Comparative Study Between of the Effect of Biologically Prepared of two Types of Silver Nanoparticles and Nanoscale in Anti-Mosquito Culex.Pipienes

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Abstract
The study addressed the influences of bio-prepared silver nanoscale from Verticillium lecanii mushrooms and nanoscale silver prepared from Peganum harmala L sand extract in the fight against C.pipienes mosquitoes, The concentrations used for the bio-prepared Nano-silver from the fungus were 5.2,5, 5.7.10 ml, and the lowest killing rate was 3.3% at a concentration of 5.2 after 48 hours of treatment, While the highest murder rate was 3.5% in concentration10 and 48 hours after treatment compared to the control treatment in which the murder rate did not occur. As for the nano-silver ether biologically prepared from the Harmet extract in mosquito control, the concentrations used were 25.0, 50. 0,75. 0 ml The lowest killing rate was 3.3% in the concentration of 25.0 after 48 hours of treatment, while the highest killing rate was 0.8% in the concentration of 75.0 after 48 hours of treatment compared to the control treatment in which the murder rate did not occur.
Keywords: Mosquito,The mushroom verticillium lecanii,Harmala Plant Extract,Nano silver

1. Introduction

Mosquitoes are small insects belonging to the Diptera rank of the Culicidae family. Mosquitoes can be identified by their small size of approximately 3-9 mm. They possess one pair of wings, long and thin legs, mosquito female mouth parts contain a long absorption hose and the males differ from females with sensor pods. Mouth parts are not suitable for skin piercing (Shnipesh et al,2021). mushroom V.lecanii is one of the most important insect-nursing inland-fed fungi that possesses the ability to attack many types of insects such as Diptera bi-wing rank, wingspan and similar wings, aphids, therps and meal bugs, The mushrooms have been isolated from the infected oak leaves and from the soil and the sexual phase of this fungus has not yet been found. This mushroom is produced by non-moving pathways called Conedes, which are formed after the development of the Conedian carrier (Feng et al,2000). Nanoscale silver particles are particles with a size ranging from 1-100nm, and there is a great interest in the manufacture of products containing nanoscale silver due to the possession of nanoscale silver minutes with antimicrobial properties, There are many products that contain nanomaterials, Some of these materials are associated with foodstuffs such as chopping boards, cups, bowls, odour resistant textiles, electronic household appliances, cosmetics, water sanitizers, medical devices, children's toys, laundry detergents and food packaging(Fauss,2008,Buzea, et al,2007,Mirta,2014).

2. Materials and Working Methods

Breeding mosquitoes

Sites have been selected from Salahuddin Governorate where the ponds are located where *C.pipiens* mosquitoes are frequently located for the presence of organic materials. A long-arm scoop was used for the purpose of collecting and then placed in 2000ml plastic utensils containing 1000ml water similar to water in the wild environment which is chlorine-free and transferred to the insect breeding room under laboratory conditions temperature 2 ± 25 and relative humidity 5 ± 65 and lighting period 12 hours/day after which it was placed in breeding cages, The base of the cage consists of wood and four faces of metal clamp,The larvae were fed by adding a grinding mouse leaf consisting of wheat, protein and yellow corn, a ratio of 1:1:1 by 2 g per basin (Soni&prakson,2012) .

Preparation of silver nitrate solution AgNO3

Silver nitrate solution by dissolving 0.345 grams of silver nitrate AgNO3 in 450 ml of deionized water (Al-Naimi et al,2019).

Vitally manufactured silver nanoparticles from the mushroom *V.Lecanii*

Silver nanoparticles are manufactured by cracking the mushroom extract by ultrasonic device for five minutes and then placing the prepared silver nitrate solution on the Hot Plate heating device with magnetic motor magnetic stirrer for 30 minutes and

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then starting the process of adding the mushroom extract to the silver nitrate solution in droplets and then placing in the ultrasonic device for a duration.

Preparation of hot water extract for the P.harmala plant

Weighed 10mg of dried and milled sand plant then add to it 100ml of deionized water, then put the *Peganum harmala* plant mixture in sterile glass guards and closed its opening to prevent evaporation and then boil the mixture for 30 minutes, Then the mixture was filtered using the medical gauze to remove the parts of the plant and then 1 filtration paper was used. Whatman NO and then put in clean glass bottles and keep in the refrigerator until used (Masaudi,2020).

Silver Nitrate Solution AgNO3

The silver nitrate solution with a concentration of 1 mL was attended by dissolving 0.0162 g of silver nitrate in 100ml of deionized water (Kumaret *al*,2017).

Manufacture of nanoparticles silver minutes biologically using *P. harmala*

The nanoscale silver minutes were prepared using the harpy water extract since 10mg of the hot water extract was blended with 90 millilitres of silver nitrate solution with a concentration of 1 milli mulary and then placed the mixture on the Hot plate magnetic stirrer for 1 hour and at a temperature of 60-70m°,The bioprocessing process of nanoscale silver minutes was inferred by the discolouration of the silver nitrate solution mixed with the hot water extract from light yellow to deep brown(Kumar *et al*,2017) .Then dry the deposit in an hour bottle in the electric oven at 80 m°, in order to get rid of excess water, collect the nanoparticles silver minute powder and save in glass bottles until use(Arulmoorthy,2015).

The effect of lively prepared silver nanoscale from mushroom *V. lecanii* at the fourth larval age

The lively prepared silver nano concentrations of mushroom *V.Lecanii* (5.2,5, 5.7,10 ml) were placed in clean and sterile plastic packaging and each focus was a bottle and took 40 larvae and distributed on four plates, The larvae were then superficially sprayed with a hand sprinkler from approximately 15cm high to ensure that all larvae were exposed to the bio-prepared silver nano trachesalnano from mushroom*V.Lecanii*, The experiment was repeated three times per concentration; the control transaction was sprayed with distilled, sterile water only after which the loss rate was calculated after 24 hours and 48 hours of exposure.

The effect of lively prepared nano- silver from P. harmala plant extract at the fourth larval age

The bio-prepared silver Nano trachesalnano of the harmala plant extract (0.25,0.50, 0.75) In clean and sterile plastic packaging each concentration was a bottle and took 40 larvae and distributed on four plates. The larvae were then superficially sprayed with a hand sprinkler from about 15cm high to ensure that all larvae were exposed to the bio-prepared silver trachesalnano from the plant's harmala extract, the experiment was repeated three times per concentration; the control transaction was sprayed with distilled, sterile water only after which the loss rate was calculated after 24 hours and 48 hours of exposure.

3. Results and Discussion

Nano Silver Diagnosis

Diagnosis of Nano Silver Biologically Prepared Mushroom and SEM Extract under SEM Microscope

A scanning electron microscope is one of the technologies by which the shape and body of nanoscale minutes can be determined and determinedSE (Alwan *et al*, 2021). M reveals the Scattered Electrons rectangular electrons emitted from the surface of the specimen are by scanning by a beam of electrons on the surface of the specimen. The variability in the sample is depending on the absorption of electrons. SEM also provides information about the surface shape of the sample, and the sampling technique used to measure it is very easy, the thickness of the sample to be measured with SEM mediation is unnecessary and SEM gives three-dimensional white and black images and is also accurate. The measurement was carried out at Tehran University/Iran. We note from the tests under the scanning electron microscope that the nanoparticles of silver prepared from mushrooms are in the form of spherical, homogeneous and non-conforming minutes. These results correspond to the results obtained by many researchers such as (Bharde et al,2006). which indicated the possibility of producing nanoparticles from mushrooms *V. lecanii*, thus producing silver particles from mushrooms *V. lecanii*. As in figure (1).

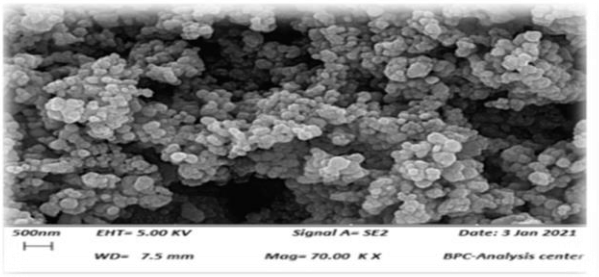

Figure (1): Measurement of scanning electron microscope for Nano-silver particles prepared from mushrooms under magnifying force of 500 nm.

As for the silver nanoparticles prepared from the extract of the harmal plant Measured by scanning electron microscope under the magnification force of 10 micrometers, they appeared as contiguous spherical assemblies, as shown in figure (2).

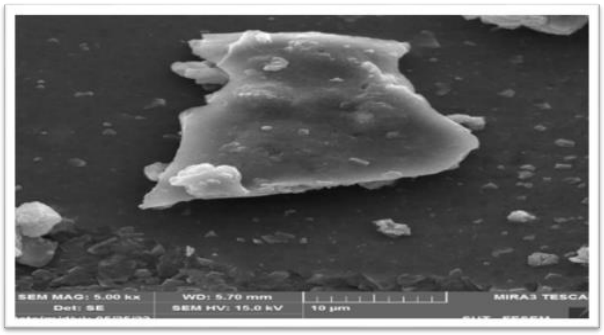

Figure (2) Nano-Silver Prepared from harmal Under Scanner Electron Microscope with 10 Micro Zoom Power

Diagnosis of Nano-Silver Biologically Prepared Mushroom and haramel Extract under AFM Microscope

Atomic force microscope (AFM) is a modern technique used to detect artificial nanoparticles topography, through which the sizes and dimensions of nanoparticles and their surface are recognized, giving a binary and three-dimensional picture of the model to be measured(Abdulla et al,Bharde et al,2006,pattanyak,2013).This technique has an important role to play in various fields of science(Keyeyune,2017).The atomic force microscope is used to characterize material surfaces and is able to produce images of non-conductive surfaces without the need to perform the Etching Chemical or Staining process. The unique advantage of this technique compared to other microscopy techniques can be used to study the mechanical properties of material surfaces and know the dimensions, sizes and shapes of nanoparticles minutes and give a bilateral and three-dimensional picture of the model to be measured. This technique does not involve the use of electronic beam radiation that damages the surface of materials to be characterized (Jagtap&Ambre,2006). Examinations under the atomic force microscope showed that the Nano-silver prepared from mushrooms was the highest for minutes (12.0 nm) and was roughly spherical or oval in shape, as shown in figure (3).

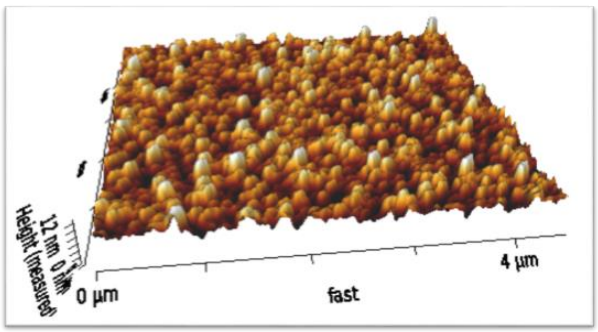

Figure (3): Diagnosis of atomic force microscope of silver nanoparticles prepared from mushrooms

It is the atomic force microscope measurements of nanoparticles silver minutes prepared from the harmal plant extract, the highest altitude of minutes (62.54nm) with spherical shapes, and figure (4) shows the three-dimensional prepared Nano-silver.

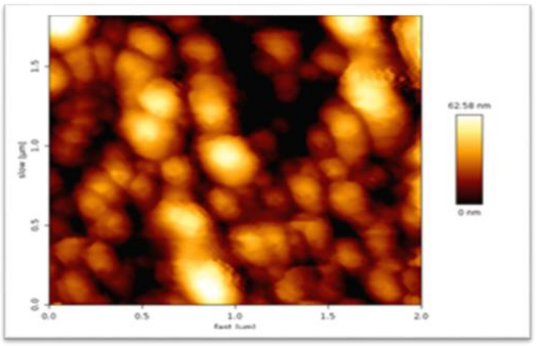

Figure (4) Diagnosis of atomic force microscope for silver nanoparticles prepared from Harmal

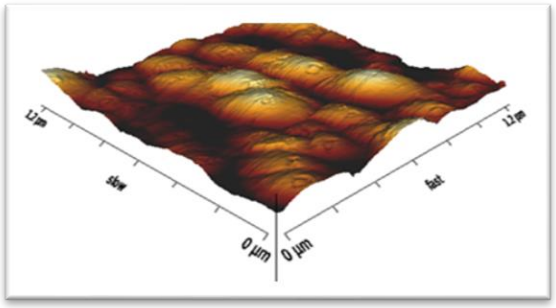

Figure (5) Nano-silver prepared from harmala under a three-dimensional atomic force microscope

The effect of Nano-silver biologically prepared from *V.lecanii* at the fourth larval age.

Table (1) results showed that there were moral differences in homicide ratios for overlapping concentrations and duration of exposure, as they were the highest for larvae Fourth age, 5.3% at concentration10% after 48 hours of treatment, While the lowest killing rate was 3.3% at 5.2% 24 hours after of treatment, While the average rates of killing according to the effect of concentrations showed that the highest killing rate was at the 10% concentration, reaching 4.95%, while the lowest average killing rate was at the 5.2% concentration, reaching 3.3%, As for the average rates of killing due to the effect of the duration of the killing, it was the highest rate of killing after 48 hours, which amounted to 45.4%, and the lowest rate of killing after 24 hours, which amounted to 37.3%. Through the results, it was found that the killing rates of larvae Fourth age, increase by increasing concentration and exposures. The results of this study were agreed with (Al-Fatlawi, 2021) through the use of pendants of three types of fungi (*penicillium, chrysogenum, V.lecanii, Aspergillus niger*) in its influence on the thin phases of *Culex quinquefasciatus* mosquitoes. The entomopathogenic mushrooms *V. lecanii* outperformed the rest of the mushroom in affecting mosquito larvae with a death rate of (20, 16.66, 13.33 and 10) after 48 hours of treatment and it rose to (63.33, 60, 56.66 and 53.33) after 96 hours of treatment.

The results of this study also coincided with (Qamandar,2017) the effect of bio-prepared silver nanoparticles from Beauveria Bassiana mushrooms on the killing of C.pipiens mosquitoes, as they were

the highest killers at the second larval age in all concentrations. The kill rate (% 95.55) at concentration is 150 and (96.66%) at concentration is 200 and (98.88%) at concentration is 250. The lowest killing rate was found in the control treatment, as there were no significant differences between the concentrations in each stage.

Table No. (1) The effect of bio-prepared silver nanoparticles from Verticillium lecanii on the fourth larval age			
Concentration	The killing rate%		Average killing rate%
	24 hours	48 hours	
2.5	3.3 c	3.3 c	3.3 C
5	3.0 c	4.6 b	3.8 B
7.5	2.6	4.6 b	3.6 BC
10	4.6 b	5.3 a	4.95 A
Treatment of control	0 d	0 d	0 D
Average killing rate%	3.37 b	4.45 a	

The effect of lively prepared nano-silver extract from the harmel plant at the fourth larval age of C.pipiens mosquitoes

Table results (5) showed that there were moral differences in murder ratios for overlap between concentrations and duration of exposure as the highest killing rate for fourth larval age was 8.0% at concentration 0.75% after 48 hours of treatment while the lowest killing rate was 2.0% at concentration 0.25% after 24 hours of treatment, While the average rates of killing by the effect of concentrations showed that the highest killing rate was at concentration 0.75% at 8.0% while the lowest average killing rate at concentration was 0.25% at 2.65%. Averages of killing with duration of murder were the highest killing rate after 48 hours and 6.30% and the lowest killing rate after 24 hours at 5.86%.

Al-Husseini and others (2021) studied the effectiveness of silver nanoparticle extract and ethanol extract of pomegranate crusts against the fourth-phase larvae of *Culex* mosquitoes. quinquefasciatus the nanoparticle extract was more toxic than the ethanol extract of pomegranate crusts because the killing rate for nanoparticles was 90% and the killing rate was 80% for ethanoid extract with a concentration of 5ML and for 72hours of treatment for both types of extracts used.

Table No (2) Effect of Biologically Prepared Nano-Silver from harmala Plant Extract in the Fourth Larvial Age			
Concentration	The killing rate%		Average killing rate%
	24 hours	48 hours	
0.25	2.0 c	3.3 b	2.65 B
0.50	7.6 a	7.6 a	7.6 A
0.75	8.0 a	8.0 a	8.0 A
Treatment of control	0 d	0 d	0 C
Average killing rate%	5.86 b	6.30 a	

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