

Antimicrobial activity of the red palm weevil *Rhynchophorus ferrugineus*

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Abstract

The red palm weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera Dryophthoridae), is an important pest of palms. Knowledge of both its natural enemies and its defensive mechanisms against predators and microorganisms is important to develop methods for an integrated pest control. Antimicrobial activity of the cuticular surface of adults and larvae, as well as of eggs, of this invasive species was investigated. This activity was tested against the Gram-positive bacteria *Bacillus subtilis* (Ehrenberg) Cohn and *Bacillus thuringiensis* Berliner, the Gram-negative bacterium *Escherichia coli* Escherich, and the entomopathogenic fungi *Beauveria bassiana* (Balsamo) Vuillemin and *Metarhizium anisopliae* (Metchnikoff) Sorokin. A similar analysis was conducted with the hemolymph of *R. ferrugineus* larvae infected by *Pseudomonas aeruginosa* (Schroter) Migula, *E. coli* and *Staphylococcus aureus* Rosenbach. Polar surface fraction of extracts from adults and large larvae inhibits Gram-positive bacteria and the *B. bassiana*'s growth, but not the growth of *E. coli* and *M. anisopliae*. Similarly, the hemolymph of larvae and the surface extracts of both small larvae and eggs seemed not to show any inhibition. Chemical analyses of the fraction exhibiting antimicrobial activity show the presence of some polar compounds ranging between 1000 and 1500 Dalton. This study improves our knowledge on the biology of *R. ferrugineus* and helps to suggest strategies for the biocontrol of this pest.

Key words: *Rhynchophorus ferrugineus*, palm, pest, biological control, antimicrobial activity, polar substances.

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