



**Zagazig University  
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**Biocontrol of two spotted spider mite,  
*Tetranychus urticae* Koch by bacteria isolated  
from Egyptian soil**

***Thesis***

Submitted for the degree of  
**DOCTOR OF PHILOSOPHY**

***By***

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M. Sc. In Microbiology, 2009**

**2019**

## ABSTRACT

The present work was carried out to study the acaricidal activity of bacterial and actinomycetal isolates which isolated from Egyptian soil. A total of 25 bacterial isolates and 20 actinomycetal isolates were screened for their acaricidal activity against two spotted spider mite, *Tetranychus urticae* Koch. Isolates A3 and B8 (91 & 96% respectively) were exhibited the highest mortality against the tested individuals. The two most potent isolates was characterized and its identification was confirmed by amplifying its 16S rRNA gene and as *Streptomyces avermitillis* and by API 20NE as *Pseudomonas aeruginosa*. Three techniques were applied for the two isolates, *Streptomyces avermitillis* and *Pseudomonas aeruginosa* spray technique was the most effective, LC<sub>50</sub> was 70.18 & 68.11% respectively followed by immersion and dipping technique respectively, but both of them were less toxic for predator mite (*Agistemus exsertus*) when treated with the previous techniques. Also, the two isolates, *Streptomyces avermitillis* and *Pseudomonas aeruginosa* have a direct contact ovicidal activity for egg of *T. urticae* and unhatchability 80% & 72.85% respectively influenced by egg age. Where, three days old eggs were more sensitive than one day one where LC<sub>50</sub> was 53.17 & 69.28% and 60.88 & 73.27% respectively. Interestingly, the treatment with both *S. avermitillis* & *P. aeruginosa* was characterized by a significant reduction in the fecundity of adult female of *T. urticae* as well as shortened the longevity. Clearing zone technique was determined for production of chitinase enzyme from *P. aeruginosa* and it showed positive result. The maximum chitinase activity obtained at optimum incubation period 48hr.; incubation temperature 40°C; pH value 7.0 and colloidal chitin as carbon source.

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