



mRNA expression profiles of heat shock proteins of wild and salinity-tolerant swimming crabs, *Portunus trituberculatus*, subjected to low salinity stress

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ABSTRACT. Challenged by the low salinity, 4 parts per thousand (4 ppt), for 72 h, the survivals of swimming crabs (*Portunus trituberculatus*) were collected as the screened group (SG, tolerant to low salinity). Aiming at identifying the mechanism of low salinity tolerance, quantitative real-time PCR was employed to investigate the expression profiles of 4 HSP genes (*HSP60*, *HSP70*, *HSP90-1*, *HSP90-2*) in the hepatopancreas of wild (WG) and screened (SG) groups of *P. trituberculatus* exposed to low salinity (4 ppt). The results showed that 3 of the candidate genes (*HSP60*, *HSP70*, *HSP90-1*) exhibited similarly downregulated expression profiles in the first 3 h ($P < 0.05$), which became upregulated from 3 h to 72 h after being subjected to low salinity conditions. In contrast, the expression profile of the *HSP90-2* gene was upregulated during the first 6 h for the WG, and during the first 12 h for the SG, after which it became downregulated. *HSP90-1* and *HSP90-2* were highly expressed at 12 h after low salinity challenge in the SG, but not the WG. The response of these 2 genes to salinity stress indicates

their suitability as biomarkers to differentiate SG from WG crabs. The results indicate that HSP genes are involved in the adaptation of crabs to low salinity exposure, and that different HSPs have diverse functions in response to low salinity stress in *P. trituberculatus*. In addition, HSP expression in SG indicates that this group is more tolerant to low salinity conditions compared to WG.

Key words: *Portunus trituberculatus*; Low salinity stress; qRT-PCR; HSP