



Sixth Article: Sharing with another inside the specialization-Accepted for publication

Article title	Jojoba oil-based Nano-emulsion as promise bio-pesticide against <i>Myzus persicae</i> and <i>Tetranychus urticae</i> and Its biosafety on <i>Coccinella undecimpunctata</i> and aphid mummies
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Abstract

Nano-emulsion-based essential oils are considered from the most effective applications for controlling pests. Jojoba oil-based nano-emulsion and bulk emulsion formulations were examined against *Tetranychus urticae* and *Myzus persicae* and their natural enemies. The prepared jojoba oil-based nano-emulsion showed superior stability in centrifuging and freezing tests and had non-foaming properties. The droplet size of the Jojoba oil-based nano-emulsion was as small 45 ± 5 nm with a zeta potential of 4.79 mV. Results confirmed that jojoba oil-based nano-emulsion possesses better acaricidal and aphicidal activity than bulk emulsion. The LC_{50} of nano-emulsion was 0.103 and 0.06%, while in bulk emulsion, it recorded 4.06 and 4.76% against *T. urticae* after 24 h of spraying at temperatures of 20 and 30°C, respectively. Under the same conditions, nano-emulsion had an LC_{50} value of 0.23 and 0.35% while bulk emulsion had 5.14 and 3.61% against *M. persicae*. Furthermore, the use of jojoba oil-based emulsion had no significant negative impact on aphid mummies or *Coccinella undecimpunctata*. These encouraging findings confirmed that jojoba-based nano-emulsions possess potential eco-friendly and effective bio-pesticides against mites and aphids as well as being safe as biological control agents. Additionally, its physical properties are suitable for commercial use.