

(Culicidae) Pallens

(Chironomidae)

Culex pipiens

***Chironomus ninevah* Ahmad**

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Euphorbia peplus L.

Tilia chordate Miller

(*Haloxylon salicornicum*=) *Hammada salicornica* (Bunge) Botsch

Lc₅₀

Culex pipiens Pallens

Solanum carolinense L.

13.0 14.0

7.8 16.0

24 12

21.0 26.0

14.0 18.0

%28 36 41 56 (80)

80

%19 41

2 4 10 Lc₅₀

Chironomus ninevah Ahmad

Chironomus ninevah *Culex pipiens* :

Bioefficacy of Four Botanical Extracts Against *Culex pipiens* Pallens (Culicidae) Stages and Non-Targeted *Chironomus ninevah* Ahmad (Chironomidae)

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ABSTRACT

Bioinsecticidal activity of *Tilia chordata* Miller, *Euphorbia peplus* L., *Solanum carolinense* L. and *Hammada salicornica* (Bunge) Botsch (= *Haloxylon salicornicum*) were tested against various stages of *Culex pipiens* Pallens and *Chironomus ninevah* Ahmad 4th larvae. For 12 and 24 hrs. exposure times, L_{c50} were (16.0 , 7.5 ppm), (14.0 , 13.0 ppm), (18.0, 26.0 ppm) and (26.0, 21.0 ppm) caused by *T. chordata*, *E. peplus*, *H. salicornica* and *S. carolinense* respectively. Pupal mortality were 56 , 41 , 36 and 28% for *T. chordata*, *H. salicornica*, *S. carolinense*, and *E. peplus* at the later (80 ppm) applied concentration. Only, *T. chordata*, and *H. salicornica*, extracts were active on adult exclusion with mortality 41 and 19% at 80 ppm concentration.

On the other hand, its revealed that significant differences between L_{c50} of the targeted *C. pipiens* larvae and that of the non-targeted *C. ninevah* larvae with 10, 4 and 2 folds of the applied extracts ; *T. chordata*, *S. carolinense* and *H. salicornica*.

Keywords: *Culex pipiens* , *Chironomus ninevah*, Plant Extracts, Mortality.

(Sukumar *et al.*, 1999)

.(Zayed *et al.*, 2006) *Culex pipiens*

Mohan) (Sun *et al.*, 2006)

.(*et al.*, 2010

Al-Sharook *et al.*,)

(1991

.(Alouani *et al.*, 2009) (Khater and Shalaby, 2008)

(Populations)

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(Dharmagadda *et al.*, 2005) (El-Hag *et al.*, 2001)

Chironomus spp.

(Habitat)

Cranston,)

(Wais *et al.*, 1980) (Tidwed *et al.*, 1997) (1995

(Risk and El-Gehazaly, 1995)

(*Euphorbia peplus*)

(Gayar *et al.*, 1971)

Solanum carolinense

;1987)

(Hardin and Arena, 1975)

(Rechinger, 1964

Kutas *et al.*, (2003)

Tilia chordata

%49 *Sitona* spp.

%94

(*Haloxylon salicornicum*=) *Hammada salicornica*

Lepliotarsa decemlineata

(Al-Ahmadi and Salem, 1995)

Culex pipiens

(Chironomidae) *Chironomus ninevah*

C. pipiens

: .1

Chironomus ninevah

Culex pipiens

0.750

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.2

:

Solanum carolinense

Tilia chordata

-

50

Euphorbia peplus

35

100

0.250

500

25

24

48

1

.1

24

.()

1000

Stock Solution

:

.3

(35 25 15 5)

35

%100

C. pipiens

(80 60 40 20)

:

.4

C.

C. ninevah

(WHO, 2005)

pipiens

100

.....

250

25

75

12 :

12

%85

1±25

24 12

:

.1

24 12

1

35 25 15

Euphorbia

%100 35

Hammada salicornica

Tilia chordata

peplus

Solanum carolinense

%92.0 80.3

%98.7

24

25

%.54.7

%90.7

%97.2

(Lc₅₀)

(26.0)

18.0 16.0 14.0

24

(Lc₅₀)

14.0 21.0 13.0

.(1)

24

Culex pipiens

%100

.Shalaby *et al.* (1997)

Atlantia

Siragniname and Kalyanasundrama (2004)

monophylla

(Lc₅₀)

Khater and Shalaby (2008)

%100

Siragniname and Kalyanasundrama) Alouani *et al.*, (2009)

Jang *et al.*, (2002) (2004

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:

2

80 60

20 40

%41.3

25 20

%28

%65 64

2

80)

%13.3

%18.0 6.7

80 60

.(

40

80

%41

(%12)

60

2

80 60

%97 76

%49.3 60.0

(80)

.(Makkar *et al.*, 2007)

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:1

Culex pipiens

	F	Lc ₅₀				()	
		24	12	24	12		
Y = 0.000 ± 0.000 X	**71.29	13.0	14.0	0.0 ± 0.0 c (0.0)	0.0 ± 0.0 c (0.0)		<i>E. peplus</i>
				0.0 ± 0.0 c (0.0)	0.0 ± 0.0 c (0.0)	5	
				16.7 ± 3.2 b (66.7)	13.7 ± 4.0 b (55.5)	15	
				24.7 ± 0.6 a (98.7)	21.0 ± 5.3 a (84.0)	25	
				25.0 ± 0.0 a (100)	25.0 ± 0.0 a (100)	35	
Y = 3.364 ± 1.566 X	**808.3	7.8	16.0	0.0 ± 0.0 c (0.0)	0.0 ± 0.0 c (0.0)		<i>T. chordate</i>
				0.0 ± 0.0 c (0.0)	0.0 ± 0.0 c (0.0)	5	
				3.3 ± 0.5 b (13.3)	3.3 ± 0.5 b (13.3)	15	
				24.3 ± 0.6 a (97.2)	24.3 ± 0.6 a (97.2)	25	
				25.0 ± 0.0 a (100)	25.0 ± 0.0 a (100)	35	
Y = 7.317 ± 0.718 X	**469.30	14.0	18.0	0.0 ± 0.0 f (0.0)	0.0 ± 0.0 f (0.0)		<i>H. salicornica</i>
				0.0 ± 0.0 f (0.0)	0.0 ± 0.0 f (0.0)	5	
				14.3 ± 1.5 e (57.3)	8.3 ± 1.5 d (33.3)	15	
				22.7 ± 0.6 d (90.7)	21.0 ± 1.7 b (84.0)	25	
				25.0 ± 0.0 a (100)	25.0 ± 0.0 a (100)	35	
Y = 1.586 ± 1.998 X	**98.89	21.0	26.0	0.0 ± 0.0 e (0.0)	0.0 ± 0.0 e (0.0)		<i>S. carolinense</i>
				0.3 ± 0.6 e (1.3)	0.0 ± 0.0 e (0.0)	5	
				7.0 ± 2.0 c (28.0)	3.3 ± 0.6 d (13.3)	15	
				13.7 ± 1.2 b (54.7)	11.3 ± 3.8 b (45.3)	25	
				23.0 ± 1.7 a (92.0)	20.7 ± 0.6 a (80.3)	35	

25

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. 0.05

(block)

. Mortality

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Culex pipiens

:2

F			()	
77.29**	0.0 ± 0.0 c (0.0)	0.0 ± 0.0 c (0.0)	20	<i>E. peplus</i>
	0.0 ± 0.0 c (0.0)	0.3 ± 0.6 c (1.3)	40	
	0.0 ± 0.0 c (0.0)	5.7 ± 1.2 b (22.8)	60	
	0.0 ± 0.0 c (0.0)	7.0 ± 1.0 a (28)	80	
82.02**	0.0 ± 0.0 d (0.0)	0.0 ± 0.0 d (0.0)	20	<i>S. carolinense</i>
	0.0 ± 0.0 d (0.0)	2.7 ± 1.2 c (10.7)	40	
	0.0 ± 0.0 d (0.0)	7.0 ± 1.0 b (28.0)	60	
	3.3 ± 1.2 c (0.0)	9.0 ± 0.0 a (36.0)	80	
129.83**	0.0 ± 0.0 e (0.0)	0.0 ± 0.0 e (0.0)	20	<i>H. salicornica</i>
	0.0 ± 0.0 e (0.0)	0.0 ± 0.0 e (0.0)	40	
	1.7 ± 0.6 d (6.8)	8.7 ± 0.6 b (34.7)	60	
	4.7 ± 1.5 c (18.7)	10.3 ± 0.6 a (41.3)	80	
64.83**	0.0 ± 0.0 e (0.0)	5.0 ± 1.0 d (20.0)	20	<i>T. chordate</i>
	3.0 ± 1.0 d (12.0)	6.3 ± 3.1 c (25.0)	40	
	3.0 ± 0.0 d (12.0)	16.0 ± 2.0 a (64.0)	60	
	10.3 ± 0.6 b (41.3)	14.0 ± 1.0 a (56.0)	80	

25

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. 0.05

(block)

. Mortality

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Chironomus ninevah

3

24 12 80 60 40 20

C. pipiens

12

60 40

20

%100

80

%20 26 100

. 12

24

12

24

200 100 41 LC₅₀

.(1)

24

LC₅₀

10 4

24

12

(Jacobson, 1975)

Culex pipiens

:3

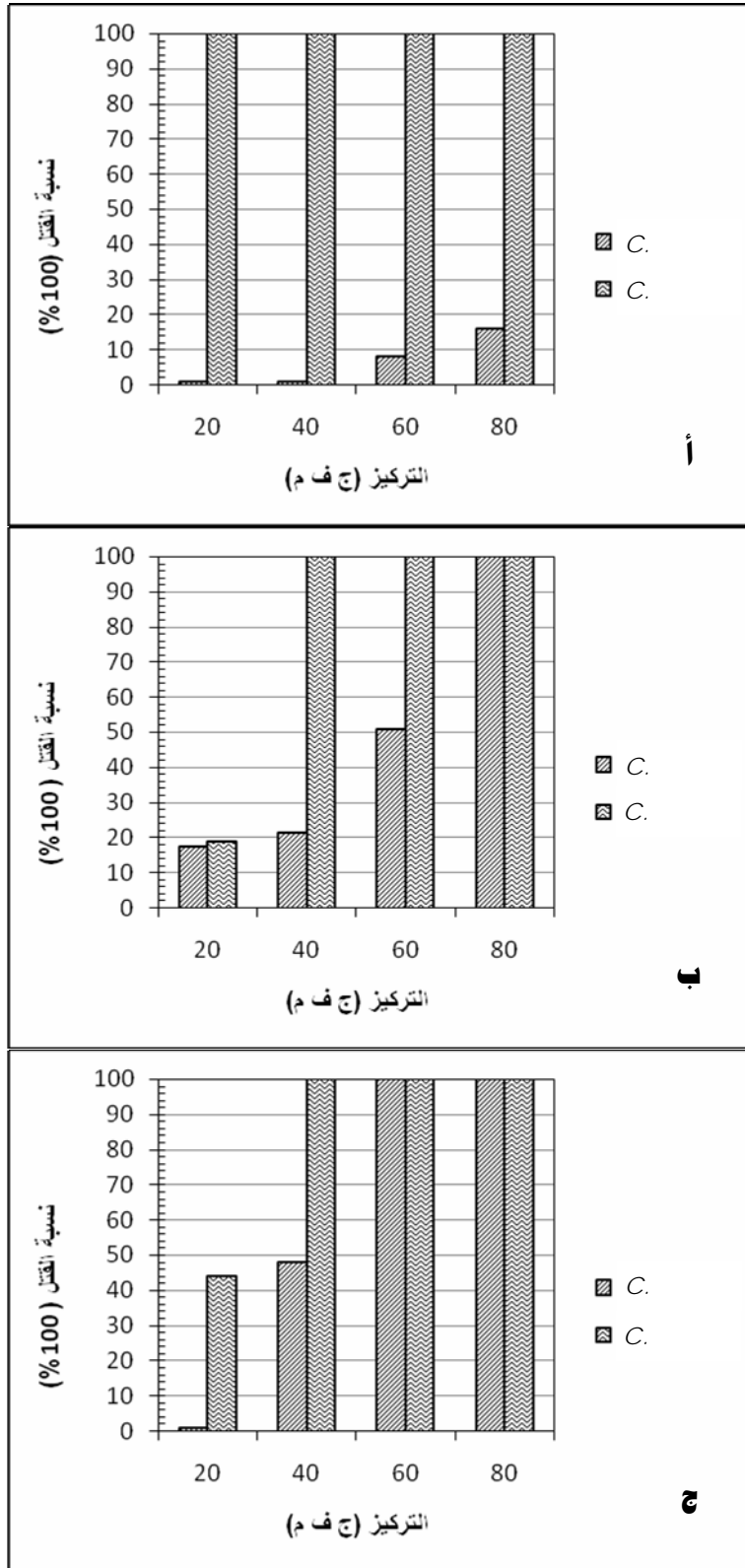
Chironomus ninevah

	F	() Lc ₅₀					()	
Y = 3.92 ± 0.878 X	2158.3**	27.0		0.0 ± 0.0 e (0.0)	6.0 ± 1.0 d (24.0)	12	20	<i>H. salicornica</i>
				0.0 ± 0.0 e (0.0)	25.0 ± 0.0 a (100)		40	
				0.0 ± 0.0 e (0.0)	25.0 ± 0.0 a (100)		60	
				0.0 ± 0.0 e (0.0)	25.0 ± 0.0 a (100)		80	
		41.0	21.0	0.0 ± 0.0 e (0.0)	11.0 ± 1.0 c (44.0)	24	20	
				12.0 ± 1.0 b (48.0)	25.0 ± 0.0 a (100)		40	
				25.0 ± 0.0 a (100)	25.0 ± 0.0 a (100)		60	
				25 ± 0.0 a (100)	25.0 ± 0.0 a (100)		80	
Y = 1.44 ± 1.052 X	390.2**	27.0		0.0 ± 0.0 d (0.0)	5.0 ± 1.0 c (20.0)	12	20	<i>S. carolinense</i>
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		40	
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		60	
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		80	
		100.0	26.0	4.3 ± 0.6 c (17.3)	4.7 ± 1.0 c (18.7)	24	20	
				5.3 ± 0.6 b (21.3)	25.0 ± 0.0 a (100)		40	
				12.7 ± 1.1 b (50.3)	25.0 ± 0.0 (100)		60	
				25.0 ± 0.0 a (100)	25.0 ± 0.0 a (100)		80	
Y = 2.39 ± 0.767 X	3788.4**	20.0		0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)	12	20	<i>T. chordate</i>
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		40	
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		60	
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		80	
		200.0	20.0	0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)	24	20	
				0.0 ± 0.0 d (0.0)	25.0 ± 0.0 a (100)		40	
				2.0 ± 1.0 c (8.0)	25.0 ± 0.0 a (100)		60	
				4.0 ± 1.0 b (16.0)	25.0 ± 0.0 a (100)		80	

.0.05

(block)

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Culex pipiens

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24 *Chironomus ninevah*

Solanum carolinense

Titia chordata

Hammada salicornica

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Chironomus ninevah

.(1987)

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