Available online at www.scholarsresearchlibrary.com

Scholars Research Library

Annals of Biological Research, 2013, 4 (1):285-288
(http://scholarsresearchlibrary.com/archive.html)

Annals of Biological Research
Scholars Research Library
ISSN 0976-1233
CODEN (USA): ABRNBW

Effect of different parts of plants extracts on the hatching of *Meloidogyne incognita.*

Tanweer Azam[1,2] *, and Hisamuddin[2]

[1]Department of Horticulture and Plant Science, College of Agriculture and Veterinary Medicine, Jimma University, Ethiopia.
[1,2]Department of Botany, Aligarh Muslim University Aligarh-202002.India

---

ABSTRACT

Root-knot nematodes, the major limiting factors affecting the plant growth and yield are mostly controlled by synthetic pesticides. The natural products obtained from plants and their parts are the safe alternatives. In variety of plants Nematicidal components have been identified and successfully tested. This work was carried out to evaluate the potential of aqueous extracts from Carica papaya, Cassia tora and Jatropha curcas on hatching of eggs of the root-knot nematode, Meloidogyne incognita. From these plants water extracts of leaves, stem and seed were obtained from each extracts five dilution were prepared. Rate of hatching was slow extract in seed extracts then in leaf and stem extracts and was slowest in seeds extracts of Cassia tora.

Key Words: Root-knot nematode, (*Meloidogyne Incognita*), Plant part extract *(Carica papaya, Cassia tora* and *Jatropha curcas)*

INTRODUCTION

The root knot of nematode *Meloidogyne incognita* is one of the most important and widespread plant parasitic nematode occurring through out the country and attacking various economically important crop species. It has been reported that average yield loss of world's major crop due to plant-parasitic nematodes is 12.3% (Sasser, 1998). Chemical that are being used for controlling plant parasitic nematode are costly and hazardous in nature. So application of plant extracts is needed, several workers have been reported different plant for their nematicidal properties against plant parasitic nematodes which were used in soil amended or as extracts. (Prakash and Rao, 1997; Muhammad *et al.*, 2001; Das and Mishra, 2003). Prasad *et al.*, (2002) evaluated various botanicals and recorded 100% mortality of second stage juvenile of *Meloidogyne incognita* by *Clatropis procera* and *Datura stromonium* in in-vitro conditions. Sukul *et al;* (2001) reported that application of plant extracts significantly increased the plant growth and decreased the nematode population in root and soil. (Chitwood, 2002) Nematicidal photochemical are generally safe the environment and humans.

MATERIALS AND METHODS

Collection of egg masses:
Root-knot nematode *Meloidogyne incognita* infected egg plants were collected from the village of Narayan Pur, Aligarh (U.P), India. The roots were infested with high population of nematode. Pure culture of *M. Incognita* was maintained in green house of the Department of Botany, Aligarh Muslim University Aligarh and *Solanum melongena (eggplant)* using single egg masses. The egg masses were stored under refrigeration until use.

Collection of Plant Material,
The seeds leaf and stem part of *Carica papaya*, *Cassia tora* and *Jatropha curacas* were selected for study. These were collected from the University Campus.

Preparation of Extracts.
Fresh plant parts (Leaves, Stems and Seeds) of *C. papaya*, *C. tora* and *J. curcas* were, washed with running tap water followed by sterilized distilled water. Twenty grams of each botanical was grind separately in grinder, the powder was added in 100ml distilled water, the botanicals were filtered in muslin cloth and again filtered in Whatman filter paper No1. The filtrate was designated as standard solution from which other dilution was made (10%, 30%, 50%, 70% and 90%) by adding required amount of distilled water. Standard solution and their diluted solution were kept under refrigerator to avoid bacterial or fungal contamination.

To study the effect of botanicals on hatching, five ml of each dilution was added into the petridishes containing 100 ml of distilled water. One set containing only distilled served as control. In each Petri dish, five egg masses were placed. All the set were allowed to incubate at 28±1°C. The numbers of Juveniles hatched were recorded at 12, 24, 48, 72 and 120 h intervals of time

RESULTS AND DISCUSSION

The results indicated that the eggs of *Meloidogyne incognita* hatched uniformly in control that in the extracts. Egg hatching was affected in the extracts of the plants being faster in diluted extracts that in concentrated. The rate of hatching was slow in seed extracts as compared to leaf and stem extracts. It was noticed that hatching rate was much slow in the extracts of *Cassia tora* than in other plants.

The rate of egg hatching in the extracts of stem was higher than leaf and seed extracts. Extracts of *C. tora* appeared to be more inhibitory than of *C. papaya* and *J. curcas.* The hatching rate declined with an increase in concentration of the extracts. Highest number of Juveniles hatched on the fifth day was in the stem extracts of *C. papaya* follow by *J. curcas* and *C. tora* . In stem extracts of *C .tora* was not slow. In the leaf extracts of *C. tora* hatching was not observed after 12h and 90% percent concentration and in *J. curcas* it occurred in all the concentration .After 120h the number of juveniles' hatched was highest in the *J .curcas* and leaf extracts and lower in *C. tora.* Egg hatching after 12h was most slow in seed extracts of *C. tora* the juveniles hatched in different dilution was lower in *C. tora* than in other plants at respective. From these finding in might be inferred that *C. tora* botanicals are more inhibitory than *C. papaya* and J. *curcas.* The inhibitory effect might to be attributed to the chemicals present in leaves, stems and seeds. Which probably different into the eggs and caused death of the first stage juvenile. The extracts contain various kind of alkaloids, flavnoids, saponoid , amid sets. Which interfere in the metabolic reaction the nematode in or out of the egg shell. Saravanapriya and Sivakumar (2005) have reported that seed extract of *Areca catechu*, leaf extracts of *Tagetes erecta*, *Azadirachta indica* and *Calotropis gigantea* caused significant inhibition of egg hatch at lower concentration of 0.1%. Soil application with 15 % leaf extract of neem showed maximum growth parameters and reduced nematode population (Umamaheswari *et al.*, 2005). *Azdirachta*, Aak, and *Parthenium* were found effective in managing the root-knot nematode in tomato nursery and thereby increasing the production of transplantable tomato (Patel *et al.*, 2006).

Plant	Plant Part	Duration in hours	Control	Percentage of hatching in dilutions					Mean
				10%	30%	50%	70%	90%	
Carica papaya	Leaves	12	31	4.90	3.20	2.80	2.20	00	2.62
		24	35	9.10	7.00	5.20	3.30	2.10	5.34
		48	41	17.30	15.10	11.30	13.20	8.10	13.00
		72	49	26.20	20.10	18.30	16.20	13.40	18.84
		120	56	35.10	32.90	28.40	24.60	20.80	28.36
Carica papaya	Stems	12	31	6.70	5.10	4.30	3.90	2.60	4.50
		24	35	13.40	11.20	9.20	8.60	7.10	9.90
		48	41	23.20	21.30	19.10	18.10	15.30	19.40
		72	49	41.20	39.10	33.20	30.10	26.30	33.90
		120	56	60.8	57.90	55.10	51.50	48.40	54.70
Carica papaya	Seeds	12	31	3.10	2.20	1.00	00	00	1.30
		24	35	8.30	6.10	4.80	3.10	2.0	4.80
		48	41	13.10	11.30	10.10	9.20	6.50	10.04
		72	49	23.50	20.40	19.60	17.90	10.10	18.30
		120	56	32.10	29.80	27.30	25.10	23.90	27.64
Cassia tora	Leaves	12	31	3.30	2.40	1.10	00	00	1.36
		24	35	7.60	5.90	4.10	2.50	1.30	4.28
		48	41	14.30	12.10	10.80	9.40	6.10	10.50
		72	49	21.10	18.30	16.10	14.10	11.00	16.10
		120	56	26.20	24.40	20.65	18.45	16.92	21.32
Cassia tora	Stems	12	31	4.90	4.10	3.80	3.50	1.80	3.60
		24	35	8.30	6.10	4.80	2.10	1.30	4.52
		48	41	15.10	14.20	12.10	10.90	6.70	11.80
		72	49	22.30	18.40	17.30	16.10	10.30	16.88
		120	56	40.50	39.80	37.10	34.20	30.90	36.50
Cassia tora	Seeds	12	31	2.0	1.50	00	00	00	0.70
		24	35	5.0	4.80	4.0	2.10	1.50	3.40
		48	41	9.10	8.30	7.90	6.80	5.30	7.50
		72	49	18.30	17.10	16.80	15.40	8.30	15.20
		120	56	25.20	23.90	20.10	18.40	16.70	20.80
Jatropa carcas	Leaves	12	31	3.90	3.00	1.50	0.9	0.9	2.04
		24	35	8.30	6.10	4.80	2.1	1.3	4.50
		48	41	13.10	11.30	10.1	9.2	6.5	10.04
		72	49	22.30	19.10	16.90	15.1	12.5	17.18
		120	56	33.60	29.90	25.10	20.7	16.90	25.24
Jatropa carcas	Stems	12	31	5.20	4.60	4.10	3.10	2.10	3.80
		24	35	10.10	9.60	8.0	7.10	5.80	8.12
		48	41	18.10	17.20	15.10	14.50	12.10	15.36
		72	49	36.30	34.10	30.10	27.10	10.70	27.56
		120	56	44.10	41.50	39.40	36.80	30.90	38.54
Jatropa carcas	Seeds	12	31	2.90	2.00	00	00	00	0.90
		24	35	6.10	5.50	4.10	2.50	1.30	3.90
		48	41	10.20	9.70	8.50	7.10	5.40	8.20

Acknowledgment
The authors are thankful to Chairman, Department of Botany, Aligarh Muslim University, Aligarh-India, for providing necessary facilities to complete this work.

REFERENCES

[1] A Prakash; J Rao. Botanical pesticides in agriculture. CRC, Lewis Publishers Boca Raton, New York, London, Tokyo. 461, **1997**.
[2] B Saravanapriya; M.Sivakumar. *Natural Prod. Radi*. **2005**, 4, 158 – 161.
[3] DJ Chitwood. *Ann.Rev. Phytopathol.* **2002**, 40, 221-249.
[4] D Prasad; D Ram; I Ahmad. *Ann. Pl. Protection. Sciencec.* 2002, 10,360-364.
[5] Das; SD Mishra. *Ann.Pl. Protec. Sci.* **2003**, 11, 110-115.
[6] JN Sasser. A perspective on nematode problems worldwide. Sasena, M. C., R. A. Sikora and Srivastava (Eds.), Nematode Parasitic to Cereals and legumes in temperate Semi Arid Regions, ICARDA, Syria .PP: 8-12, **1998**.
[7] NC Sukul; SP Sinhababu; SC Datta; A Sukul. *Journal of Allelopathy*. **2001**, 8, 65-72.
[8] R Umamaheswari; R Sundarbabu; S Ramakrishanan. *Ind. J. Nematol*. **2005**, 35, 127- 129.
[9] SK Patel; HV Patel; AD Patel. *Ind. J. Nematol*. **2006**, 36: 307-308.
[10] ZK Muhammad; S,Ghulam; M.Sher. *J. Agric.Tropics and Subtropics*. **2001**, 102,143-146.