

The Use of Different Ethanolic And Hexane Concentrations of Propolis In Controlling Adults And Nymphs of Green Peach, *Myzus Persicae*

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Abstract: *The study was conducted for the period 10/15/2021 until 15/12/2021, where different concentrations (1, 1.5, 2%) of different extracts of propolis were targeted during the period of decimation of nymphs and adults. Where the results showed the effect of the organic extracts (ethanolic alcohol and hexane) of the wormwood plant, which showed effectiveness in controlling insect nymphs from green peach in the laboratory. 36.67 and 30.00% after 24 hours and (45.67 and 42.00%) after 72 hours, respectively, compared with the comparison factor that gave a killing rate of 0.00 for the period 24 and 72 hours. 6.67%). As for the adults, it was shown that the hexane extract of propolis gave the highest killing rate in terms of concentrations and periods. A concentration of 2% gave a killing rate of 25.66 and 37.22 for the 24 hour period and (35.22 and 45.00) for the 72 hour period compared with the comparison that gave 0.00 for the period 24 and 72 hours. For hexane and ethanolic extract (3.33 and 6.73)*

Keywords: *ethanolic, hexane, propolis, green peach, Myzus persicae*

1. INTRODUCTION

The stone fruit trees belonging to the genus *Prunus armeniaca* L of the Rosaceae family (1). It includes types of peaches, apricots, pears, cherries and almonds. The cultivation of apricots is widely distributed and commercially produced in about 70 countries in the world (2). The areas planted with apricot trees reach 492,196 hectares, and the statistics of the World Food and Agriculture Organization showed that the amount of global production amounted to 3956,640 tons. , while the area planted with apricot trees in Iraq reaches 5,000 hectares and Iraq's production is about 22,500 tons (2), Trees with stone kernels are affected by many insect pests, which cause great damage, represented in the weakness and dwarfing of trees as a result of infection with some diseases, reducing the rate of fruit production and poor quality.

The green peach, *Myzus persicae* sulz, is a family Aphididae of the order Homoptera of economic importance in the world. Its original home is Asia, and it spreads in most countries of the world and is characterized by its wide family range, as it attacks many plant species that exceed 400 plant families (3). In Iraq, this insect infects several plant families, including radishes, chard, spinach, okra, beet, peaches, potatoes and vegetable crops. It causes significant economic losses by absorbing the plant juice, as it absorbs the plant juice and secretes the honeydew (4).

It is an insect from the leaves of apricot *pruni Geoffr. H* which was first recorded in Iraq in 1957 on stone-core trees (5). One of the most important insects sucking plant juices that attack trees with stone cores of various types, the damage of this type of aphids is caused by the absorption of plant juice by nymphs and whole insects. And its abundant honeydew secretion, which encourages the accumulation of dust and the growth of black mold fungi that reduce the efficiency of the photosynthesis process (6) (7).

It also causes leaf wilt and reduces plant growth, as it lives in the lower part of the leaves and therefore it is difficult to contact the pesticide and kill it, in addition to what it leaves behind from shedding skins and feces, and its transfer to pathogens, as it has the ability to transmit more than 70 types of plant viral diseases, (8). Due to the frequent use of chemical pesticides manufactured to control insects, including green peaches, this has led to the emergence of many generations that are resistant to the action of pesticides. As well as what these pesticides It has negative effects as it remains for a long time without decomposing, which increases its pollution to the environment and thus affects the genetic systems of living organisms (9). The researchers resorted to using safer and less harmful methods for humans and the environment, which is the use of plant extracts, Propolis, a sticky resinous substance (Runtin). Honey bees collect it from the bark, leaves and buds of some trees such as palm, conifers, eucalyptus and others. , the worker bees remove this substance with their upper jaws and secrete on it from their mandibular glands substances that help in its formation and then transfer it to the cells through the pollen basket on their legs (10) (11) (12) (13).

Therefore, the study aimed to test comparing the efficiency of the extract of natural materials (Propolis) in controlling an insect of green peach. And studying the effect of different concentrations of extracts on the life performance of an insect of green peach .

Working Methods Materials

Nymphs and adults of green peach *M. persicae* were collected from fields spread in Babylon governorate from apricot plants and other secondary families on 2/10/2021 until 15/6/2022. Before the Museum of Natural History Then it was bred and multiplied in the laboratory in Petri dishes and the leaves were changed every 24 hours for the purpose of feeding the insect on it, where it was left to grow and multiply for the purpose of using it in subsequent laboratory experiments according to the method (14) in an incubator with a temperature of (25 ± 1) C and relative humidity of $(65 \pm 5\%)$ for the purpose of obtaining a colony. Also, plants of these varieties infected with aphids were placed in the laboratory after infection was carried out with an insect of green peach on radish leaves as a precaution to avoid changing the climatic conditions of the colony.

Propolis collection

Propolis was collected from different apiaries of Al-Diwaniyah Governorate

Preparation of the ethanolic extract

Follow the method (15) in preparing propolis extracts with some modifications, where he took 10 grams of raw propolis and cut into small pieces It was placed in a volumetric flask and 100 ml of ethanol was added to it, then left for 5 days and then shaken using a magnetic stirrer for 15 minutes and after completion From the dissolution process, then filter the solution with a clean cloth to get rid of large particles, and then filter it by means of a filter paper type (Whatman No.: 1) Then, the solution was extracted and dried by a Rotary Evaporator under vacuum pressure and a temperature of 45°C. Then weigh the extract and put it in clean, sterile containers in a warm and dark place until use.

Preparation of the hexane extract

I followed the same method for preparing the ethanolic extract except adding 200 ml of hexane

Effect of organic solvent extract of propolis on the life performance of green peach insect

Effect of organic solvent extract on the destruction of the piscial role

Plastic bottles (10) cm in diameter were used, the covers of which were punctured by means of a fine needle for ventilation, and a sterile filter paper was placed in each of them in order to put leaves from the apricot plant on them after wrapping their necks with sterile cotton pieces moistened with water for the purpose of feeding the insect, and it was placed in each repeater (10) nymphs from as well as adults for each replicate, with a rate of (3) replicates for each concentration and workshops Replicators with concentrations of extract, alcohol and distilled water as a treatment compared to a rate of (3) refined using a sterile medical syringe, then the dishes were surrounded by adhesive tape to prevent the exit of the treated aphids and then they were transferred to the incubator at a temperature of (25 ± 1) C and a relative humidity of $(65 \pm 5\%)$ (14). And then the death rates were recorded in the two cyclones, each separately, after 24, 48, 72 hours and 167 hours.

Effect of organic solvent extract of propolis on the life performance of green peach insect

Effect of organic solvent extract on adult mortality

Plastic bottles (10) cm in diameter were used, the covers of which were punctured by means of a fine needle for ventilation, and a sterile filter paper was placed in each of them in order to put leaves from the apricot plant on them after wrapping their necks with sterile cotton pieces moistened with water for the purpose of feeding the insect, and it was placed in each repeater (10) nymphs from as well as adults for each replicate, with a rate of (3) replicates for each concentration and workshops Replicators with concentrations of extract, alcohol and distilled water as a treatment compared to a rate of (3) refined using a sterile medical syringe, then the dishes were surrounded by adhesive tape to prevent the exit of the treated aphids and then they were transferred to the incubator at a temperature of (25 ± 1) C and a relative humidity of $(65 \pm 5\%)$ (14). And then the death rates were recorded in the two cyclones, each separately, after 24, 48, 72 hours and 167 hours.

statistical analysis

The statistical program Statistical Analysis System -SAS (2018) was used in data analysis to study the effect of various factors (extraction, concentration and time) on the studied traits according to a factorial experiment applied in a complete random design. (Completely Randomized Design-CRD) for laboratory experiments and randomized completely block design-RCBD, and significant differences between the means were compared with the test of least significant difference (Least Significant Difference-LSD). And below the level of significance 0.05 . (21)

RESULTS AND DISCUSSION

The results of Table (1) showed that the hexane extract of propolis was slightly superior to the ethanolic extract, as it gave the highest killing rate of 2% (36.67 and 30.00%) after 24 hours and (45.67 and 42.00%) after 72 hours. Respectively compared with the comparison factor that gave a killing rate of 0.00 for the period 24 and 72 hours. The longer the period, the greater the killing rate of the insect, as the period of 167 hours gave the lowest killing rate

at the same concentration of hexane and ethanolic extract (6.67 and 6.67%). This is in agreement with (16) Propolis mixed with neem leaf powder in controlling the major grain beetle *Prostephanus truncates* (Coleopter: Bostrichidae) that infects corn grains in stores and achieved rates of killing against the pest. It was also used by (17) . Effect of ethanolic extract of two types of propolis in controlling fig moth (Pyrilidae: Lepidoptera) *Cadra cautella* (Walker) stored date fruits, where the highest mortality rate of fig moth reached 93.34% when treated with green and black propolis extract at 10% concentration.

Table (1) Effect of organic solvents of propolis on the destruction of the nymph of green peach, *Myzus persicae*

	periods Concentrations	mermaid roles				modified
		24	48	72	167	
Propolis extract ethanol	1% concentration	13.33	15.33	26.67	10.00	16.33
	1.5% concentration	16.67	17.67	20.00	13.33	16.91
	2% concentration	30.00	35.67	42.00	6.67	28.58
Propolis extract hexane	1% concentration	23.76	26.67	30.00	13.33	23.41
	1.5% concentration	26.33	28.67	32.13	13.33	25.11
	2% concentration	36.67	40.00	45.67	6.67	32.25
	comparison	0.00	3.33	0.00	0.00	0.83
L.S.D. 0.05		Extractor: 3.59* Focus: 4.81* Duration: 4.81* Focus-time overlap: 6.07* Triple overlap: 8.61*				

The results of Table (2) showed that the hexane extract of propolis gave the highest killing rate in terms of concentrations and periods, as 2% concentration gave 25.66 and 37.22 killing rates for the 24 hour period and (35.22 and 45.00) for the 72 hour period compared with the comparison that gave 0.00 for the 24 and 72 hours, the longer the period, the higher the killing rate of the insect, as the period 167 hours gave the lowest killing rate at the same concentration for the hexane and ethanolic extract (3.33 and 6.73) .

(18) also used the phenolic extract of propolis at different concentrations, which caused a death of 26.66% of the larvae of the great waxworm *Galleria mellonella*. L, where the highest mortality rate of the last life larvae of the Great Waxworm was recorded(19) used a study of the effect of the water and alcoholic Propolis extract on the destruction of the capillary beetle *Trogoderma granarium* Everst (Coleoptera: Dermestidae), where the highest mortality rate was 66.66 and 83.33% for the second instar larvae and adults using the aqueous extract at a concentration of 50 mg / ml-1, and this agrees with the current results of both ethanolic and hexane extracts. As between (20). The effect of biological activity of some natural extracts on the life of black bean *Aphis fabae* (Aphidadae: Homptera), where the superiority of propolis in preventing the hatching of an insect from the black bean and achieved a rate of killing against the pest.

Table (2) Effect of organic solvents of propolis on the death of adults of green peach insect *Myzus persicae*

	periods Concentrations	mermaid roles				modified
		24	48	72	167	
Propolis	1% concentration	18.44	21.11	24.02	13.33	19.22

extract ethanol	1.5% concentration	21.15	26.56	26.26	10.00	20.99
	2% concentration	25.66	30.88	35.22	3.33	23.77
Propolis extract hexane	1% concentration	20.33	22.25	25.20	16.71	21.12
	1.5% concentration	22.66	27.24	30.00	16.71	24.15
	2% concentration	37.22	41.10	45.00	6.73	32.51
	comparison	0.00	3.33	0.00	3.33	1.66
L.S.D. 0.05		Extractor: 3.68* Focus: 4.96* Duration: 4.96* Focus-time overlap: 6.51* Triple overlap: 9.04*.				

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