



Molecular cloning and expression profile of an ATP-binding cassette (ABC) transporter gene from the hemipteran insect *Nilaparvata lugens*

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ABSTRACT. The ATP-binding cassette (ABC) transporters belong to a large superfamily of proteins that have important physiological functions in all living organisms. In insects, ABC transporters have important functions in the transport of molecules, and are also involved in insecticide resistance, metabolism, and development. In this study, the *Nilaparvata lugens* Stal (Hemiptera: Delphacidae) ABCG (*NIABCG*) gene was identified and characterized. The complete mRNA sequence of *NIABCG* was 2608-bp long, with an open reading frame of 2064 bp encoding a protein comprised of 687 amino acids. The conserved regions include three *N*-glycosylation and 34 phosphorylation sites, as well as seven transmembrane domains. The amino acid identity with the closely related species *Acyrtosiphon pisum* was 42.8%. Developmental expression analysis using quantitative real-time reverse

transcriptase PCR suggested that the *NIABCG* transcript was expressed at all developmental stages of *N. lugens*. The lowest expression of *NIABCG* was in the 1st instar, and levels increased with larval growth. The transcript profiles of *NIABCG* were analyzed in various tissues from a 5th instar nymph, and the highest expression was observed in the midgut. These results suggest that the sequence, characteristics, and expression of *NIABCG* are highly conserved, and basic information is provided for its functional analysis.

Key words: *Nilaparvata lugens*; *NIABCG*; Gene expression; Gene structure; Tissue distribution