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EFFECT OF THE COLD AND HOT WATER EXTRACTS OF THE CARNATION FLOWERS *DIANTHUS CARYOPHYLLUS* L. ON LARVAL INSTAR OF HOUSE FLY *MUSCA DOMESTICA* L. (DIPTERA: MUSCIDAE)

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Abstract

This study aims to test the effectiveness of cold and hot water extract for carnation flowers (*Dianthus Caryophyllus* L.) in killing the three larval phases of the domestic fly *Musca domestica* L. to evaluate this using the effect of concentrations (0.0%, 2%, 4%, 6%).

The results of the study showed that the extracts of cold and hot water for the flowers of the carnation plant have an apparent effect in killing larval phases of the insect. The death rate for the first, second, and third larval phases in cold water extract and concentration was 6% (57.00%, 68.85%, 77.75%), respectively, While the death rate in hot water extract and the same concentration (46.92%, 50.85%, 66.14%), respectively. The results of the statistical analysis indicated that there were apparent moral differences in the effect of the concentrations used with the treatment of control for all phases and both extracts. The results of the study also indicated the existence of a direct relationship between the concentration of the extract and the rate of death in the larval phases. Moreover, the first larval phase was more sensitive than the other phases as it gave the highest kill rate in all concentrations and both extracts.

Key words: *Musca domestica* L. , Extract , Carnation flower

Introduction

House fly is one of the insects of medical importance that transports pathogens to humans (pfodt, 1978) chemical pesticides have been used in control programs of agricultural and medical insect, however this did not persist because of many problems appeared in the treated insects such as the emergence of resistant strains and pollution of the environment (Al-Adil and Abd, 1979, Abu Al-Hab, 1982 and Begnini, 2001),This prompted researchers to find new pesticides of plant origin that are an effective and safer alternative to manufactured pesticides, as these pesticides are characterized by some good qualities such as their rapid degradation when exposed to light, heat, and humidity to non-toxic substances; besides, the emergence of resistance has not yet been recorded in insects treatment and its low toxicity to humans, animals, and plants. (Al-Zubeidi and his group, 2000 and Shaaban and Al-Malah, 1993).

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The use of slow-decomposing and long-degraded manufactured chemical pesticides such as those of the chlorinated hydrocarbon group has led to their accumulation in the food chain and soil; and This leads to the emergence of many abortions and deformities, as well as their effect on many beneficial insects such as bees and pollinators, kill the fish, and the killing of the natural enemies of the Pests (Shaaban and Al-Malah, 1993). Moreover, many insect pests have shown resistance to chemical pesticides, with 20 types of pesticide-resistant insects in 1950 and 240 species in 1960 to 504 species in 1989 (Pasteur and Raymond, 1996).

Due to the containment of the clove plant Dianthus *Caryophyllus* L. on secondary compounds effective against insects such as Byrrolizidine alkaloid and Homo spermidine swnthase (Hss). So this plant was chosen to test its vital effectiveness against domestic fly larvae. *Musca domestica* L. (Chakravorty, 1976 and Andreas *et al.,* 2004).

Materials and Methods

Plant collection and diagnosis

Dianthus Caryophyllus L. carnation flowers were collected from the Gardens of the Kufa Technical Institute during the flowering season in October and November 2019,The samples were dried at room temperature and then milled in an electric mill to get a fine, dry powder and save the powder in plastic bags in the refrigerator until use. The plant was diagnosed in the grass place of the Faculty of Science, University of Babylon.

Collecting and breeding insect

Collected the adult of the house fly *Musca Domestica* L. From the campus of the Al-Furat Al-Awsat Technical University, it was placed in breeding cages with dimensions (35×35×60) (Osborn and Shipp, 1965). With a cover of boring fabric and has cloth and has a circular opening to enter the hand to deal with insects, feeding adults on a food medium containing water, milk and a piece of cotton, the insect's breeding at 30°C ± 1 and relative humidity 20-30% (Abdel Fattah, 1989). The insect's eggs were collected with a soft brush and placed in a petri dish containing an artificial food medium to feed the larvae (Abdel Fattah, 1989).

The eggs transferred to the incubator at 30co ± 1, the relative humidity of 60-70% and a 12-hour light period until the pupa stage. The resulting pupa was collected and placed in the breeding cages until the emergence of adult and mated. The colony was purified for two generations before being tested, and the insect was diagnosed at the Natural History Museum at The University of Baghdad.

Preparation of water extracts

Preparing cold water extract

The method (Harbone, 1984) was adopted in the preparation of water extracts, under which the samples were dried and milled and then took 10 grams of dry powder and mixed with 200 ml of distilled water using an electric mixer and left for 24 hours at room temperature,Then filter the mixture using the boring fabric to get rid of impurities or plankton, then transfer the leachate to the centrifuge to centrifugation by speed 3000 rpm for 10 minutes,Then filtration the extract using filter paper to obtain a solution, dry the extract using the oven at 40^0C and then keep the sample in the refrigerator until use.

Prepare boiling water extract

Prepare as in the way of preparing cold water extract with cold water replaced with boiling water.

Preparing plant extracts concentrations

Taken 6 g of dry matter of the extractor and dissolved in 100ml distilled water, so the base concentration of the solution became 6% or the equivalent of 60 mg/ml from which i attended the concentrations (2%, 4%, 6%), The concentration of control is cold distilled water in the case of cold water extract and boiling distilled water in the case of boiling water extract.

The effect of cold and hotwater extracts of clove flowers in killing larval phases for domestic fly

Taken 10 larvae per phase and 3 repeaters per concentration, and put in Petri dishes a container on the food medium and the treatment of extracted concentrates where i add 10 ml of extract per 10 g of the food medium, As for the control coefficients, the distilled water was added to the food medium, transported to the incubator at a temperature of ≤30 m and relative humidity 60-70%, recorded death rates after 24 hours of treatment and the death rates were adjusted according to the equation (Abbot, 1925).

Statistical analysis

The results were analyzed according to the analysis of the practical experiments using the design of the perfect randomization, and the lowest moral difference L.S.D. was used at the probability level of 0.05% to test the moral differences between the transactions (Al-Rawi and Khalafallah, 2000).

Results and Discussion

Table 1 shows that increased concentrations of water extract (cold and hot) lead to an increase in the death rate in the three larval phases of the domestic fly. The death rate for the first, second, and third larval phases in cold water extract and concentration was 6% (77.70%,

Table 1: Shows the effect of the hot and cold water extracts of *Dianthus Caryophyllus* L.Flowers on mortality the different Larvel instar of. *Muscadomestica* L.

Conc-entration %	Percentage of mortality						Average of conce-ntration
	Cold water			Hot water			
	1st	2nd	3rd	1st	2nd	3rd	
0%	0	0	0	0	0	0	0
2%	44.91	43.92	30.78	38.85	32.70	28.77	35.15
4%	68.85	57	47	52.77	47	43	52.60
6%	77.70	68.85	57	66.14	50.85	46.92	61.24

Least significant differences (L.S.D) under the 5% level of significance for treatments = 5.61%

Least significant differences (L.S.D) under the 5% level of significance for concentration = 1.23%.

Least significant differences (L.S.D) under the 5% level of significance for different Larval = 1.96%.

68.85%, 57%), respectively. While the death rate in boiling water extract and in the same concentration (66.14%, 50.85%, 46.92%), respectively. The results of the statistical analysis also showed apparent moral differences in the effect of the concentrations used compared to the treatment of control and for both extracts.

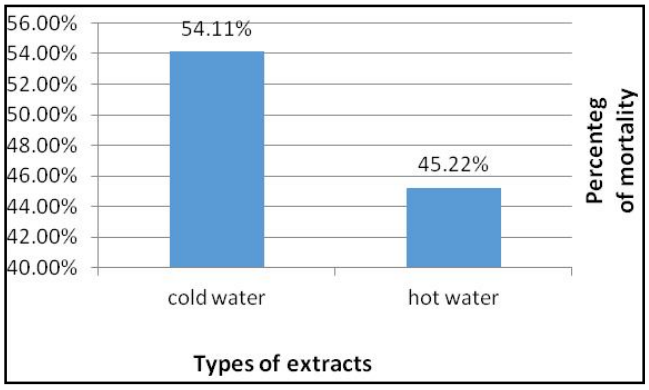

Fig. 1: Shows the effect of type extracts for the *Dianthus Caryophyllus*L. flowers on mortality rate of larval instar for *Musca domestica* L.

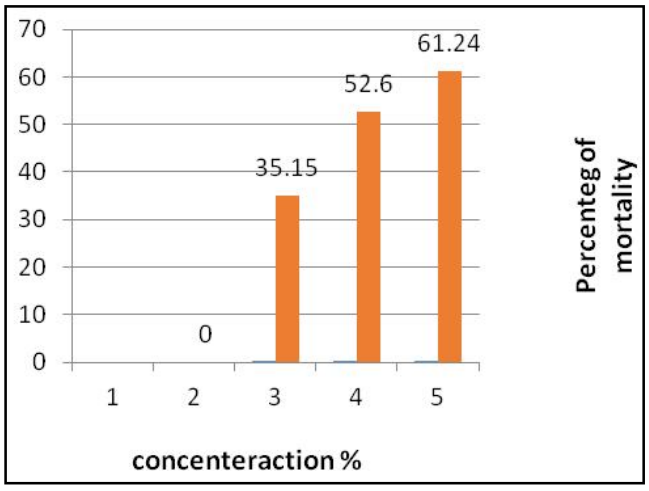

Fig. 2: Effect of concentrations of *Dianthus Caryophyllus*L. flowers extracts on larval of *Musca domestica* L.

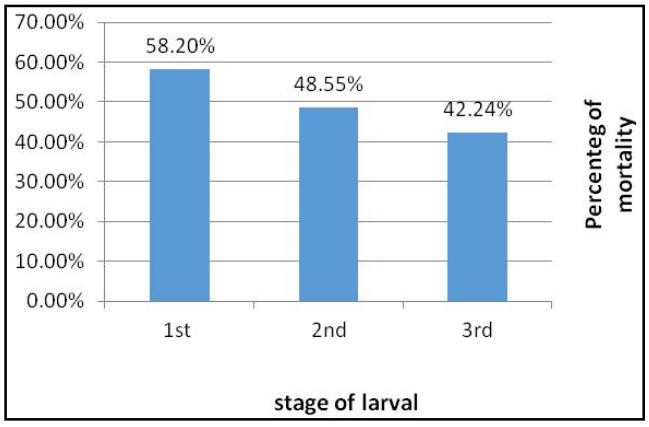

Fig. 3: Shows the sensitivity of the larval instar of *Musca domestica* L. for water extracts of *Dianthus Caryophyllus*L. flowers.

The results of the study also pointed out the impact of cold water extract more than the effect of hot water extract, as shown in the Fig. 1 because the heat may affect the nature of the toxic substances found in the plant extract and turn it into less toxic substances. The results of the current study also indicated a direct correlation between the death rate and the And the concentration of the extract, as shown in Fig. 2. Moreover, the first larval phase is more sensitive than the other phases, and in both extracts, it gave the highest kill rate in all concentrations and both extracts, as shown in Fig. 3.

The death of larvae may be due to the presence of toxic chemical compounds in the plant extract that caused to death of the insect, as he pointed out (Bowers, 1984) that some plant compounds caused in the killing of the epithelium cells lining the middle gastrointestinal tract of the insect and these cells are responsible for the secretion of digestive enzymes that remove the action of these compounds and thus lead to the death of the insect. Hassan, 1996 suggested that the cold water extract of *Nerium oleander* leaves was the most influential of boiling water extract in the death of larval Phases of the domestic fly *Musca domestica* L. And the results of this study are consistent with what Hassan referred to with the difference in plant type.

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