Nematicidal Properties Of Manilkara hexendra

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Abstract

Nematicidal properties of extracts of plants are collected in and around from local forest vegetation .The plant barks were shade dried and powered .the plant extracts was prepared by soxhlet apparatus using ethanol as solvent . Extract were dissolved in distilled water to prepared different concentration of test solution. The test solution would be distributed in series of cavity blocks in which mellydogynee incognita larvae would obtained nematode mortality would be obtained at varying the concentration of solution (Chatterjee and Sukul,1980)

Key Word*: nematicide, Melydogynee,Manilkarahexendra ethanol extract*

INTRODUCTION

Plant parasite nematode are responsible for 10-40 % loss yields of various kind of field and fruit crops.Though effective in reducing nematode population are not always cost effective. Moreover, their often phytotoxic(Rodrigueez-Kabana et al..,1985) cause environmental pollution endangering the life of many animals including fish (Loria et al..,1986). Thus there remains aneed for effective nematicide,which would be cheap not phyto toxic, and relatively less persistence in soil, The prospect of nematicide among heterocyclic compound is favourable.

Overall, 50% of global yield loss is guessed to be due to root knot nematodes, which may be much higher in the tropics and the sub tropics .all though world wide in distribution the root knot nematodes caused great damaged in the tropics .Sasser(1989)estimated losses of 17-29%,and18-33% and24-38% on egg plant, melon and tomato respectively throughout the tropics.

In India over 350 plant species are known as hosts of *Manilkara*. Spp.(Sen and Dasgupta,1982); Melydogynee incognita alone infecting about 250 and M javanica infects bout 150 genera of plant .Frequently of M. SPP. In soil ranges between 17-44% in different cases.

In order to solve the problem of nematode disease, different methods have been developed to control the phytophagus nematode. The problem of assessment of the actual loss caused by them till draws little attention and extensive work and some sophisticated technique are needed to solve it. This .may be due to that though nematodes are mankinds enemy next to insects yet their activities apperntly less spectacuiar.Sustained efforts have therefore been made to find out suitable measures of controls of nematodes The members of Meloidogyneegoidi(1982) are the most well known and the most experimented of all plant pathogenic nematodes. This is the mostimportentnematods problem in tropical and subtropical countries.

PLANT DESCRIPTION

Manilkarahexendra is aspecies in the tribe sapoteae in the sapotaceae family that is native to much of south asia,Indian sub continent, Bangladesh, Sri Lanka

Manilkara is a slow growing ever green tree that grows in tropical forests. It grows 40 to80 feet tall and 1to 3 meters in circumference .The bark is grayish black and rough. The wood is very hard,heavy durable,weighing 70pound per cubic foot. The bark color ranges from dark pink to dark purple.It contains resinous substance which is used in various biological aspects. The present study to control nematode population is performed by ethanol extract of this plant bark.

NAME OF PLANT: *Manilkarahexendra*

Plant part to be used: Bark

Systematic position:

Kingdom: Plantae

Unranked:Angiosperm

Unranked: Eudicods

Unranked:Asterids

Order: Ericales

Family: Sapotaceae

Genous:Manilkara

SPECIES: M. Hexendra

Binomial name

Manilkarahexendra

(Roxb.)Dubard

Fig: Immage of *Manilkarahexendra*

Material and method:

Manilkarahexendra barks were used .The plants were collected in an around from Jhargram sub division; the collected barks were shade dried and powdered with the help of grinder. The powder was extracted by the help of soxhlet apparatus with the help of ethanol as a solvent the extracted material was then dissolved in distilled water to prepare different concentration of test solution(5mg/ml,10mg/ml,15mg/ml) respectively.

Melydogyneeincognita were collected by sieving and modified Baermannmethod(Christie and Perry,1951)

Effect of extract on melydogynee was evaluated by larval mortality, replicate 3 times in cavity blocks. The blocks were kept in room temperature. Nematode mortality would be determined by prolonged immobility of nematodes after their transference from test medium to water (Das and Sukul,1988); larval mortality would be confirmed by microscopic study.

RESULT

Different concentration of ethanol extract is applied to melydogynee larvae. Same concentration of Carbofuran is used as test compound to compare the nematicidal activity of M hexendra. The result shows that the decrease of concentration increases death and paralysis time.

Effect of Manilkarahexendraonmelydogynee

Dose(mg/ml)	Paralysis time(min)	Death time(min)
15	9.5	19.33
10	11.91	21.16
5	12.08	23.75

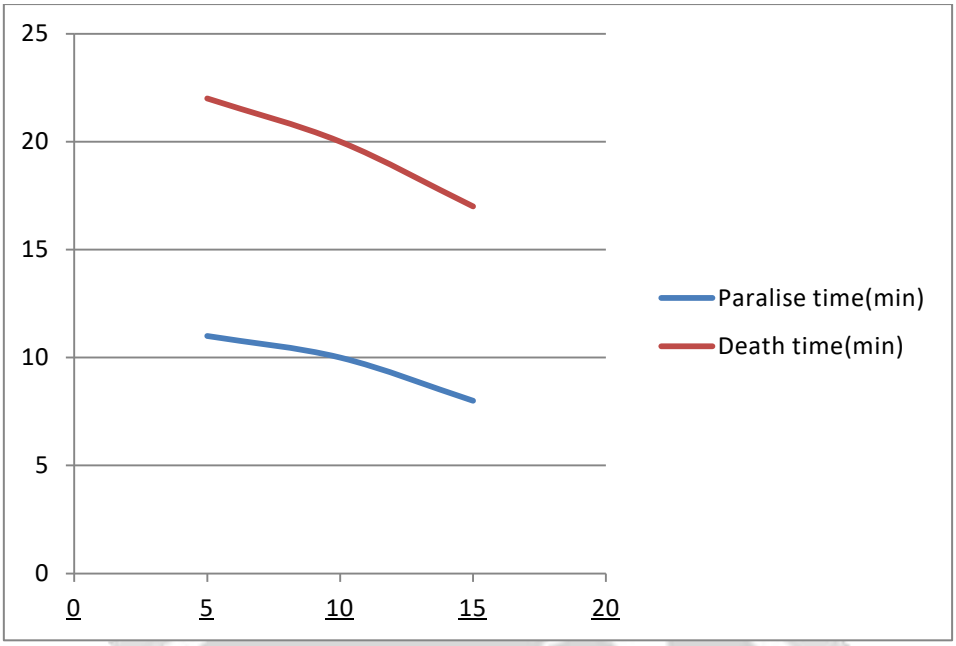

Figure 1

Effect of Carbofuranonmelydogynee

Dose(mg/ml)	Paralysis time(min)	Death time(min)
15	8	17
10	10	20
5	11	22

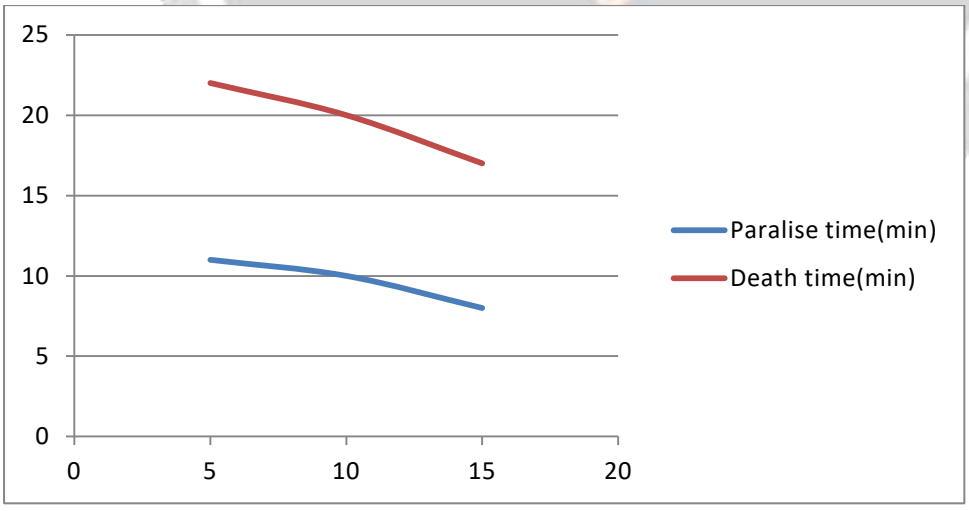

Figure 2

The above experiment suggests that both plant extract and carbofuran more or less take same time for paralysis / death of melydogynee.But carbofuran is achemical compund, and its use involves some problems. These include phytotoxicity (Roberts et al., 1988; Baujard et. al. ,1989), ground water contamination (Loria et al., 1986 and environment pollution (Landau and Tucker, 1984). Another hazard is residual toxicity.

On the other hand ethanol extract of manilkarahexendra have no such problem. So we use one of these concentrations probably 5mg/ml to control nematode population.

Significance:

Applications of chemical nematicides, though effective in some cases, are not always cost effective and moreover, their use involves some problems. These include phytotoxicity (Roberts et al., 1988; Baujard et. al. ,1989), ground water contamination (Loria et al., 1986 and environment pollution (Landau and Tucker, 1984). Another hazard is residual toxicity. Aldicarb at 1ppm level in water could suppress immune function in mice (Olsen et al., 1987). Residues of aldicarb were reported changing the activity of enzyme like oxidase and esterase, nematodes were known to develop resistance againstaldicarb and oxamyl after a long time exposure (Below et al.,, 1987). Carbofuran is reported to inhibit seed germination and reduce seedling height in some plants (Benjamini,1986),reduce nodulation in beans(Karanja et al...,1982) affects the lands and in biotic community(Broder,1987) and also cause human sterility(Termoto and shirasu,1989). Traditional chemical control using chemical nematicides available for the last few decades is in declining status internationally (Osman and Viglierchio,1988).

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