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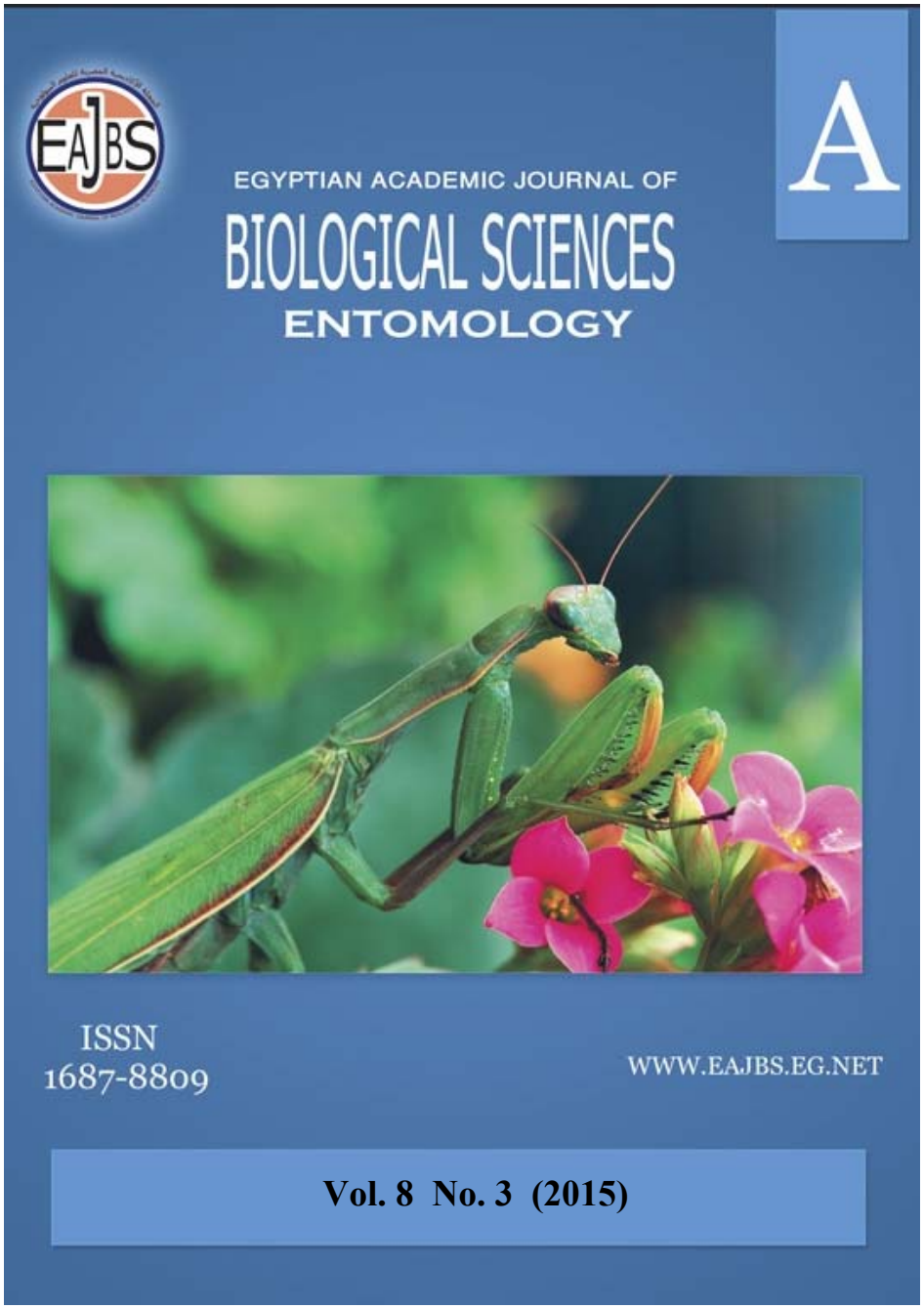

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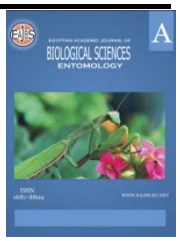

The Toxicological Effects of *Nerium oleander* and *Yucca glauca* as Crude Leaf Extracts by Different Methods against Cowpea Aphid, *Aphis craccivora* (Koch) and Their Chemical Components

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ABSTRACT

The current study carried out during Spring season of 2015 year under laboratory conditions, in at Plant Protection Research Institute , Doki, Giza, Egypt. The experiment aimed to study the toxic effects of Oleander, *Nerium oleander* and Soapweed, *Yucca glauca* as a botanical leaf extracts against *Aphis craccivora* nymphs , fecundity, physic-chemical properties and the identification of their chemical components. Botanical leaves extracted using chloroform , ethanol and water as a solvents. The results showed that crude extracts produced from *N. oleander* were the superb toxic than *Yucca glauca*, also *N. oleander* with Chloroform was the most effective followed by ethanol and water *against A. craccivora* , whereas water produced the least toxic extracts. On the other hand, the results indicated that *Y. glauca* recorded lowest LC50s and LC90s with Chloroform compared with *Y glauca* with other solvents. In case of , *N. oleander* extracts (with chloroform, ethanol and water) reduced fecundity (offspring number) of *A. craccivora* compared with *Y glauca* extracts, wherever *N. oleander* with chloroform recorded the lowest fecundity at a 800 ppm concentration followed by other concentrations. In addition to there are differences in physico-chemical properties between two botanical extracts with different solvent , the obtained result showed that foam disappearance in case of extracts with chloroform and ethanol but were 33 and 3 ml in case *Y. glauca* and *N. oleander* with water alone, surface tension were decreased when adding chloroform and ethanol recorded 18.74, 31.81 and 19.54, 31.81 with *Y. glauca* with chloroform , ethanol and *N. oleander* with chloroform and ethanol, respectively, but adding water to *Y. glauca* and *N. oleander* cause increasing surface tension recorded 59.48 and 65.14, respectively . Also, PH values ranged between high acidic and slightly acidic. On the other hand data showed that number of component of *Yucca glauca* and *Nerium oleander* extracts were contain 27 and 38 compounds, respectively.

Recommendation : The paper recommended using *Nerium oleander* and *Yucca glauca* extracts with chloroform in *A. craccivora* (Koch) control.

INTRODUCTION

The cowpea aphid, *Aphis craccivora* is one of the most serious insect pests of broad bean *Vicia faba*, cowpea *Vigna unguiculata* and kidney bean *Phaseolus vulgaris*. Plant protection plays an important role in addition to good yield, heavy losses of bean are recorded by the attack of cowpea aphid, *Aphis craccivora*, In recent years, the use of pesticides, particularly of insecticides, has become very common.

Excessive and indiscriminate use of these toxicants has unlimited hazards for environment and human beings and all naturally growing population (Iqbal *et al*., 2007). The vegetable crops and other edible parts of plants are directly exposed to the applied pesticides and are usually consumed before the plant system is able to get rid of pesticide residues or the latter is diluted to the non-toxic. Spraying of pesticide liberate a fair volume of harmful vapors in the atmosphere and consequently create a certain degree of atmospheric pollution (Dheeraj *et al*., 2006). However, some chemicals have posed some serious problems to health and environmental safety, because of their high toxicity and prolonged persistence (Kulkarni and Joshi, 1998) but the culture of Egypt people is to consume the fresh vegetables that having the residues across maximum residue limit (MRL) (Mansoor *et al*., 2005). So that from necessary search on alternative materials such as botanical extracts from plant origin containing insecticidal properties are indigenously available and are considered comparatively safe for environment & public health. It has been reported that over 2000 plant species belonging to about 170 natural families are known to have insecticidal properties .Cowpea aphid, *Aphis craccivora* (Koch) is a threat to cowpea growers in all over the country. Both nymphs and adults suck plant sap and cause serious damage right from the seedling to pods stage. Due to heavy infestation, young seedlings succumb to death, whereas the older plants show symptoms such as stunting, crinkling and curling of leaves, delayed flowering, shriveling of pods and finally resulting in yield reduction. Considering the adverse effect of insecticides, pest management through control with insecticides alternatively is encouraged using plant extracts. Among them, *Nerium oleander* and *Yucca glauca* are gaining importance in pest control, used to insect control and management of sucking pests (Soliman, 2004). A study aimed to study the toxic effects of *Nerium oleander* and *Yucca glauca* as botanical extracts against *Aphis craccivora* nymphs, female fecundity(offspring number), as well as the physic-chemical properties of the tested extracts under laboratory conditions, in addition to the identification of the chemical components of each extract.

MATERIALS AND METHODS

Cowpea aphid rearing:

Cowpea aphid, *A. craccivora*, rearing was started with aphids collected from several fields planted with bean, kidney bean and peas in Zagazig district, Sharkia governorate in April, 2015. The aphids were transferred to bean plants growing on a clay soil, in 7 cm diameter and 10 cm depth plastic pots in the cages in laboratory. Individual groups of ten wingless adults collected from the bean plants aphid colony were placed in the plastic Petri- dish (9 cm diameter, 1.5 cm depth) contains one bean plant leaves (5 x 3 cm) dipped for 10 seconds in distilled water (control), and others in the different plant extract stock solutions or in their serial dilutions. The Petri dishes were placed in the growth chamber at 22°C and a photoperiod of 16 (L:D) h for 24, 48, 72 h from treatments.

After 24 h aphids were classified as dead or alive and then counted. Aphids were considered dead when they did not move after multiple prodding's with a fine-haired paint-brush. Number of newborn nymphs (progeny) per group (treatment) was also determined as a way of assessing the LC50s and LC90s effects of plant extracts on nymph of aphid and fecundity (reproduction) was observed and recorded. Enumeration of aphids was performed using a colony count magnifying glass.

Preparation of crude extracts

The following solvents were used in the preparation of crude extracts according to the method of Macneel *et al.,* (1975) : (a) ethanol 99.5%, (b) chloroform 99.5 % and (c) distilled water. Approximately 1 kg of *Nerium oleander* and 1 kg of *Yucca glauca* fresh leaves collected from healthy mature trees and chopped into small pieces. .The pieces were blended in blender then weighed 100 g and extracted in each solvents in the ratio of 1:5 w:v. Each extraction suspension was mixed with a vortex mixer (VM-300 (Axiom, Germany)) then placed on a rotary shaker for 1 h at 170 rpm followed by extraction on filter paper (Whatman filter paper grade No.1). The extracts were concentrated to 1 ml on rotary evaporator by removing the excess solvent under vacuum , adding 20 ml of a solvent to solvent - plant mixture (1 ml), then centrifuging in a micro-centrifuge (Hettich zentrugen D-78532 (Tuttlingen, Germany) at 6000 rpm for 10 min.. Supernatants from the extractions from each solvent were combined and concentrated to dryness under vacuum before being mixed with sterile distilled water, weight extracts, adding 45 ml with distilled water. These extracts were either used immediately or kept in the refrigerator at 4 ± 1°C until further use. Each plant extract stock solution (1000 ppm) was serially diluted with distilled water to obtain the different extract concentrations as mentioned in Table (1). Each dilution was prepared on the day of the experimental trial.

Table 1: Plant leaf extracts and dilutions with water

Name of Extract and Family	Solvents	Stock Solution ppm	Dilution with water				
			Concentrations ppm				
Nerium Oleander **Fam: Apocynaceae**	Ethanol	1000	800	400	200	100	50
	Chloroform	1000	800	400	200	100	50
	Water	1000	800	400	200	100	50
Yucca glauca **Fam : Asparagaceae**	Ethanol	1000	800	400	200	100	50
	Chloroform	1000	800	400	200	100	50
	Water	1000	800	400	200	100	50
Control (water)	water alone						

Clean - Up:

Glass plates (20 × 20 cm.) were coated with silica gel GF 254. After the silica gel was dispersed in distilled water at 1 : 2 w. / v. fribos applicator was used for coating the glass plates with a thin layer (0.25 mm thickness) , then the plates were put in an oven adjusted 110 °C for one hour. An aliquot of the concentration extract was spotted on the plate at a distance of 3 cm from the lower edge. The plates were developed in hexane: acetone (7 : 3 V./V.) then exposed to U.V. light in order to detect the spots of the authentic sample. The spots were scraped from the plates and the material residues were extracted by ethyl acetate using a centrifuge Soliman (1998 and 2004). The solvent was then decanted and evaporated to dryness. The residues were determined using GC/MS in Micro Apparatus Unit at Researcher International Centre

Data analysis

Extract concentration - mortality curves for all bioassays were estimated using Probit analysis in the SPSS software (version 11.0.1) (SPSS Inc., 2001). Extract concentrations, and their 95 % confidence limits, required to kill 50 and 90 percentage (LC_{50} and LC_{90}) of the cowpea aphids (nymph) were estimated using the Probit regression. We developed a probit model that used the number of dead aphids as a response variable, the total number of aphids subjected to an extract concentration as a total observations variable, the type of solvent used in leaf

extraction as a factor, coded (CE, chloroform extracts) for chloroform, (EE, ethanol extracts) for ethanol, and (WE, water extracts) for water. We used Extracts concentrations, then a single analysis was therefore executed for all solvent extracts, with the assumption of similar or common probit regression slopes checked with the test of parallelism. Pearson's Chi-square test was used to determine the fit of the statistical model (Finney, 1971). Data from all bioassays were corrected using Abbott's formula (Abbott, 1925).

RESULTS AND DISCUSSION

A- Toxic effects of *N. oleander* leaf extract with three different solvents against cowpea *A. craccivora* nymphs:

Data in Table (2) show the toxicity of *N. oleander* leaf extracts from different solvents on cowpea aphid, *A. craccivora* after 24, 48, and 72 h. After 24h, the data revealed that the highest LC50 was 331.9ppm by using WE with 95% confidence 208.71. While, the lowest LC_{50} was 11.28 ppm using CE at confidence 6.02.Moreover, the highest LC_{90} was 1640.5 ppm using WE at confidence 948.5 and the lowest LC_{90} was 90.5 ppm using CE at confidence 99.22. After 48h, the highest LC_{50} was 158.1 ppm using WE at confidence 94.45 and the lowest LC_{50} was 1.14 ppm at confidence 0.789 using CE. While, the highest LC_{90} was 912.2 ppm using WE at confidence 453.0 and the lowest LC_{90} was 96.52 ppm using CE at confidence 45.32. The same trend occur after 72h, the highest LC_{50} was 33.0 ppm using WE at confidence 0.002 and the lowest LC_{50} was 0.113 ppm at confidence 0.062 using CE. While, the highest LC_{90} was 657.6 ppm using WE at confidence 416.8 and the lowest LC_{90} was 12.09 ppm using CE at confidence 10.5. These results are agreement with Ellis *et al*., 1998, Isman 2006 a , b , Isik and Görür, 2009 and Arshad *et al.*, 2010, founded that all the treatments of plant leaf extracts showed insecticidal activity, but Indian neem followed by Mexican marigold reduced the aphid population to a great extent.

Table 2: LC_{50}s and LC_{90}s together with their 95% confidence limits of the *N.oleander* leaf extracts from different solvents on cowpea aphid, *A. craccivorae* after 24,48 and 72 hours.

***Nerium oleander* extracts**	**LC_{50} ppm**	**95 % confidence**	**LC_{90} ppm**	**95 % confidence**
After 24 hour from application				
Chloroform	11.28	6.02	90.5	99.22
Ethanol	152.3	368.9	1113.9	1640.0
Water	331.9	208.71	1640.5	948.5
After 48 hour from application				
Chloroform	1.14	0.789	69.52	45.32
Ethanol	9.44	0.865	305.9	205.3
Water	158.1	94.45	912.2	453.0
After 72 hour from application				
Chloroform	0.113	0.062	12.09	10.50
Ethanol	7.73	5.02	193.9	112.4
Water	33.5	0.002	657.6	416.8

As shown in Table (3), after 24 h from application Chi-square was 0.086, 0.086, and 0.365, Slope was 0.441, 0.687, and 1.846 and SD; 0.334, 0.339, and 0.428 using CE, EE, and WE, respectively. On the other hand, also , after 48h, the Chi-square was 0.007, 0.924, and 3.39, Slope; 0.459, 0.848, and 2.07, SD; 0.410, 0.442, and 0.417 using CE, EE, or WE, respectively. But after 72 h, the Chi-square was 0.524, 0.158, and 0.544, Slope; 1.247, 0.916, and 0.893, SD; 0.684, 0.489, and 0.376

using CE, EE and WE, respectively. Generally the chloroform extract from *N. oleander* was the most toxic extract against *A. craccivora* nymph during the 24h and 48h from treatments. Because it exerted its effect with the lowest LC50s, LC90s, Chi-Square, and Slope comparing to other solvents at the same time points used in the present study.

Table 3: Chi-square , slope and standard error with *Nerium oleander* .

***Nerium oleander* extracts**	**Chi –Square**	**Slope**	**SD**
After 24 hour from application			
Chloroform	0.086	0.441	0.334
Ethanol	0.086	0.687	0.339
Water	0.365	1.846	0.428
After 48 hour from application			
Chloroform	0.007	0.459	0.410
Ethanol	0.924	0.848	0.442
Water	3.39	2.07	0.417
After 72 hour from application			
Chloroform	0.524	1.247	0.684
Ethanol	0.158	0.916	0.489
Water	0.544	0.893	0.376

B- Toxic effects of *Y. glauca* leaf extract with three different solvents against cowpea *A. craccivora* nymphs:

Data in Table (4) show the toxic effect of *Y. glauca* leaf extracts by three solvents on cowpea aphid, *A. craccivora* nymphs after 24, 48, and 72 h , where after 24 h, the data revealed that the highest LC_{50} was 466.1 ppm by using EE with 95 % confidence 233.6, while, the lowest LC_{50} was 20.4 ppm using CE at confidence 5.0.

Table 4: LC_{50}s and LC_{90}s together with their 95% confidence limits of the *Yucca glauca* leaf extracts from different solvents on cowpea aphid, *A. craccivorae* after 24,48 and 72 hours.

***Yucca glauca* extracts**	**LC_{50} ppm**	**95 % confidence**	**LC_{90} ppm**	**95 % confidence**
After 24 hour from application				
Chloroform	20.4	5.0	1216.7	792.3
Ethanol	466.1	233.6	3989.6	2132.2
Water	254.7	71.2	2276.5	1365.1
After 48 hour from application				
Chloroform	1.41	0.453	516.9	332.4
Ethanol	64.73	22.3	3704.3	1872.2
Water	32.79	3.6	2010.9	125.8
After 72 hour from application				
Chloroform	1.27	0.891	138.5	72.0
Ethanol	2.5	0.223	257.9	62.53
Water	1.27	0.533	257.91	62.53

Moreover, the highest LC_{90} was 3989.6 ppm using EE at confidence 2132.2 and the lowest LC_{90} was 1216.7 ppm using CE at confidence 792.3. After 48h, the highest LC_{50} was 64.73 ppm using EE at confidence 22.3 and the lowest LC_{50} was 1.41 ppm at confidence 0.453 using CE, while, the highest LC_{90} was 3704. ppm using EE at confidence 1872.2 and the lowest LC_{90} was 516.9 ppm using CE at confidence 332.4. While after 72h, the highest LC_{50} was 2.5 ppm using EE at confidence 0.223 and the lowest LC_{50} was 1.27 ppm using CE or EE at confidence 0.891 and 0.533, respectively.

Also, the highest LC_{90} was 257.9 ppm at confidence 62.53 using EE or WE and the lowest LC_{90} was 138.5 ppm using CE at confidence 72.0. These results are in agreement with those obtained by Srinivasa *et al*., 2014, Opolota *et al.*, 2006 who

found that the use of synthetics and tobacco was more economically beneficial than using synthetics alone.

As shown in (Table 5) after 24h from application Chi-square was 0.123, 0.630, and 5.99, Slope; 0.428, 0.674, and 1.880, SD; 0.340, 0.351, and 0.695 using CE, EE and WE, respectively. On the other hand, after 48h, the Chi-square was 0.001, 0.023, and 0.096, Slope; 0.305, 0.353, and 1.42, SD; 0.408, 0.334, and 0.621 using CE, EE and WE, respectively. But after 72h, the Chi-square was 0.016, 0.016, and 0.053, Slope; 0.555, 0.511, and 0.734, SD; 0.444, 0.432, and 0.504 using CE, EE, or WE, respectively.

Table 5: Chi-square , slope and standard error with *Yucca glauca*.

***Yucca glauca* extracts**	**Chi –Square**	**Slope**	**SD**
After 24 hour from application			
Chloroform	0.123	0.428	0.340
Ethanol	0.630	0.674	0.351
Water	5.99	1.88	0.695
After 48 hour from application			
Chloroform	0.001	0.305	0.408
Ethanol	0.023	0.353	0.334
Water	0.096	1.42	0.621
After 72 hour from application			
Chloroform	0.016	0.555	0.444
Ethanol	0.016	0.511	0.432
Water	0.053	0.734	0.504

C-Impact of *Nerium oleander* and *Yucca glauca* botanical extracts on *Aphis craccivora* fecundity(number offspring):

Results illustrated in Fig.1: show that *N. oleander* extracts (chloroform, ethanol and water) reduced fecundity (offspring number) of *A. craccivora* compared with *Y glauca* extracts. On the other hand, *N. oleander* with chloroform recorded the lowest fecundity at a 800 ppm concentration followed by other concentrations , the same trend was noticed with *Y. glauca* . Efficacy of extracts depend on active ingredient extracted with solvent , where , extraction with chloroform was the most effective than extraction using ethanol and water. *Y. glauca* extracts at a 100 ppm recorded the highest fecundity(offspring number).

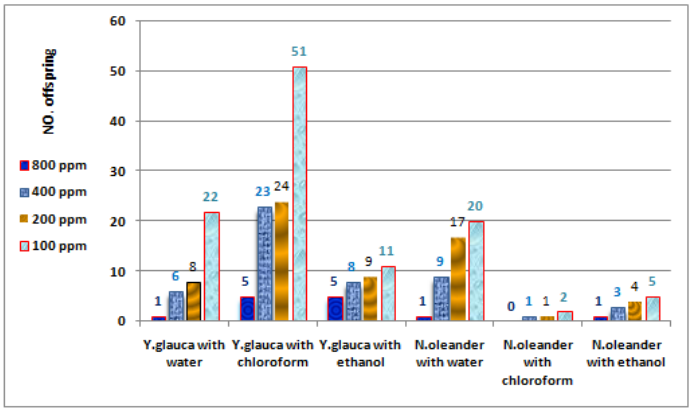

Fig.1. Effect of botanical extracts of *N. oleander* and *Y. glauca* on fecundity(offspring number) of *A. craccivora* .

D-Physical and chemical properties of botanical extracts:

The results in Table (6) reported that foam disappear in case of extracts with chloroform and ethanol but were 33 and 3 ml in case of *Y. glauca* and *N. oleander*

with water . Surface tension were decreased when adding chloroform and ethanol recording 18.74, 31.81 and 19.54, 31.81 with *Y. glauca* with chloroform , ethanol and *N. oleander* with chloroform and ethanol, respectively, but adding water to *Y. glauca* and *N. oleander* increased surface tension recorded 59.48 and 65.14, respectively . On the other hand, pH values ranged between high to slightly acidic. Also , solution density was the highest in case of *Y glauca* with chloroform 1.43, thenceforth 1.42 with *N. oleander* ethanol followed by other treatments.

Table 6: Physico-chemical properties of the tested botanical extracts

Extracts	Foam	Surface ten	pH	Density
***Yucca glauca* + chloroform**	-	18.74	2.95	1.43
***Yucca glauca* + ethanol**	-	31.81	4.94	0.79
***Yucca glauca* + water**	33	59.48	4.3	0.97
***N. oleander* + chloroform**	-	19.54	4.85	1.42
***N. oleander* + ethanol**	-	31.81	5.25	0.82
***N. oleander* + water**	3	65.14	3.41	0.96

E- Identification of extract components:

Data in Tables 7 and 8 show number of component of *Yucca glauca* and *Nerium oleander* extracts where *Y glauca* and *N. oleander* extracts contain 27 and 38 compounds, respectively .

Table 7: Compound name, Retention time(RT), Probability (Prob.), Area and Molecular weight (MW) of compounds in *Yucca glauca*

No	Compound name	RT	Prob.	Area	MW
1	2-Hexadecen-1-ol,3,7,11,15-tetramethyl-,[R-[R*,R*-(E)]]-(CAS)	13.92	11.79	162064.52	296
2	Phytol, acetate	13.92	9.96	162064.52	338
3	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	13.92	9.57	162064.52	296
4	Z-4-Nonadecen-1-olacetate	14.50	6.56	89773.88	324
5	4-(ACETYLOXY)-1-(1,5-DIMETHYLHEXYL)-3A,6,6,12A-TETRAM ETHYL-2,3,3A,3B,5A,6,7,8,9,11,12,12A-DODECAHYDRO-1H-CY	14.50	6.31	89773.88	526
6	Hematoporphyrin	14.50	4.83	89773.88	598
7	9-Hexadecenoic acid,9-octadecenyl ester,(Z,Z)- (CAS)	14.91	6.01	104637.16	504
8	Isopropyl linoleate	14.91	5.54	104637.16	322
9	Glycerine-1,3-dimyristate, 2-O-trimethylsilyl-	16.43	11.4	188437.62	584
10	Octadecane,3-ethyl-5-(2-ethylbutyl)	16.43	10.52	188437.62	366
11	Lucenin 2	19.73	17.07	49377.69	610
12	5H-Cyclopropa(3,4)benz(1,2-e)azulen-5-one,1,1a-à,1b-á,4,4a,7a-à,7 b,8,9,9a-decahydro-7b-à,9-á,9a-à-trihydroxy-3-hydroxymethyl-1,1,6,8-à -tetramethyl-4a-methoxy-, 9,9a-didecanoate	22.03	17.51	47582.44	686
13	4-O-Methylphorbol12,13-didecanoate	22.03	17.51	47582.44	686
14	Stearic acid,3-(octadecyloxy)propylester (CAS)	24.13	16.86	518367.52	594
15	Octadecane, 3-ethyl-5-(2-ethylbutyl)	24.13	13.25	518367.52	366
16	Pentacosane	28.14	40.92	1099099.92	352
17	DIMETHOXYGLYCEROL DOCOSYL ETHER	28.14	42.85	52800 .84	604
18	Stearic acid,3-(octadecyloxy)propylester (CAS)	29.18	53.59	199274.35	594
19	5-Chloro-6beta-nitro-5alpha-cholestan-3-one	29.18	6.98	52800.84	465
20	Heptacosane	31.87	34.48	2494509.0	380
21	ANODENDROSIDE-E2	32.65	8.29	29136.59	574
22	Carda-16,20(22)-dienolide,3-[(6-deoxy-3,4-O- ethylenehexopyranos-2-ul os-1-yl)oxy]-5,11,14-trihydroxy-12-oxo-,(3á,5à,11à)-	32.65	8.29	29136.59	574
23	2-(3-Acetoxy-4,4,10,13,14-pentamethyl-2,3,4,5,6,7,10,11,12,13,14,15 ,16,17-tetradecahydro-1H-cyclopenta[a]phenanthren-17-yl)-propioni	34.14	15.38	20252.25	430
24	Propanoic acid,2-(3-acetoxy-4,4,14-trimethylandrost-8-en-17-yl)-	34.14	14.79	20252.25	430
25	Propanoic acid,2-(3-acetoxy-4,4,14-trimethylandrost-8-en-17-yl)-	36.77	12.82	45030.26	430
26	DIMETHOXYGLYCEROL DOCOSYL ETHER	36.88	41.22	54851.13	460
27	2-TRIMETHYLSILYLAMINO-1-TRIMETHYLSILYLOXY-1-(3',4'-BIS(TRIMETHYLSILYLOXY)-PHENYL)ETHANE	36.88	13.55	41327.34	457
28	Hentriacontane	38.94	44.88	5987653.99	436

Table 8: Compound name, Retention time (RT), Probability(Prob.), Area and Molecular weight (MW) of compounds in *Nerium oleander*

No	Compound name	RT	Prob.	Area	MW
1	[5-(3-Methoxymethoxy-10,13-dimethyl-2,3,4,9,10,11,12,13,14,15,16,17 -dodecahydro-1H-cyclopenta[a]phenanthren-17-yl)-hex-1-nyl]-rime	31.38	15.89	1534859.24	468
2	5-(3-Methoxymethoxy-10,13-dimethyl-2,3,4,9,10,11,12,13,14,15,16,17 -dodecahydro-1H-cyclopenta[a]phenanthren-17-yl)-hex-1-ynyl]-trime	31.38	15.89	1534859.24	468
3	2-AMINO-6-(ETHYLSULFANYL)-4-PHENYL-1,4-DIHYDRO-3,5-P YRIDINEDICARBONITRILE	31.38	7.72	1534859.24	282
4	Phenol,2,6-bis(1,1-dimethylethyl)-4-methyl- (CAS)	31.47	10.13	1716792.96	220
5	Phenol,4,6-di(1,1-dimethylethyl)-2-methyl-	31.47	4.70	1716792.96	220
6	Hexa-t-butylselenatrisiletane	54.75	25.06	579273.39	506
7	Propanoic acid,2-(3-acetoxy-4,4,14-trimethylandrost-8-en-17-yl)-	54.75	6.96	579273.39	430
8	3,3-Dicarbomethoxy-13-Methoxy-8,11-dioxotetracyclo[5.5.2.0(1,5).0(7,12)]tetradec-13-ene	55.59	60.42	340120574.61	338
9	1,2-Benzenedicarboxylic acid, dioctyl ester(CAS)	55.59	8.97	340120574.61	390
10	1,3-Benzenedicarboxylic acid, bis(2-ethylhexyl)este	55.59	7.37	340120574.61	390
11	Glycine,N-[(3à,5á,7à,12à)-24-oxo-3,7,12-tris[(trimethylsilyl)oxy]cholan-24-yl]-, methyl ester	60.84	9.85	739522.03	695
12	GLYCOCHOLIC ACIDMETHYL ESTER TMS	60.84	9.85	739522.03	695
13	DIMETHOXYGLYCEROL DOCOSYL ETHER	60.84	7.15	739522.03	460
14	Cyclohexane,1,1',1'',1'''-(1,6-hexanediylidene)tetrakis- (CAS)	60.92	19.38	621775.28	414
15	2H-1,4-Benzodiazepin-2-one,7-chloro-1,3-dihydro-5-phenyl-1-(trimethylsily l)-3-[(trimethylsilyl)oxy]	60.92	10.22	621775.28	430
16	2H-1,4-Benzodiazepin-2-one,7-chloro-1,3-dihydro-5-phenyl-1-(trimethylsilyl)-3-[(trimethylsilyl)oxy]-	60.92	10.22	621775.28	430
17	Dimethyl(P)-1,12-Dimethyl-2,4,9,11-tetranitrobenzo[c]phenanthrene-5,8-dicarboxylate	62.03	11.85	1053238.06	552
18	Benzoic acid,2,5-bis(trimethylsiloxy)-, trimethylsilyl ester	62.03	7.89	1053238.06	370
19	N,N-Dimethyl-N'-(10-propyl-10H-acridin-9-ylidene)-benzene-1,4-dia mine	62.03	5.73	1053238.06	355
20	2-(3-Acetoxy-4,4,10,13,14-pentamethyl-2,3,4,5,6,7,10,11,12,13,14,15,16,17-tetradecahydro-1H-cyclopenta[a]phenanthren-17-yl)-propioni	63.10	11.84	677824.06	430
21	[3-Methyl-2-(4-nitro-phenyl)-4-oxo-1,2,3,4-tetrahydro-phthalazin-1-yl]-acetic acid, methylester	63.10	2.65	677824.06	355
22	2,4,6-Decatrienoicacid,1a,2,5,5a,6,9,10,10a-octahydro-5,5a-dihydroxy -4-(hydroxymethyl)-1,1,7,9-tetramethyl-11-oxo-1H-2,8a-methanocyclo penta[a]cyclopropa[e]cyclodecen-6-ylester,[1aR-(1aà,2à,5á,5aá,6á,8aà, 9à,10aà)]-	63.33	20.01	583481.68	496
23	2,4,6-Decatrienoicacid,1a,2,5,5a,6,9,10,10a-octahydro-5,5a-dihydroxy -4-(hydroxymethyl)-1,1,7,9-tetramethyl-11-oxo-1H-2,8a-methanocyclo penta[a]cyclopropa[e]cyclodecen-6-ylester,[1ar-(1aà,2à,5á,5aá,6á,8aà,9à,10aà)]-	63.33	20.01	583481.68	496
24	Hexadecanoicacid,1a,2,5,5a,6,9,10,10a-octahydro-5,5a-dihydrox -4-(hydroxymethyl)-1,1,7,9-tetramethyl-11-oxo-1H-2,8a-methanocyclo penta[a]cyclopropa[e]cyclodecen-6-ylester,[1aR-(1aà,2à,5á,5aá,6á ,8aà,9à,10aà)]-	63.33	15.33	583481.68	586
25	(5á)Pregnane-3,20á-diol,14à,18à-[4-methyl-3-oxo-(1-oxa-4-azabutane-1,4-diyl)]-, diacetate	63.66	20.51	679314.05	489
26	Stearic acid,3-(octadecyloxy)propylester (CAS)	63.66	5.59	679314.05	594
27	Carda-16,20(22)-dienolide3-[(6-deoxy-3,4-O-methylenehexopyranos-2-ul os-1-yl)oxy]-5,11,14-trihydroxy-12-oxo-,(3á,5à,11à)-	64.21	13.94	601843.65	574
28	ANODENDROSIDE-E2	64.21	13.94	601843.65	574
29	9-Desoxo-9-xi-hydroxy-3,7,8,9,12-pentaacetateingol	64.62	9.71	533933.40	578
30	Estra-1,3,5(10)-triene-3,17-diol,2-bromo-1-methyl-,bis(trifluoroacetate),(17á)- CAS)	64.62	7.63	533933.40	556
31	13-Methyl-2-oxabicyclo[9.3.0]tetradec-1(11)-ene	64.62	5.39	533933.40	208
32	Cyclopentanepentanoicacid,2-(3-oxooctyl)-3,5-bis[(trimethylsilyl)oxy]-, methyl ester,[1R-(1à,2á,3à,5à)]-	65.52	8.29	3952855.46	486
33	TETRADECAMETHYLCYCLOHEPTASILOXANE	65.52	6.02	3952855.46	518
34	Narceine	66.71	9.89	504971.84	445
35	2-Isopropoxy-4,6-dichloro-1,3,5-triazine	66.71	7.06	504971.84	207
36	17á-Acetoxy-1',1'-dicarboethoxy-1á,2á-dihydro-17à-methyl-3'H-cyclo prop[1,2]-5à-androst-1-en-3-one	67.35	16.48	587962.88	502
37	Colchiceine	67.35	10.65	587962.88	385
38	4,5,6,7-Tetrahydroxy-1,8,8,9-tetramethyl-8,9-dihydrophenaleno[1,2-b] furan-3-one	67.35	6.13	587962.88	342

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ARABIC SUMMERY

لتأثيرات السامة لمستخلصات أوراق الدفلة واليوكا بواسطة طرق مختلفة ضد من البقوليات ومحتوياتها الكيميائية .

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نفذت الدراسة في الموسم الربيعي ٢٠١٥ تحت ظروف المعمل في معهد بحوث وقاية النباتات ،الدقى، جيزة، مصر. الهدف من الدراسة هو دراسة التأثيرات السامة لمستخلصات أوراق نباتات الدفلة واليوكا ضد حوريات من البقوليات وخصوبة أفراد المن ، دراسة الخواص الطبيعية الكيميائية وتعريف المكونات الكيميائية لمستخلصات الأوراق. استخلصت أوراق النباتات باستخدام الكلوروفورم والايثانول والماء . بينت النتائج ان مستخلصات أوراق نبات الدفلة كانت عالية السمية عن مستخلصات أوراق نبات اليوكا ، كما أن مستخلصات أوراق الدفله مع الكلوروفورم كانت أكثر فعاليه يليها الاستخلاص بالايثانول ثم الماء ضد حوريات من البقوليات حيث سجل استخلاص أوراق الدفلة بالماء اقل سمية . أوضحت النتائج أن مستخلصات أوراق نبات اليوكا مع الكلوروفورم سجلت اقل قيمة LC_{90s} , LC_{50s} بالمقارنة بالاستخلاص بالايثانول والماء . أما بخصوص تأثير المستخلصات على خصوبة أفراد المن أظهرت النتائج ان الاستخلاص للدفلة بالمذيبات الثلاثة قللت خصوبة الأفراد (عدد الذرية التي يتم وضعها) مقارنة مع مستخلص أوراق نبات اليوكا ، مستخلص الدفلة مع الكلوروفورم بتركيز ٨٠٠ جزا في المليون سجل اقل خصوبة يليه باقي التركيزات. وفى حالة دراسة الخواص الطبيعية والكيميائية بينت النتائج وجود اختلافات بين المستخلصات مع المذيبات المختلفة ، ففى حالة دراسة الرغوة، اختفت الرغوة في حالة الاستخلاص بالكلوروفورم والايثانول بينما سجلت رغوة مقدارها ٣٣ ، ٣ مل في حالة اليوكا والدفلة مع الماء فقط ، وفى حالة دراسة التوتر السطحي وجد ان استخدام الكلوروفورم والايثانول مع الاوراق سجل ٧٤و١٨ ، ١٨و٣١ ، ٥٤و١٩ ،٨١و٣١ مع (اليوكا + الكلوروفورم)، (اليوكا + الايثانول)، (الدفلة + الكلوروفورم)، (الدفلة + الايثانول) على التوالي لكن إضافة الماء إلى الدفلة واليوكا زودت التوتر السطحي ٤٨و٥٩ ، ١٤و٦٥ ، وبخصوص الاس الهيدروجيني تتراوح قيمته بين الحموضة المرتفعة والحموضة الخفيفة . وبخصوص نتائج تحليل العينات والتعرف على المكونات بينت نتائج التحليل المستخلصات على ٢٧ ، ٣٨ مركب في مستخلص اليوكا والدفلة على التوالي .

التوصيات : يوصى البحث باستخدام مستخلصات أوراق الدفلة واليوكا مع الكلوروفرم في مكافحة من البقوليات.