



Molecular characterization and expression analysis of the β -actin gene from the ridgetail white prawn *Exopalaemon carinicauda*

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Genet. Mol. Res. 15 (2): gmr.15026872

Received July 20, 2015

Accepted January 4, 2016

Published April 25, 2016

DOI <http://dx.doi.org/10.4238/gmr.15026872>

ABSTRACT. Actin is a highly conserved protein that is found in all eukaryotic cells, and has been widely used as an internal control gene in gene expression studies. In this study, we cloned an actin gene (named *Ec β -actin*) from *Exopalaemon carinicauda* and determined its expression levels. The full-length cDNA of *Ec β -actin* was 1335 bp long, comprising a 1131-bp ORF encoding 376 amino acids, a 65-bp 5'-UTR, and a 139-bp 3'-UTR with a poly(A) tail. The A + T content was approximately 79% in the 3'-UTR of the *Ec β -actin* mRNA. The 3'-UTR contained two repeats of the AUUUA motif. The putative protein Ec β -actin showed high identity (97-99%) with other actins

from various species. Phylogenetic analysis revealed that Ec β -actin belongs to Crustacea, although it formed a singleton sub-branch that was located a short distance from crabs and other shrimp species. Ec β -actin expression was detected in the hepatopancreas, ovary, muscle, gill, stomach, and hemocytes, and was strongly expressed in the hemocytes and ovary of *E. carinicauda*. Ec β -actin mRNA expression varied during ovarian development, with high levels observed at stages I and V. Therefore, caution should be taken when using the Ec β -actin gene as an endogenous control gene.

Key words: *Exopalaemon carinicauda*; β -actin; Ovarian development; Internal control; Gene expression