

EFFECT OF MAGNETIC FIELD ON MITES**Nabeel K. Al Ani****Department of Biotechnology, College of Science, Al-Nahrain University,
Baghdad-Iraq.****e-mail: nkalani54@yahoo.com.****Abstract**

Two experiments were carried out to study the effects of magnetic field on two types of Mites. Broad Mite *Polyphagotarsonemus latus* (Banks) and two Spotted spider mites *Tetranychus urticae* Koch. In the first experiment Tomato infected leaves were passed through 500 gauss magnetic field for different time intervals. In the second experiment the infected leaves were sprayed with magnetic water (500 Gauss) for three repeated sprays. The results in both experiments revealed that the mite's number reduced as the experiment was carried out, however the eggs number were increased as the experiment was passed. This may be due to the effect of magnetic field on some enzymes inside the mites or the eggs which make them hyper active to lay down more eggs.

Keywords: *Mites, Magnetic field, Biological control. Broad Mites, TSSM.*

Introduction

The important crops in Iraq were faced danger of many insects such as Aphids, white fly, and leaf hopper (1). In 2004 the first register for *leptinotarsa sp.* On potato in Iraq (2). In spite of that there are other infections such as Mites specially (Broad Mite) *Polyphagotarsonemus latus*. This has been consider as a dangerous pest and recorded for the first time in Iraq in 1997 (3). This mite infect many economical crops such as Tomato, Potato, Pepper, and cucumber, the infection with these mites give great losses in both cover and uncover crops. These losses in potato fields go up to 50% of the total crops production (4). These Mites is being distributed in tropical and subtropical areas, therefore, the weather in Iraq are very suitable to grow them. These Mites is distributed very fast because they are fast growing and their life cycle is very short (5). The Broad mite is belong to the family Acari: Tarsonemidae and it has different names such as yellow tea mites or tropical mites. (5).

Pesticides have been used for many years to control these mites. The repeated uses of these pesticides has develop resistance varieties of these mites, Moreover, residual effects of these pesticides in fruits make them un useable by people (6).

As a result of these problems we have tested new way to control those mites, by passing or spraying them through magnetic

field. It has been known that the earth is being a big magnetic field. In this earth human, animals, and plants are live and they have to moderate their different magnetic characters due to the earth (7). The magnetic field is measured by Gauss and every 10000 gauss equal to tesla. The magnetic field to the earth is about 0.5 gauss (8).

Material and Methods

The Mites in both kinds (Broad and two spotted spider Mites) were grown on leaf discs of Tomato (*Lycopersicon esculantum*). These discs were transferred to 9 cm. Petri dishes with medical cotton plaque in a depth of 1.5 cm. These plaques were soaked with distilled water. Then, the discs were put up side down. The adages were leveled to avoid any grooves between the discs and the cotton. Vaseline was put around the discs to prevent the escape of these mites. By using very fine hair 10 mites per each replicate were transferred to these discs. Five replicates were used in each treatment. The discs were transferred to clean transparency nylon bags. These bags were passed through the magnetic field with 500 Gauss (Magnetic Technology Company in Dubai) for different times 2, 4, 6, 600, 1800 & 3600 seconds per each treatment. The mites and eggs were calculated under dissecting microscope. In another experiment the discs were sprayed with Magnetic water (500 gauss) every 10 hours up to 72 hours. The mites and the eggs exposed to three sprays in

each sample, then the calculation for mites and eggs each time after spray was done.

The Complete randomize design was used in this experiment. The results were analyzed and compared by using standard deviation with the help of computer program.

Results and Discussion

It seems that the magnetic field has two different effects. On Mature Mites the effect of the field reduced the number of mites in both species (Broad and two spotted spider mites). However, the reduction in Broad mites is less than two spotted spider mites, Moreover in high exposure time the spot mites, was completely dead (Fig. (1, 2)). The death in two spotted spider Mites started earlier than broad Mites.

As for egg number, the number of eggs is highly effective by the time of exposure. As long as exposure time increase the number of eggs increased in both mentioned species for Mites. (Fig. (3, 4)).

The above results may give us an idea that the magnetic field may be enhanced some metabolic enzymes inside the mites, this give

these mites hyperactivity to lay more eggs besides reduce their life cycle. These results are in agreements with (9). Who state that increase temperature may cause protein de naturalized beside liquidize of fats and phospholipids in the cells. Its well known that magnetic field may increase temperature.

The same effect found in spray experiments. As the spray may cause direct effect on mites which make them died completely specially after more than two sprays. This case found to be the same in both species Fig. (5, 6).

The eggs in the spray experiments have also stimulation effects in both species. Fig. (7, 8).

This may be due to direct effect of magnetic field on increasing some enzymes inside the eggs which make them mature in short times as compared by the control. These results are in agreement with (9).

Finally I hope that this paper may clear some facts about the effectiveness of magnetic field inside dangerous animals such as these Mites.

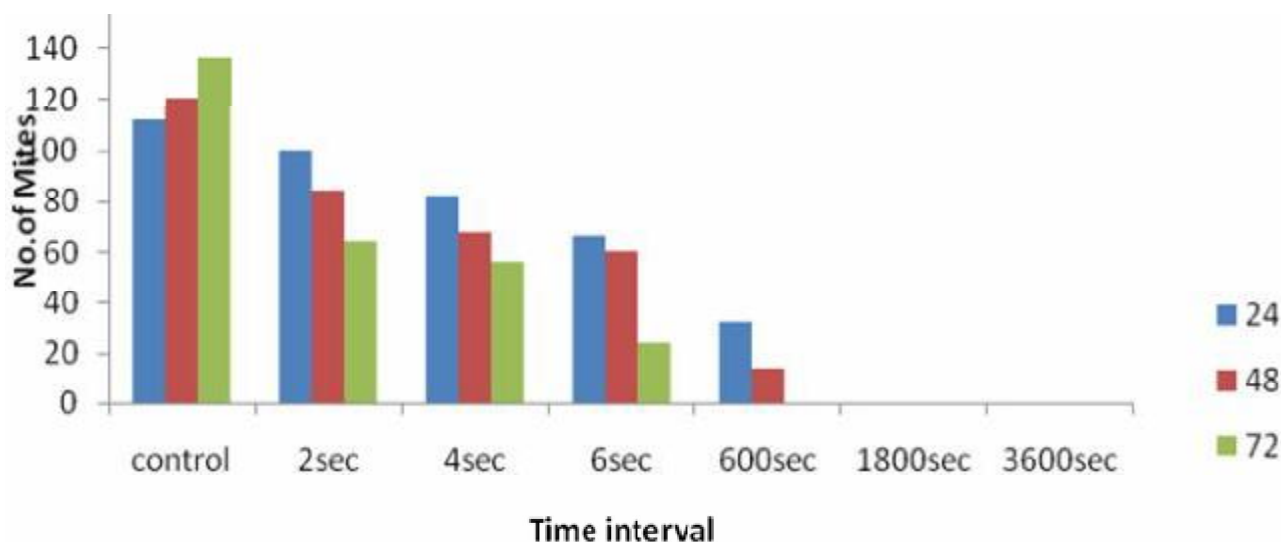


Fig. (1) : No. of two spotted mites treated with magnetic field in different time interval.

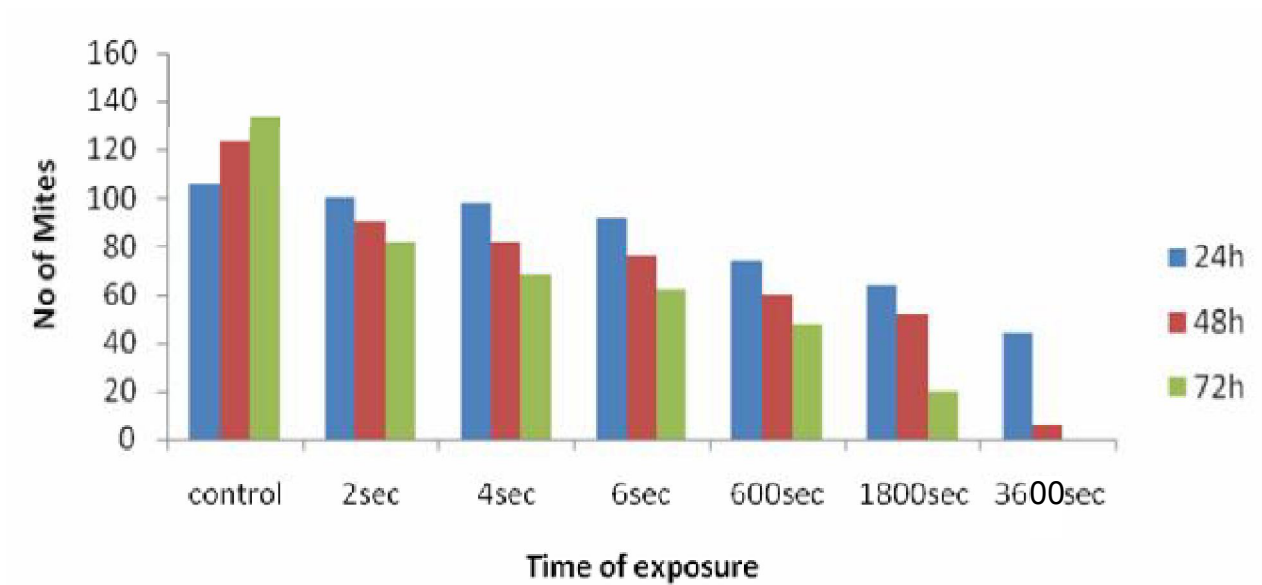


Fig. (2) : No. of broad mites treated with magnetic field with different time.

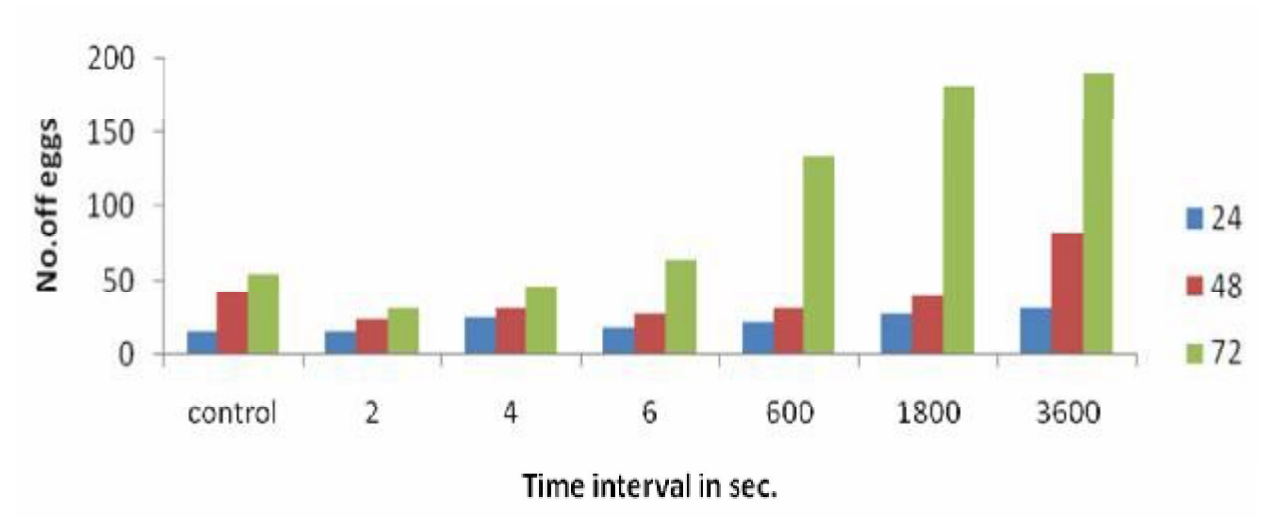


Fig. (3) : No. of eggs (two spotted spider mites) treated with magnetic field in different time interval.

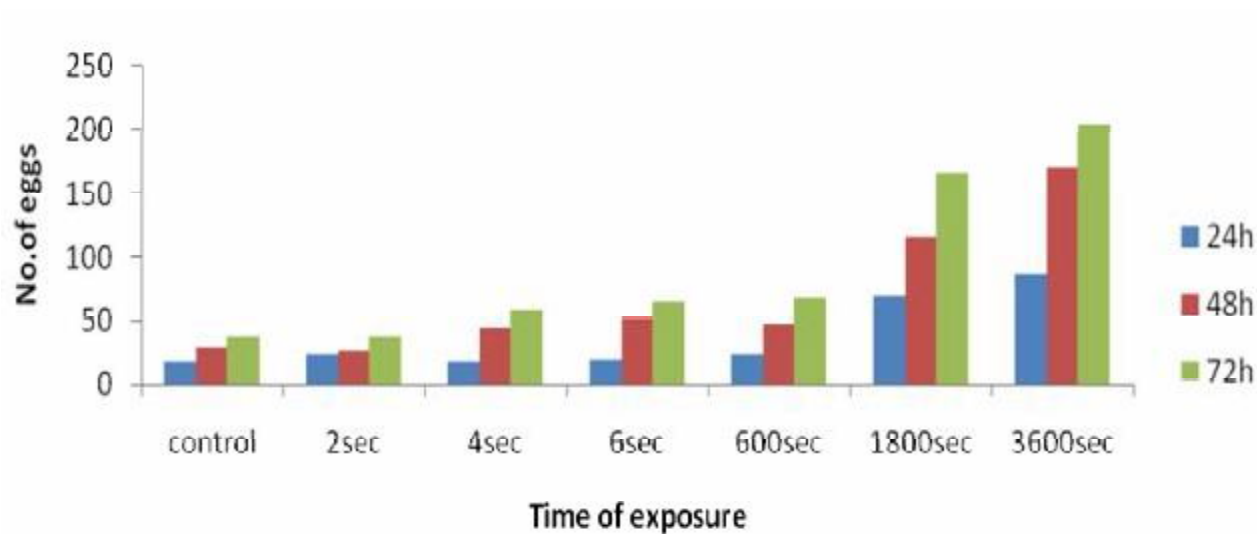


Fig. (4) : No. eggs (broad mites) treated with magnetic field in different time interval.

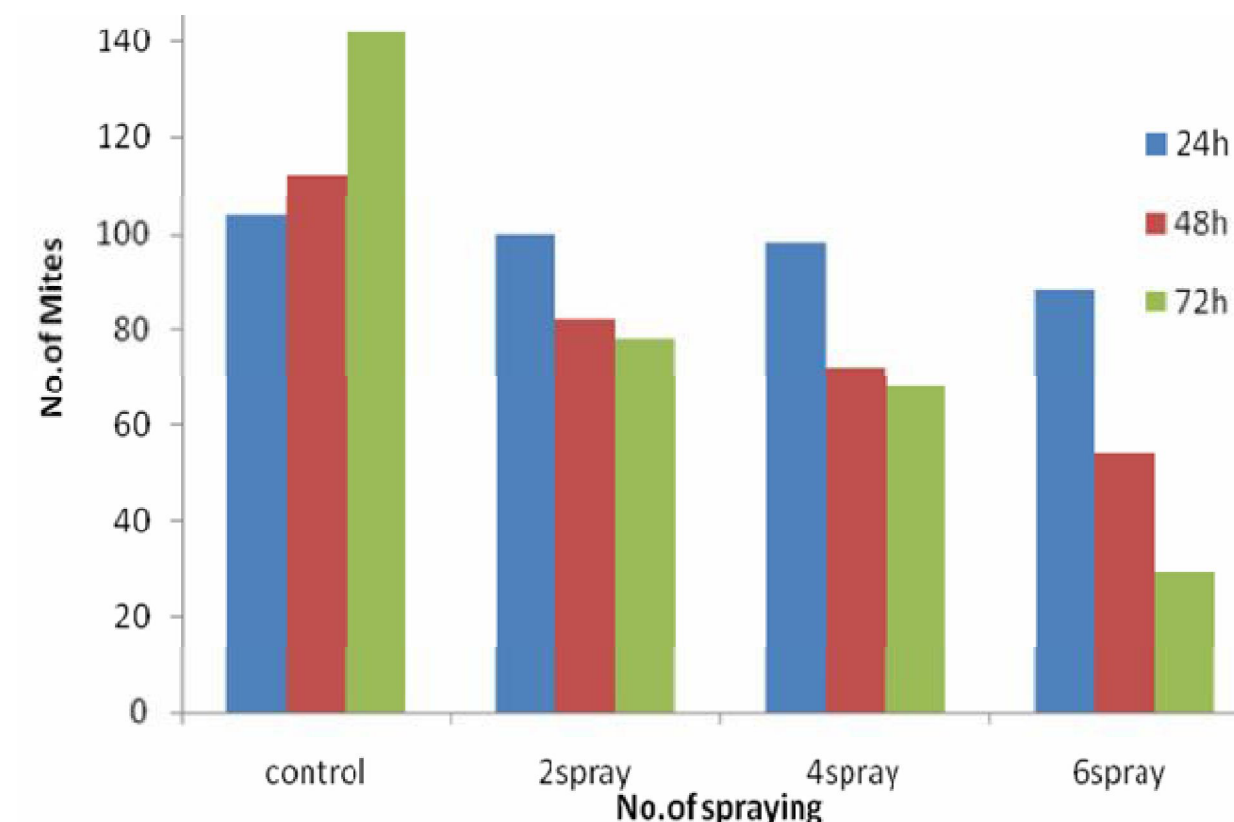


Fig. (5) : No. of broad mites sprayed with magnetic water.

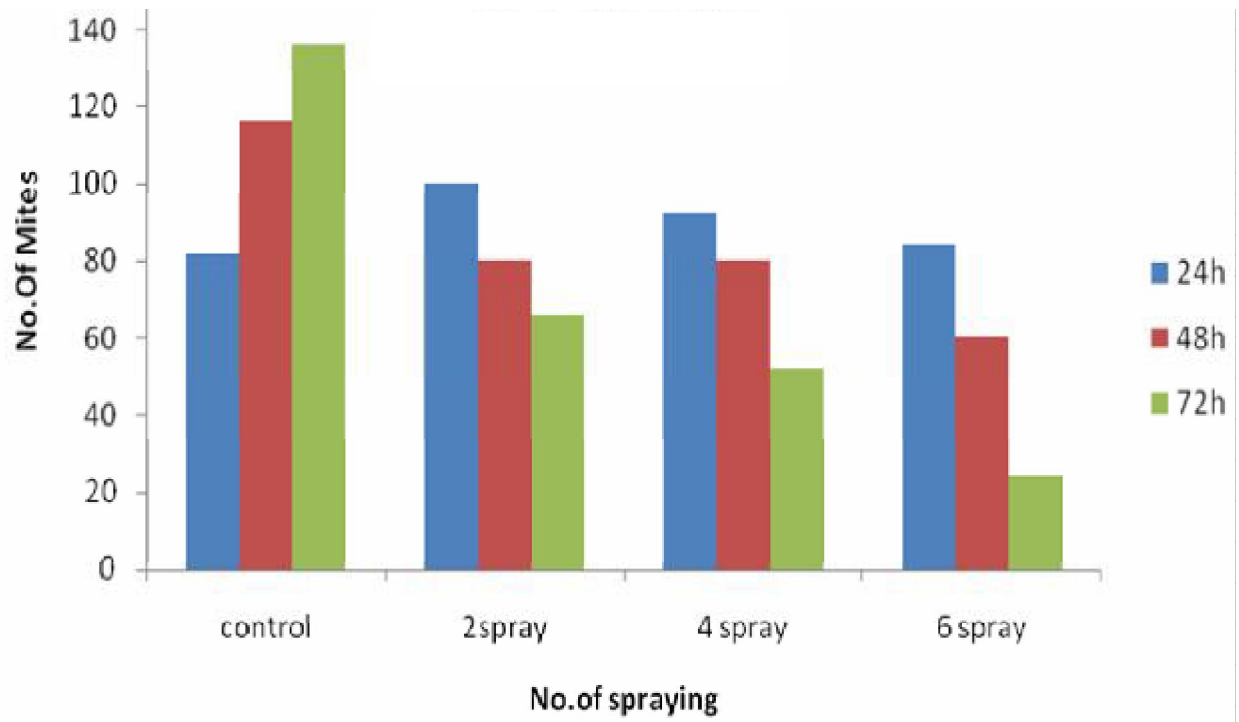


Fig. (6) : No. of two spotted spider mites sprayed with magnetic water.

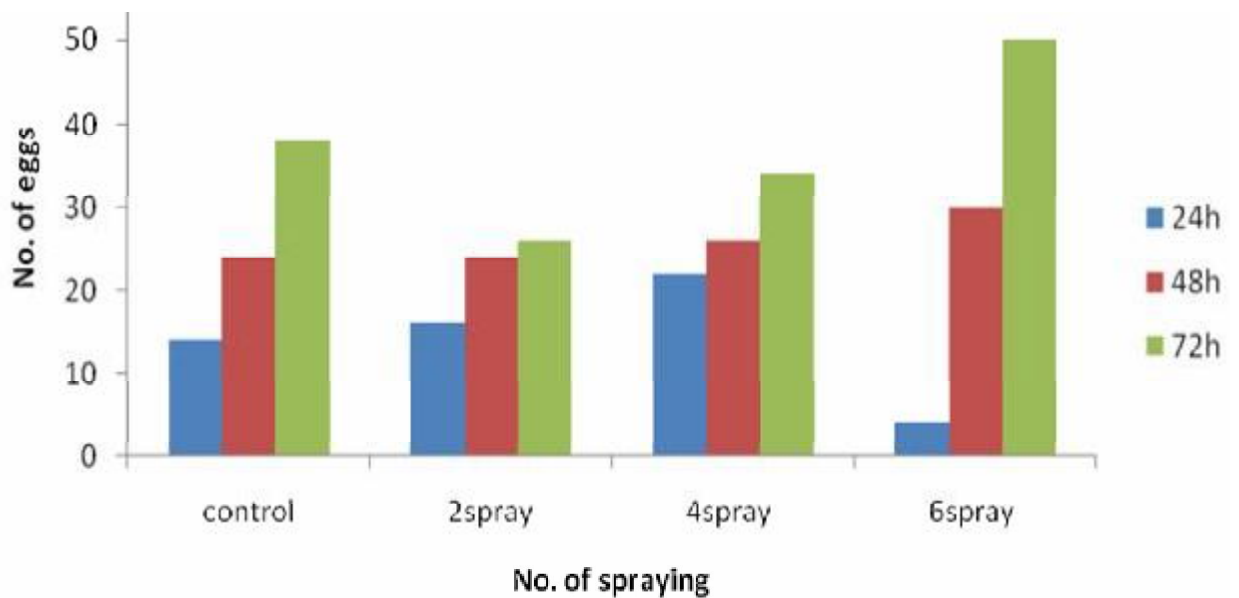


Fig. (7) : No. of eggs (broad mites) sprayed with Magnetic water.

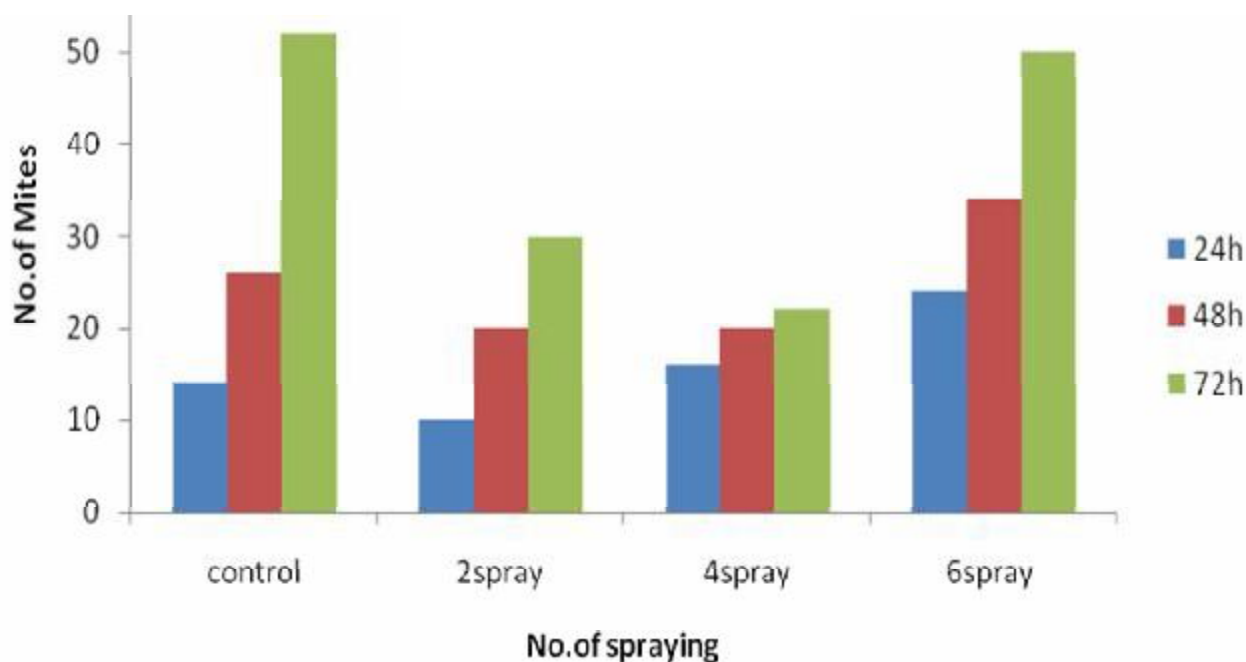


Fig. (8) : No. of eggs two spotted spider mites sprayed with magnetic water.

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الخلاصة

اجريت تجربتان لدراسة تاثير المجال المغناطيسي على نوعين من الحلم Broad Mite *Polyphagotarsonemus latus* (Banks) and two Spotted spider mite *Tetranychus urticae* (Koch). في التجربة الاولى استعملت اوراق نبات الطماطة المصابة حيث مررت خلال مجال مغناطيسي بقوة 500 كاوس لمدد مختلفة. اما في التجربة الثانية فرشت الاوراق المصابة بماء ممغنط لثلاث مرات متوالية. وكانت النتائج في كلتا التجربتين تشير الى زيادة واضحة في كمية البيض ونقصان واضح في اعداد الحلم، وربما يعود السبب في ذلك الى ان المجال المغناطيسي ربما يكون قد اثر على بعض الانزيمات داخل جسم الحيوان مما جعلها اكثر حيوية وذات فعالية اكثر في وضع البيض.