

Evaluation of a Chitin Synthesis Inhibitor Novaluron in the Shrimp *Palaemon Adspersus*: Impact on Ecdysteroids and Chitin Contents

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Abstract : Pesticides are widely used in crop production and are known to induce a major contamination of ecosystems especially in aquatic environments. The leaching of a large amount of pollutants derived from agricultural activities (fertilizers, pesticides) might contaminate rivers which diverse into the likes and estuarine and coastal environments affecting several organisms such as crustacean species. In this context, there is searched for new selective insecticides with minimal toxic effects on the environment and human health such as growth insect regulators (GIRs). The current study aimed to examine the impact of novaluron (CE 20%), a potent benzoylphenylurea derivative insecticide on mosquito larvae, against non-target shrimp, *Palaemon adspersus* (Decapoda, Palaemonidae). The compound was tested at two concentrations (0.91 mg/L and 4.30 mg/L) corresponding respectively to the LC50 and LC90 determined against fourth-instar larvae of *Culiseta longiareolata* (Diptera, Culicidae). The molting hormone titer was determined in the haemolymph by an enzyme-immunoassay, while chitin was measured in peripheral integument at different stages during the molting cycle. Under normal conditions, the haemolymphatic ecdysteroid concentrations increased during the molting cycle to reach peak at stage D. In the treated series, we note absence of the peak at stage D and an increase at stages B, C and D as compared to the controls. Concerning the chitin amounts, we observe an increase from stage A to stage C followed by a decrease at stage D. Exposition of shrimps to novaluron resulted in a significant decrease of values at all molting stages with a dose-response effect. Thus, the insecticide can present secondary effects on this non-target arthropod species.

Keywords : toxicology, novaluron, crustacean, palaemon adspersus, ecdysteroids, cuticle, chitin

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