

## **Molecular Characterization and Identification of C-Type Lectin in Red Palm Weevil, *Rhynchophorus ferrugineus* Oliver**

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**Abstract :** Insect's innate immunity depends on a variety of defense responses for the recognition of invading pathogens. Pathogen recognition involves particular proteins known as pattern recognition receptors (PRRs). These PRRs interact with pathogen-associated molecular patterns (PAMPs) present on the surface of pathogens to distinguish between self and non-self. C-type lectins (CTLs) belong to a superfamily of PRRs which involved in insect immunity and defense mechanism. *Rhynchophorus ferrugineus* Olivier is a devastating pest of Palm cultivations in China. Although studies on *R. ferrugineus* immune mechanism and host defense have conducted, however, the role of CTL in immune responses of *R. ferrugineus* remains elusive. Here, we report RfCTL, which is a secreted protein containing a single-CRD domain. The open reading frame (ORF) of CTL is 226 bp, which encodes a putative protein of 168 amino acids. Transcript expression analysis revealed that RfCTL highly expressed in immune-related tissues, i.e., hemolymph and fat body. The abundance of RfCTL in the gut and fat body dramatically increased upon *Staphylococcus aureus* and *Escherichia coli* bacterial challenges, suggesting a role in defense against gram-positive and gram-negative bacterial infection. Taken together, we inferred that RfCTL might be involved in the immune defense of *R. ferrugineus* and established a solid foundation for future studies on *R. ferrugineus* CTL domain proteins for better understanding of insect immunity.

**Keywords :** biological invasion, c-type lectin, insect immunity, *Rhynchophorus ferrugineus* Oliver

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