

Repellent Activity of Nanoemulsion Essential Oil of Eucalyptus Globulus Labill on Ephestia kuehniella (Lepidoptera: Pyralidae)

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Abstract : Nowadays, the use of encapsulation technology of pesticides causes an increase in the efficiency and controlled release of these substances. Controlled release by nanoencapsulated formulations allows the essential oil to be used more effectively over a given time interval, suitability to the mode of application and minimization of environmental damage. The essential oil from Eucalyptus globulus exhibited an average yield of 1.19% and presented 1,8-cineol (59.08%) as the major component. Nanoemulsion essential oil was carried out by the method of gum - maltodextrin using homogenization and morphology and size were determined by TEM. Several concentrations were prepared, and then third instar larvae of E.kuehniella were introduced into each treatment. Then, repellent activity was determined after 1, 3 and 24 h from commencement. This study reveals that at a concentration of 1.5 ppm, the nanoemulsion of E. globulus essential oil on the flour disc was shown here to possess more repellent activity (85%) than E.kuehniella compared to natural essential oil (5%) before formulation after 24h. The repellent activity varied with application method concentrations and exposure time. The results showed higher repellent rates in nanoemulsion than in essential oil due to controlled-release formulations allowing smaller quantities of essential oil to be used more effectively over a given time interval. Findings led to the conclusion that encapsulated technology of essential oils can enhance their control release and persistence under controlled conditions.

Keywords : nanoemulsion, eucalyptus globulus, ephestia kuehniella, TEM

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