

Insecticidal Effect of a Botanical Plant Extracts (Ultra Act®) on *Bactrocera oleae* (Diptera:Tephritidae) Preimaginal Development and Pupa Survival

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Abstract : *Bactrocera oleae* is one of the most economically damaging insects of olive in Tunisia and other producing countries of olive trees. As a reliable alternative to synthetic chemical insecticides, botanical insecticides are considered natural control methods safe for the environment and human health. The certified botanical insecticide ULTRA-ACT® effectively on large scale of insects is approved per Indian and International organic standards certified organic pesticides. Olives with signs of olive fly infestation were collected from productive olive trees in three Sahel localities of Tunisia. Infested fruits were separated daily for larval stage control purposes, into new rearing boxes under microclimatic conditions at 75% R.H, $25 \pm 3^\circ\text{C}$ and 8 L-16D. Treatment with ULTRA-ACT® extract solutions was made by dipping methods; each fruit was pipetted in 5 mL of extract for 10 seconds then air-dried. Five doses of ULTRA-ACT® were used for a bioassay, plus a water-only control. A total of 200 infested olive fruits were treated in separate dishes with a proportion of 10 olives per dish. A total of 20 dishes were used for each concentration treatment as well as 20 dishes utilized as control. The bioassay was conducted with 3 replicates. The development of the larval and pupal stages was recorded since the egg hatching until emergence of adults. It was determined that ULTRA-ACT® extracts on succeeding concentrations; 0.25, 0.5, 1 and 2% show significant effect on the biology of the pest. Increased concentration decreased significantly adult emergence from pupae and affect the egg hatchability percentage. Therefore, larval mortality increased insignificantly with the increase of the product concentration. The 2nd instar larvae were more susceptible to the product and after 72 hours the maximum mortality (75%) was observed with ULTRA-ACT® 2%. The present work aimed to give a possible and efficient alternative solution for *B. oleae* biological control with a promising botanical insecticide.

Keywords : *Bactrocera oleae*, olive insect pest, Ultra Act®, larval mortality, pupal emergency, biological control

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