

Efficacy of some plant extracts as botanical acaricide against Date palm dust mite

Oligonychus afrasiaticus (McGregor)¹Hazim M. Ali ²Kholid A. Fhaid ¹Khairullah M. Awad¹Date Palm Research Centre- University of Basrah, Basrah- IRAQ²Plant protection Department, Agriculture College-Basrah University-Basrah IRAQ**Abstract**

The purpose of this study was to determine the effectiveness of *Vitex agnus-castus*, *Melilotus officinalis*, and *Cymbopogon citratus* as botanical acaricides against date palm dust mites *Oligonychus afrasiaticus* (McGregor). There are several variables that affect dust mite mortality, including plant species, extraction method, concentration, and time. The findings indicated noteworthy impacts of these variables on the mortality rates of dust mites. The mortality rates of dust mites were significantly affected by the type of plant species ($p < 0.01$). The highest mortality rates were observed with *Cymbopogon citratus*, whereas there was no significant variation between *Vitex agnus-castus* and *Melilotus officinalis*. The extraction method was influential ($p < 0.01$), with ethanol extract performing better than aqueous and hexane extracts in terms of efficacy. Aqueous extraction had a lower efficacy than hexane extraction. The concentration of plant extract considerably affected the mortality rates of dust mites ($p < 0.01$). Increased concentrations led to significantly increased mortality rates, demonstrating a concentration-dependent impact. Dust mite mortality rates were also affected by exposure duration ($p < 0.01$). When the exposure period was increased, the mortality rate increased considerably. Significant differences in mortality rates have been observed for each time period (6, 12, 24, and 48 hours). These findings emphasize the importance of selecting appropriate plant species, utilizing effective extraction methods, optimizing concentration levels, and considering exposure duration for designing efficient dust mite control strategies. *Cymbopogon citratus*, especially when extracted with ethanol and applied at higher concentrations, has the potential to be a natural dust mite control treatment.

Keywords: Acaricide Efficacy; Extract; Mortality rate; Natural alternative; Pest management