

**THE TOXIC ACTION OF CERTAIN BOTANICAL
EXTRACTS TO MAIN VEGETABLE SUCKING
PESTS IN EGYPT**

By

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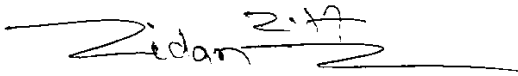
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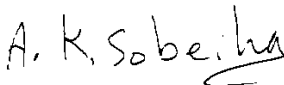
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Abstract

The present study was mainly devoted to elucidate the biological activity of certain botanical substances against red spider mite *Tetranychus urticae* and black bean aphid *Aphis fabae*. The solvent extracts of Bitter apple seeds *Citrullus colocythis* and Jew's mallow seeds *Corchorus obitorius*, Banana leaves juice *Musa paradisica* and American aloe leaves juice *Agava americana* and ready made mixture of camphor and olive oil (1 : 9) were undertaken in this study.

Hexane and acetone were the best solvent to extract or elute chemical compounds have acaricidal and aphicidal action from Bitter apple and Jew's mallow seeds, respectively.

According to toxicity against red spider mite, the investigated botanical materials could be arranged as follows; Bitter apple seed hexane extract, Jew's mallow seed acetone extract, camphor/olive (1 : 9) mixture and crude American aloe juice. Against aphid, the botanical materials order were camphor/olive oil (1 : 9) mixture, Bitter apple seed hexane extract and Jew's mallow seeds acetone extract.

Bitter apple seed hexane extract proved to be the best repellent material to red spider mite followed by camphor/olive oil (1 : 9) mixture and Jew's mallow seeds acetone extract, while the tested extracts gave poor repellency effect to black bean aphid and this order was Jew's mallow seed acetone extract, camphor/olive (1 : 9) mixture and Bitter apple seeds hexane extract.

Ultra violet (2542°A) had no/or slight influence on Bitter apple seed extract and camphor/olive mixture and Jew's mallow seeds extract.

Camphor/olive oil mixture was more effective than Bitter apple seed extract against both of red spider mite and black bean aphid under open and protective semifield condition. Both of the previous tested materials were more effective against both of pests under protective than open semifield condition.

Camphor/olive mixture proved to be more effective in reducing the population of mites and aphid on pepper plants at plastic house cultivation.

Key Words : Botanical materials, Botanical extracts, *Tetranychus urticae*, *Aphis fabae*, *Citrullus colocythis*, *Corchorus obitorius*, *Musa paradisica*, *Agava americana*, Camphor, Toxicity, Repellent, Ultra-violet.

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I- INTRODUCTION

In Egypt, vegetable crops are highly infested by sucking pests as aphid, whitefly and mites. Synthetic pesticides are still the main method currently used for controlling these pests. There is no doubt that widespread indiscriminate pesticide application have sometimes caused contamination of the environment and some disastrous ecological damage. Heavy use of conventional pesticides enhances the potential for the development of pesticides resistance and is detrimental to the judicious management of beneficial arthropods. Also, residues of pesticides in vegetable crops could cause a health hazard to ultimate consumers. Thus, **Hileman (1990)** reported that awareness has contributed to rise the alternative agriculture, a farming system that aims for adequate productivity while ensuring food safety and protection of the environment. One approach to the control of pests in alternative agriculture is the use of biodegradable natural plant compounds in place of synthetic insecticides. It was observed that plants produced chemical compounds that may have biological activity against certain pests. The multiple biological activity of various botanical extracts as repellent, toxic, antifeedant and reproduction inhibitors against insects, mites and nematodes have been reported by several investigators, such as **Warthen (1979)** for Neem-seed extract against larvae of cabbage looper and beet armyworm, **Osman et al. (1986)** for *Nerium oleander* and *Caesalpinia sepiaria* against predatory mite *Amblyseius gossipi*, **El-Halawany et al. (1989)** for *Lantana camara* against *Tetranychus arabicus*, and **Chauvin et al. (1994)** for camphor against *Tineota bisselliella*.

In a search for finding and isolating new botanical compounds could be used as pesticides, the present work was undertaken to survey concerning plants and botanical materials which have biological activities against black bean aphid *Aphis fabae* and red spider mite *Tetranychus urticae*, the following points of research were elucidated :

- a) Screening the insecticidal and acaricidal activities of certain botanical solvent extracts.
- b) Comparable toxicity of certain botanical materials against red spider mite *T. urticae* and black bean aphid *A. fabae*.
- c) Repellency effect of certain botanical materials to red spider mite and black bean aphid.
- d) Ultra-violet resistance of certain botanical materials.
- e) Initial and residual activity of two botanical materials against red spider mite and black bean aphid under protective and open semi-field conditions.
- f) Efficiency of two botanical materials against red spider mite and potato aphid on pepper plants at plastic house.