eye stalk) of *M. rosenbergii* taken for analysis. The expression is strongly up-regulated after IHHNV challenge. To understand its biological activity, the recombinant MrHSP37 gene was constructed and expressed in *Escherichia coli* BL21 (DE3). The results of ATPase assay showed that the recombinant MrHSP37 protein exhibited apparent ATPase activity which increased with the concentration of the protein. And also the purified recombinant MrHSP37 protein was used for thermal aggregation assay (chaperone activity). It showed that the recombinant MrHSP37 protein is an active chaperone in this assay. Taken together, these results suggest that MrHSP37 is potentially involved in the immune responses against IHHNV challenge in *M. rosenbergii*.

Keywords  Heat shock protein -  *Macrobrachium rosenbergii* - IHHNV - Gene expression -