

Abstract

Tetranychus urticae is one of the most important and economical pest of crops, and due to its high reproduction and rapid appearance, it causes severe economic damage. This mite acts on more than 150 plant species as hosts and causes damage. Because of its wide distribution and its potential for resistance to toxins, non-chemical control of this pest has always been considered. In this research, the contact and fumigant toxicity and repellent effects of hexane and ethanolic extracts of caraway fruit (*Momordica charantia*), leafy and fruity fruits of *Withania coagulans* and *Citrulus colocynthis* watermelon on adult of *Tetranychus urticae* were examined in the temperature $27 \pm 2^\circ \text{C}$, $50 \pm 5\%$ relative humidity and 16 hours light and 8 hours darkness respectively. The results of the experiment showed that the mortality rate of *Tetranychus urticae* increased significantly in 24 hours after treatment with increasing concentrations of the extracts. LC50 values in contact test with hexane solvent for, *Momordica charantia* cheese and watermelon *Citrulus colocynthis* were 861.03, 756.2 and 1211.2 mg/cm² respectively and with ethanol solvent were 994.6, 1275.5 and 960.3 mg/cm² was calculated and the hexane extract of cottage cheese produced more toxicity than Carella extract and watermelon Abujahl on *Tetranychus urticae*. Also, the LC50 values for the contact test with hexane solvent for *Momordica charantia*, *Withania cougulans* and *Citrulus colocynthis* were calculated 306.7, 249.2 and 569.5 mg/l air and ethanol solvent were calculated 407.1, 349.5 and 6451.1 mg/l. The hexane extract of cheesecake produced the highest respiratory toxicity and the Hexane extract of *Withania cougulans*, *Citrulus colocynthis* produced the lowest respiratory toxicity on *Tetranychus urticae*. In all herbal extracts, the highest repellency effect was observed at the highest concentration and increased with increased concentration of extracts and the attraction effect was observed at the lowest concentration.

Keywords: Herbal extract, Acaricidal, Acari, *Tetranychus urticae*, *Momordica charantia*, *Withania cougulans* and *Citrulus colocynthis*



**University of Zabol
Graduate School
Faculty of Agriculture
Department of Plant Protection**

**A thesis submitted to the Graduate Studies Office in partial
fulfillment of the requirements for the degree of M. Sc. in
Agricultural Entomology**

Title:

***Acaricidal effect of *Momordica charantia*, *Withania
cougulans* and *Citrulus colocynthis* extracts on
*Tetranychus urticae****

Supervisors:

Dr. Ali Mirshekr
Dr. Abbas Khani

Advisor:

Dr. Sara ramroodi

by:

Mona Yavar

October 2017