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# Lethal and Sublethal Effect of Azadirachtin on the Development of an Insect Model: Drosophila melanogaster (Diptera)

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**Abstract :** Azadirachtin is a biorational insecticide commonly reported as selective to a range of beneficial insects. It is one of the most biologically active natural inhibitors of insect growth and development and it is known to be an antagonist of the juvenile hormone and 20-hydroxyecdysone (20E). However, its mechanism of action remains still unknown. In the present study, the toxicity of a commercial formulation of Azadirachtin (Neem Azal, 1% azadirachtine) was evaluated by topical application at various doses (0.1, 0.25, 0.5, 1 and 2 µg/insect) on the third instars larvae of D. melanogaster. Lethal doses (LD25: 0.28µg and LD50: 0.67µg), were evaluated by cumulated mortality at the immature stages. The effects of azadirachtin (LD25 and LD50) were then evaluated on the development (duration of the larval and pupal instars, the weight of larvae, pupa and adults) of Drosophila melanogaster. Results showed that the insecticide increased significantly the larval and pupal instar duration. A reduction of larval and pupal weight is noted under azadirachtin treatment as compared to controls. In addition, the weight of surviving adults at the two tested dose was also reduced. In conclusion, azadirachtin seemed to interfere with the functions of the endocrine system resulting in development defects.

**Keywords :** azadirachtin, d.melanogaster, toxicity, development
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