

Activity of a selective insecticide (methoxyfenozide) against two mosquito species (*Culex pipiens* and *Culiseta longiareolata*): toxicological, biometrical and biochemical study

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Abstract. Methoxyfenozide is an insect growth disruptor belonging to the class of non-steroidal ecdysone agonists. In the present study, methoxyfenozide (23% emulsifiable concentrate) is evaluated against newly molted fourth-instar larvae of *Culex pipiens* L. and *Culiseta longiareolata* Macquart (Diptera: Culicidae), aiming to investigate its possible effects on growth and development. Larvae are exposed for 24 h under standard laboratory conditions in accordance with World Health Organization recommendations. The product is found to exhibit insecticidal activity against the two tested mosquito species with a concentration–response relationship. Moreover, based on the lethal concentrations determined, methoxyfenozide is slightly more toxic against *C. pipiens* than *C. longiareolata*. Furthermore, fourth-instar larva of the two mosquito species are treated using two lethal concentrations (LC_{50} and LC_{90}) of methoxyfenozide, and then individual survivals (larvae, pupae and adults) from larval treatment are subjected to a biometrical and biochemical study. The compound is found to interfere with growth by reducing the larval and pupal development duration. Moreover, the body volume and the main biochemical contents (proteins, carbohydrates and lipids) from different stages are affected. The overall results suggest that the ecdysone agonist under investigation interferes with the development process and has potential for mosquito control.