

Larvicidal Activity of Azadirachtin and Essential Oils from *Thymus capitatus* against *Prays oleae* Bern (Lepidoptera, Yponomeutidae)

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Abstract : *Prays oleae* is a major insect of olive in the Mediterranean Region. In an effort to find effective and affordable ways of controlling this pest, larvicidal activity of essential oils from Tunisian *Thymus capitatus* were analyzed in comparison to Azadirachtin, a biologically active compound insecticide. The essential oils were extracted by hydrodistillation, and their chemical composition was determined by gas liquid-chromatography coupled with mass spectroscopy. The main components of chemical components were oxygenated monoterpenes (60.24%). The most abundant oxygenated monoterpenes were carvacrol (54.11%). Monoterpenes hydrocarbons were much more abundant and dominated by the *o*-cymene (16.68%). Both active compounds of Azadirachtin and *Thymus capitatus* oil extracts exhibited significant larvicidal activity against *P. oleae* with LC50 values 81.30 ppm and 52.49 ppm respectively. Dose-response relationships were established with almost 100% mortality when using the highest dose 100 ppm of *T. capitatus* oil extracts and 80 ppm of Azadirachtin. At the lowest dose (10 ppm), *T. capitatus* oil extracts and Azadirachtin caused 60% and 76% larval mortality in 48 hours respectively. The larval mortality rate greatly decreased with increases of the dilution of both oil extract compounds. Larval development duration appeared to be prolonged to about 12 days for larvae feeding on control diet. The maximum antifeedant activity was shown by both *T. capitatus* oil extract and Azadirachtin at LC90 values (47.5 and 50.1 ppm respectively). Tunisian *T. capitatus* oil extract used at low concentrations could be considered as eco-friendly promising insecticide similar to Azadirachtin that has significant potential for the biological control of *P. oleae*.

Keywords : *Thymus capitatus*, chemical composition, azadirachtin, larvicidal effects, antifeedant activity, *Prays oleae*

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