

EFFECT OF DIFFERENT CONCENTRATIONS OF SOME PLANT EXTRACTS ON THE KILLING OF GREEN PEACH, *MYZUS PERSICAE*

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Abstract:

The study was conducted for the period 10/15/2021 until 12/15/2021, where different concentrations (1, 1.5, 2%) of alcoholic extracts (ethanol) of wormwood were targeted during the period of decimation of nymphs and adults. Where the results showed the effect of the organic extracts (ethanol and hexane) of the wormwood plant, which showed effectiveness in controlling insect nymphs of green peach in the laboratory, which showed significant differences between the concentrations of the extracts and the comparison treatment. The mortality rate increased with the increase in the concentrations of the extracts, as well as the death rate increased with the increase in the time period. The mortality rate at concentration 2 mg/ml reached 33.33 and 33.33 after 24 hours for nymphs, compared with 0.00% in the comparison treatment, reaching 40.33 and 39.33, respectively, after 72 hours for nymphs. For the same concentration, 2 mg/ml, but after 167, it gave the lowest killing rate for the nymphs at the same concentrations of 6.67 and 6.67 for each of the nymphs. It was also noted from the results that there were slight significant differences between the types of extracts, concentrations and time period, by the superiority of hexane extract and ethanol alcohol. It showed significant differences between the concentrations of the extracts and the comparison treatment. The mortality rate increased with the increase in the concentrations of the extracts, as well as the death rate increased with the increase in the time period. The mortality rate at the concentration was 2 mg / ml, which gave a killing rate of 30.00 and 30.00% after 24 hours for the adults treated with ethanol and hexane compared with 0.00% in the comparison treatment, and for the same The concentration is 2 mg/ml. As for the adults, it gave a killing rate of the same concentration and extracts 37.33 and 38.33% after 72 hours, but after 167 it gave the lowest killing rate of 3.33 and 6.73 compared with the control treatment that gave a killing rate of 0.00.

Keywords: plant extracts, green peach, *Myzus persicae*

1. Introduction

The stone fruit trees belonging to the genus *Prunus armeniaca* L, belonging to the Rosaceae family and include types of peach, apricots, pears, cherries and almonds. Apricot cultivation is distributed widely and is commercially produced in about 70 countries in the world 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 cultivated area reached With apricot trees in Iraq to 5000 hectares, and Iraq's production is about 22500 tons ¹. Trees with stone core are infected with many insect pests, which cause great damage, represented in the weakness and dwarfing of trees as a result of infection with some diseases and a reduction in the rate of fruit production and poor quality. Apricot leaf insect *H. pruni* Geoffr. Which was first recorded in Iraq in 1957 on stone-core trees ². One of the most

important sap-sucking insects that attack trees with different types of stone core, the damage of this type of aphids is caused by the absorption of the plant sap by nymphs and whole insects and their secretion of honeydew abundantly, which encourages the accumulation of dust and the growth of black mold fungi that reduce the efficiency of the photosynthesis process ^{3,4}

The green peach, *Myzus persicae* sulz, is a family Aphididae of the order Homoptera of economic importance in the world. It is native to Asia and spreads in most countries of the world. It has a wide family range, attacking many plant species that exceed 400 plant families 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 honeydew⁵ .

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, ⁶. 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. In addition to the negative effects of these pesticides as they remain for a long time without decomposing, which increases their pollution to the environment and thus affects the genetic systems of living organisms ⁷ . Refuge The researchers sought to use safer and less harmful means for humans and the environment, which is the use of plant extracts, including wormwood, which is one of the medicinal herbs, and it is a dwarf shrub that usually grows in arid areas ⁸ It is a plant known for thousands of years. It was described by the Greek historian Xenophon since the beginning of the fourth century BC. It was described and included in 1779 by the Spanish botanist Ignacio Jordan del Rio among the list of medicinal plants ⁹ Wormwood is a perennial wild shrub. With large branches and compound leaves up to about 40 cm high, the roots are hard, erect, and raised from the bottom The leaves are oval, spherical, bi-petal, with an elongated lobe, bi-spinate, with simple branches whose seated ends are decorated with 2-4 flowers per unit ¹⁰ Therefore, the study aimed to test the alcoholic extracts of the wormwood plant on the nymph stages

2. Materials and Methods

Insect collection and colonies of green peach *Myzus persicae* (Sulzer)

study was conducted in the insect laboratory - Department of Biological Resistance of the Technical College / Al-Mussib 2023-2022 and under laboratory conditions, the insect was obtained from different places of infected apricot trees in the city of Al-Mussib and it was cultured in the laboratory in plastic Petri dishes containing leaves Chard as an alternative food to apricot leaves (change the leaves daily) in an incubator with a temperature of 25 + 1 ° C, a relative humidity of 65 + 5, and a lighting period of 12 / 12 pm / pm in order to obtain a colony that has been maintained for several generations. The insect was diagnosed according to ¹¹ in the province of Babylon.

Sample collection

The wormwood samples were taken from the local markets, and then they were ground to obtain a fine powder with a piece of 1 mm, and the powder was kept in nylon bags in the refrigerator until use.

Preparation of organic solvents

10 grams of plant powder were taken, placed in the extraction device (sexolites), then 200 ml of ethanol was poured, and the extraction of the plant sample continued for 24 hours. The filtrate was taken and concentrated in a rotary evaporator at a temperature of 45-40° C. The sample was dried in an electric oven at a temperature of 45-40° C. The process was repeated several times to obtain a sufficient amount of the extracted substance. For the purpose of testing the effect of the dry matter extract resulting from the extraction with organic solvents, the method of was followed. By taking 2 g of dry matter extracted with ethanol and dissolved in 3 ml of ethanolic alcohol, adding 3 ml of the diffuser and completing the volume to 100 ml with distilled water, the stock solution became 2% or equivalent to 20 mg / ml, and then the stock solution was prepared. The concentrations were 1, 1.5 and 2 mg/ml, while the control treatment was 5 ml of ethanolic alcohol, and the volume was completed to 100 ml with distilled water.

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

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

Plastic dishes with a diameter of (9) cm were used. Their covers were punctured by means of a thin needle for the purpose of 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. In each replicate (10) nymphs and adults were placed for each replicate, with (3) replicates for each concentration. The replicates were sprayed with concentrations The extract, alcohol and distilled water as a treatment compared to a rate of (3) repeated 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 $(65 \pm 5\%)$ %. And then the death rates were recorded in the two cycles, each separately, after 24, 48, 72 hours and 167 hours.

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

Effect of organic solvent extract on adult mortality

Plastic dishes with a diameter of (9) cm 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. The replicates were sprayed with the concentrations of the extract. And alcohol and distilled water as a treatment compared to a refined rate (3) using a sprayer containing 5 ml of ethanol and 95 ml of distilled water, then the dishes were surrounded with 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 relative humidity $(65) \pm 5\%$ And then the death rates were recorded in the two cycles, each separately, after 24, 48, 72 hours and 167 hours.

statistical analysis

The statistical program Statistical Analysis System ⁻¹² was used in data analysis to study the effect of different factors (extraction, concentration and time) on the studied traits according to a factorial experiment that was applied in a completely randomized design (CRD) for laboratory experiments and by designing randomized complete sectors for circuit experiments Completely Block Design-RCBD), and significant differences between means were compared with the Least Significant Difference-LSD test. Below the level of significance of 0.05

3. Results and Discussion

The results of Table (1) showed the effect of the organic extracts (ethanolic alcohol and hexane) of the wormwood plant, which showed effectiveness in controlling insect nymphs of green peach in the laboratory. The death rate also increased with the increase in the time period Concentration 2 mg/ml 33.33 and 33.33 after 24 hours for nymphs, compared with 0.00% in the control treatment, reaching 40.33 and 39.33, respectively, after 72 hours for nymphs, and for the same concentration of 2 mg/ml, but after 167, it gave the lowest killing rate for nymphs for the same concentrations 6.67 and 6.67 For each of the nymphal roles, it is also noted from the results that there are simple significant differences between the types of extracts, concentrations and time period, with the superiority of the hexane extract. Ethanol alcohol .

Table (1) Effect of different concentrations of organic solvent extracts of wormwood on the percentage of nymphs of green peach, *Myzus persicae*

	periods Concentrations	mermaid roles				modified
		24	48	72	167	
Propolis extract ethanol	1% concentration	20.00	20.00	23.33	13.33	19.17
	1.5% concentration	23.67	26.33	28.33	10.00	22.08
	2% concentration	33.33	35.33	40.33	10.00	29.74
Propolis extract hexane	1% concentration	20.00	22.00	23.33	13.33	19.66
	1.5% concentration	26.67	30.00	35.33	10.00	25.58
	2% concentration	33.33	37.33	39.33	10.00	29.99
	comparison	0.00	0.00	0.00	0.00	0.00
L.S.D. 0.05		Extractor: 2.86NS Focus: 3.91* Duration: 3.91* Focus-time overlap: 5.44* Triple overlap: 7.37*.				

The results of Table (2) showed the effect of the organic extracts (ethanolic alcohol and hexane) of the wormwood plant, which showed effectiveness in controlling insect nymphs of green peach in the laboratory, as it showed significant differences between the concentrations of the extracts and the comparison treatment, as the mortality rate increased with the increase in the concentrations of the extracts. The death rate also increased with the increase in the time period, the death rate at the concentration was 2 mg / ml, which gave a killing rate of 30.00 and 30.00% after 24 hours for adults From the treatment to ethanol and hexane compared with 0.00% in the control treatment, and for the same concentration of 2 mg/ml. As for the adults, it gave a killing

rate of the same concentration and extracts 37.33 and 38.33% after 72 hours, but after 167 it gave the lowest killing rate of 3.33 and 6.73 compared with the control treatment that gave Kill rate 0.00.

And this study agrees with the study conducted by ¹³ that the effect of organic solvent extracts of *C. inerne* jasmine plant on the different life performance of green peach insect and the superiority of hexane extract in the effect compared to ethyl acetate extract, which came in second place, followed by ethyl alcohol. And the effect of the interaction between the concentrations of the extract, the type of extract and the time period affects the percentage of insect mortality, as the greater the time period, the greater the percentage of insect killing.

Table (2) Effect of different concentrations of organic solvent extracts of wormwood on the percentage of nymphs of green peach, *Myzus persicae*

	periods Concentrations	adults				modified
		24	48	72	167	
Propolis extract ethanol	1% concentration	20.00	21.00	25.00	6.71	18.17
	1.5% concentration	23.33	30.00	33.77	10.00	24.27
	2% concentration	30.00	35.33	37.33	13.33	28.99
Propolis extract hexane	1% concentration	20.00	22.02	25.00	6.71	18.43
	1.5% concentration	23.32	36.07	30.00	10.00	25.02
	2% concentration	30.00	33.33	38.33	13.33	28.74
	comparison	0.00	0.00	3.33	0.00	0.83
L.S.D. 0.05		Abstract: 2.77NS Focus: 3.82* Period: 3.82* Focus-time overlap: 5.26* Triple overlap: 7.15*.				

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