RESULTS AND DISCUSSION

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Table - II : Toxicity of different fractions to the fungus *Aspergillus spp.*

Sr. No.	Plant	Fraction	Zone of inhibition in mm		
			500ppm	250ppm	100ppm
1.	Std. Dithane M-45	-	40	-	-
2.	Control (Solvent)	-	00	00	00
3.	*Ichinocarpus frutescenes*	I	11	10	4
		II	8	13	15
4.	*Homononia riparia*	I	16	15	10
		II	20	13	8
5.	*Laportea interrupta*	I	10	10	10
6.	*Vernonia anthelmintica*	I	8	8	5
		II	16	15	15
7.	*Solanum surettense*	I	20	15	15

Table - III : Toxicity of different fractions to the fungus *Penicillium spp.*

Sr. No.	Plant	Fraction	Zone of inhibition in mm		
			500ppm	250ppm	100ppm
1.	Std. Dithane M-45	-	38	-	-
2.	Control (Solvent)	-	00	00	00
3.	*Ichinocarpus frutescenes*	I	14	10	8
		II	11	12	15
4.	*Homononia riparia*	I	00	00	00
		II	13	13	15
5.	*Laportea interrupta*	I	10	8	10
6.	*Vernonia anthelmintica*	I	10	8	6
		II	11	14	10
7.	*Solanum surettense*	I	15	11	8

Table - IV : Toxicity of different fractions to the fungus *Cercospora arachidicola*.

Sr. No.	Plant	Fraction	Zone of inhibition in mm		
			500ppm	250ppm	100ppm
1.	Std. Dithane M-45	-	39	-	-
2.	Control (Solvent)	-	00	00	00
3.	*Ichinocarpus frutescenes*	I	20	10	10
		II	12	12	10
4.	*Homononia riparia*	I	00	00	00
		II	10	10	10
5.	*Laportea interrupta*	I	10	10	9
6.	*Vernonia anthelmintica*	I	20	20	15
		II	12	8	12
7.	*Solanum surettense*	I	12	10	8

Table - V : Toxicity of different fractions to the bacteria *Xanthomonas citri*.

Sr. No.	Plant	Fraction	Zone of inhibition in mm		
			500ppm	250ppm	100ppm
1.	Std. Dithane M-45	-	45	-	-
2.	Control (Solvent)	-	00	00	00
3.	*Ichinocarpus frutescenes*	I	20	15	12
		II	26	20	20
4.	*Homononia riparia*	I	13	10	9
		II	13	17	20
5.	*Laportea interrupta*	I	30	20	20
6.	*Vernonia anthèlmintica*	I	26	21	16
		II	25	19	10
7.	*Solanum surettense*	I	11	16	16

Table - VI : Antifeedant activity of plant extract against fourth larval instar of Red hairy catterpillar, *Amsacta moori*.

Sr. No.	Plant	Fraction	Wt. of leaves before testing in gms.			Wt. of leaves after testing in gms.			No. of excreta pellets		
			500ppm	250ppm	100ppm	500ppm	250ppm	100ppm	500ppm	250ppm	100ppm
1.	Control (Solvent)	-	0.225	--	--	00	--	--	240	--	--
2.	*Ichinocarpus frutescenes*	I	0.247	0.175	0.153	0.175	00	00	6	122	148
		II	0.145	0.160	0.221	0.140	0.158	0.216	3	3	2
3.	*Homononia riparia*	I	0.148	0.153	0.200	0.142	0.149	00	1	1	146
		II	0.177	0.154	0.203	0.147	0.124	0.197	7	7	2
4.	*Laportea interrupta*	I	0.240	0.168	0.211	0.237	0.166	0.210	00	00	00
5.	*Vernonia anthelmintica*	I	0.217	0.221	0.218	0.195	0.100	0.95	3	225	230
		II	0.160	0.173	0.168	0.141	00	00	2	155	231
6.	*Solanum surettense*	I	0.179	0.177	0.290	0.125	0.131	0.215	10	10	?

Table - VII : Antifeedant activity of plant extract against fourth larval instar of Gram pod borer, *Helicoverpa armigera* (Hubner).

Sr. No.	Plant	Fraction	Wt. of leaves before testing in gms.			Wt. of leaves after testing in gms.			No. of excreta pellets		
			500ppm	250ppm	100ppm	500ppm	250ppm	100ppm	500ppm	250ppm	100ppm
1.	Control (Solvent)	-	0.804	--	--	0.200	--	--	338	--	--
2.	*Ichinocarpus frutescenes*	I	1.240	0.700	0.850	1.221	0.462	0.700	8	120	180
		II	0.110	0.734	0.853	0.736	0.730	0.606	222	00	286
3.	*Homononia riparia*	I	0.840	1.212	0.835	0.824	1.104	0.778	10	10	60
		II	0.926	1.021	0.840	0.900	1.000	0.838	15	19	7
4.	*Laportea interrupta*	I	0.760	1.005	1.283	0.759	1.000	1.279	00	00	00
5.	*Vernonia anthelmintica*	I	0.778	1.028	1.204	0.740	0.720	0.628	20	215	264
		II	1.313	0.833	0.769	1.310	0.829	0.762	00	00	00
6.	*Solanum surettense*	I	0.845	1.015	1.015	0.278	0.464	0.800	200	167	104

The results incorporated in the Table - II indicate that the antifungal activity of the plant extracts against *Aspergillus spp.* as compared with std. Dithane M-45 a commercial fungicide.The std. Dithane M-45 shows maximum inhibibition i.e. about 40 mm.In control there was no zone of inhibition.In case of *Ichinocarpus frutescens*, fraction I showed maximum inhibition at higher cocentration i.e. at 500ppm while in fraction II the maximum inhibition was observed at lower concentration i.e. at 100ppm. In *Homononia riparia*, fraction -I and fraction II showed maximum inhibition at higher concentration. The extract of *Laportea interrupta* shows same zone of inhibition in each concentration. In case of *Vernonia anthelmintica* at higher concentration maximum inhibition was observed in I and II fractions. The extract of *Solanum surettense* showed maximum activity at 500 ppm.

The results in Table III shows the antifungal activities against *Penicillium spp.* The results were compared with Std.Dithane M-45 showing the maximum inhibition of 38 mm. The extract of *Ichinocarpus frutescens* showed maximum inhibition at 500 ppm in fraction-I while fraction-II showed maximum inhibition at lower concentration i.e. at 100 ppm. In *Homononia riparia*, fraction I showed no zone of inhibition while fraction II showed maximum inhibition at 100ppm. The extract of *Laportea interrupta* showed maximum inhibition at 500 ppm and 100 ppm. In *Vernonia anthelmintica* fraction I showed maximum activity at higher concentration i.e.at 500 ppm while fraction-II shows maximum activity at 250 ppm.In case of *Solanum surettense* maximum inhibition was observed at 500 ppm.

The results embodied in the Table-IV showed better antifungal activity of plant extracts

against the fungus *Cercospora arachidicola* as compared with std.Dithane M-45 and the std. compound showed the maximum inhibition zone i.e. about 39 mm. The *Ichinocarpus frutescens* extracts fraction - I and fraction -II exhibited maximum inhibition at higher concentration i.e. at 500 ppm.In case of *Homononia riparia* fraction I showed no zone of inhibition while in fraction II the zone of inhibition observed was 10 mm at all the concentration. In case of extract of *Laportea interrupta* the maximum inhibition were observed at 500 and 250 ppm. *Vernonia anthelmintica* fraction-I showed the maximum zone of inhibition 20 mm at 500 ppm and 250 ppm while fraction-II exhibited the same zone of maximum inhibition at 500 ppm as well as 100 ppm. In *Solanum surettense* maximum inhibition was observed at higher concentration i.e. at 500 ppm.

Table - V indicates that the antibacterial activity of plant extract against the bacteria *Xanthomonas citri*. The results were compared with std. Conpound bactericide Gentamicin sulphate, the zone of inhibition observed in Gentamicin sulphate was 45 mm. The control of solvent showed no zone of inhibition. In case of *Ichinocarpus frutescens* fraction - I showed the maximum inhibition of about 20 mm at 500 ppm while fraction II showed maximum inhibition of 26 mm at 500 ppm. In *Homononia riparia* fraction I exhibited maximum inhibition at 500 ppm while fraction II showed same inhibition at 250 ppm. In the extract of *Laportea interrupta* the maximum inhibition zone of 30 mm observed at higher concentration. In *Vernonia anthelmintica* fraction-I and fraction-II showed promising inhibition at higher concentration i.e. at 500 ppm, where as *Solanum surettense* showed same inhibition at 250 and 100 ppm respectively.

Table - VI indicates that the antifeedant activity of the plant extract against fourth instar larvae of Red hairy catterpillar, *Amsacta moori*. The antifeedant activity of plant extract recorded by counting the excreta pellets voided by the larvae after eating the leaf disc previously spread with the plant extract and compared with the control. The excreta pellets voided by larvae in control observed were about 240. The weights of the leaf disc was also recorded before testing and after testing for water loss and also for the amount of leaves consumed by tested larval species.

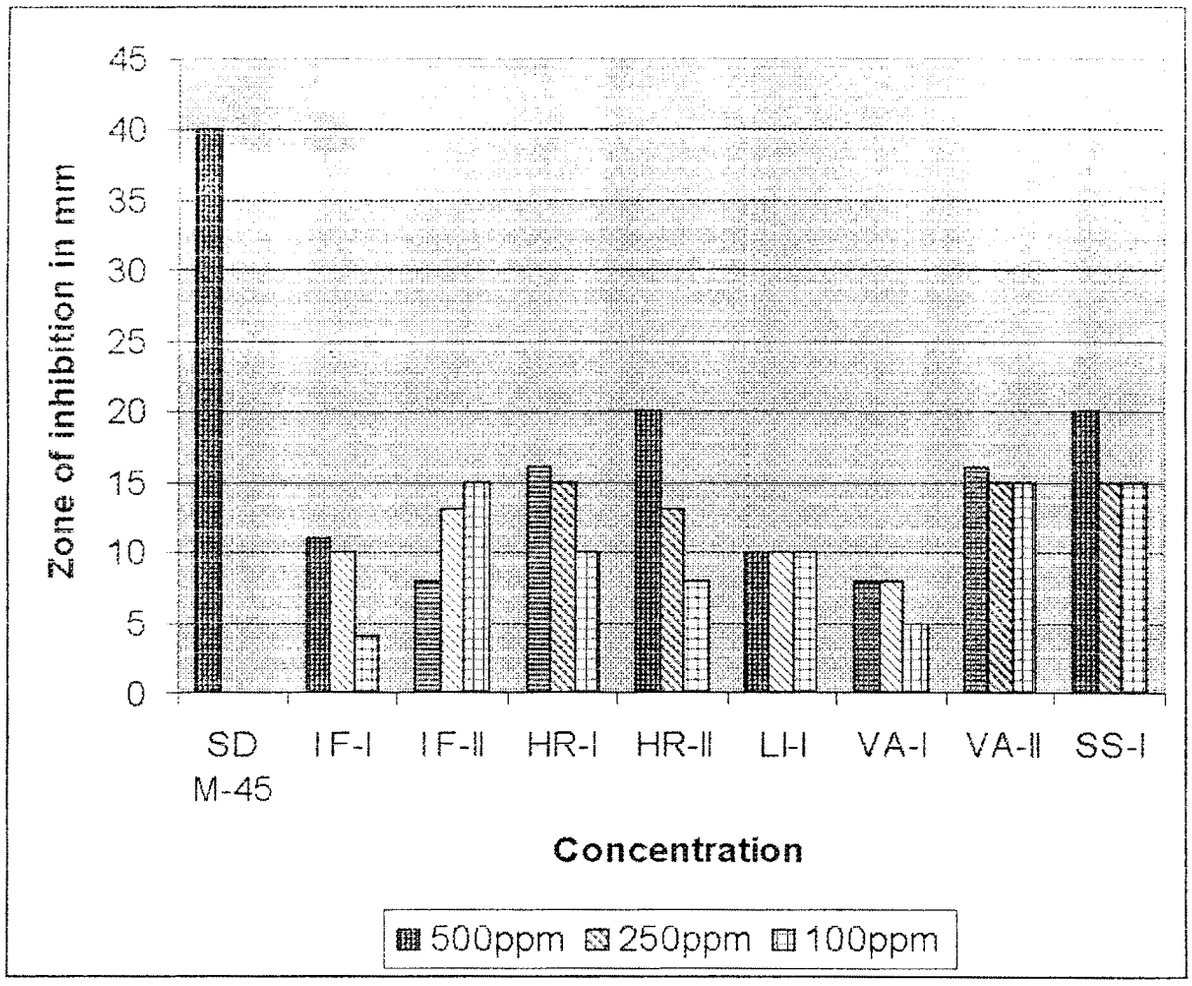
In *Ichinocarpus frutescens* fraction-I showed more no.of excreta pellets at 100 ppm, while lower no. of excreta pellets were observed at 500 ppm. In case of fraction II less no. of excreta pellets were observed meaning thereby less consumption of plant leaves. The fraction I of *Homononia riparia* exhibited better antifeedant

activity indicated by the observation of very less no. of excreta pellets at 500 ppm and 250 ppm as compared to 100 ppm, while from fraction-II less no. of excreta pellets at 100 ppm were observed as compared to 500 ppm and 250 ppm concentration. In *Laportea interrupta* no excreta pellets were observed. In the fraction I of *Vernonia anthelmintica* less no. of excreta pellets observed at 250 and 100 ppm while in fraction -II less no.of excreta pellets observed at 500 ppm. The extract of *Solanum surettense* showed same antifeedant activity at 500 and 250 ppm On the basis of the observation of excreta while less antifeedant activity at 100 ppm.

Table-VII indicates the antifeedant property of plant extract against last larval instar of Gram pod borer,*Helicoverpa armigera*.The antifeedant activity of the plant extract was compared with control. In *Ichinocarpus frutescens* fraction-I showed more no. of excreta pellets at 250 ppm and 100 ppm,while less no. of excreta pellets were observed at 500 ppm.The fraction-II showed more No. of excreta pellets at 500 ppm and 100 ppm while no excreta pellets at 250 ppm.In *Homononia riparia* fraction I shows less excreta pellets at 500 ppm and 250 ppm as compared to 100 ppm,and fraction II shows more no. of excreta pellets at 500 ppm and 250 ppm as compared to 100 ppm.In *Laportea interrupta* no excreta pellets were observed at any concentration.The fraction-I of *Vernonia anthelmintica* showed more no. of excreta pellets at 100 ppm and 250 ppm while less no. of excerta pellets were observed at 500 ppm, fraction-II shows no excreta pellets meaning no

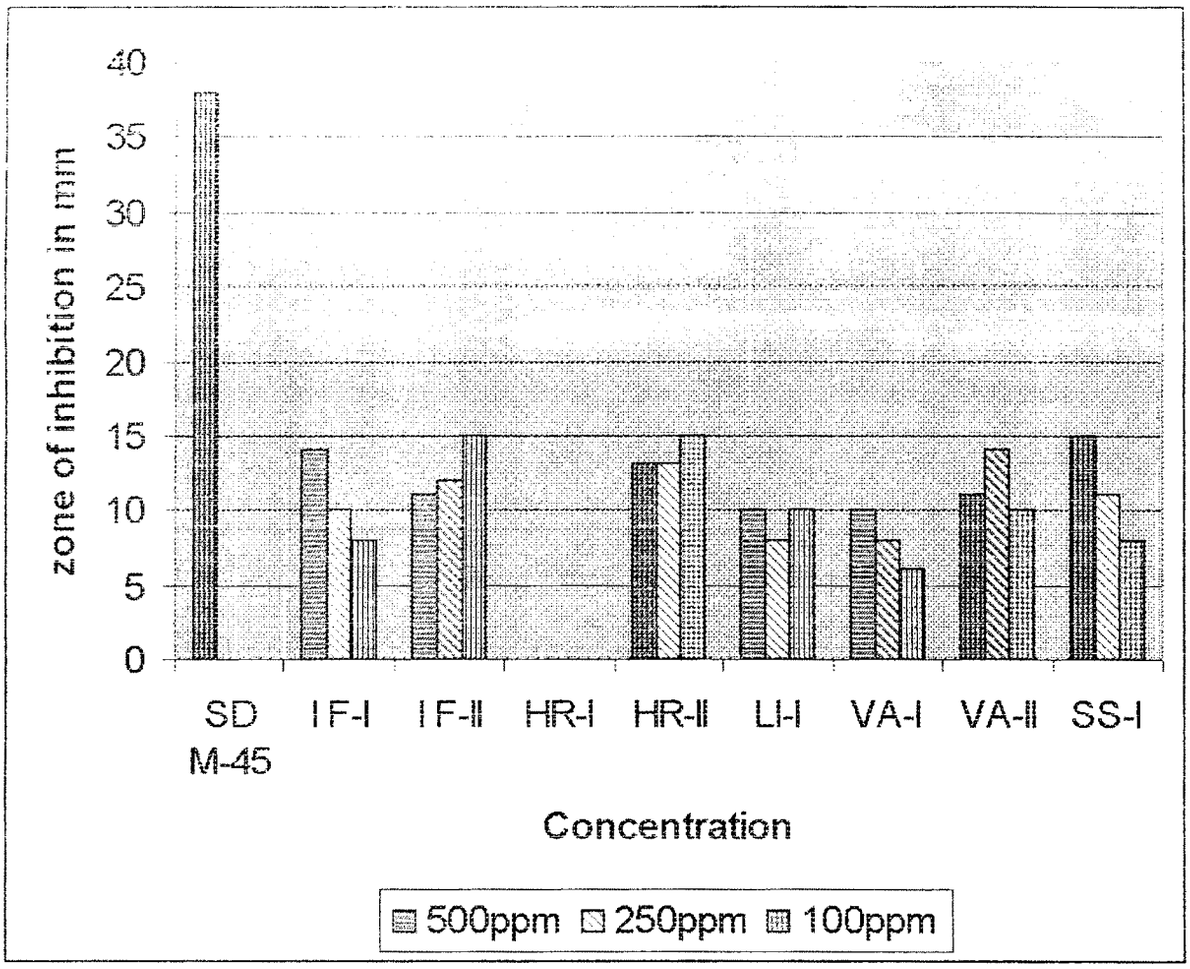
consumption of plant leaves. The extract of *Solanum surettense* showed more no. of excreta pellets at 500 ppm and 250 ppm as compared with 100 ppm. This means that the constituents of the extracts are responsible for antifeedant activity.

Different fractions indicating zone of inhibition against the fungus *Aspergillus spp.*



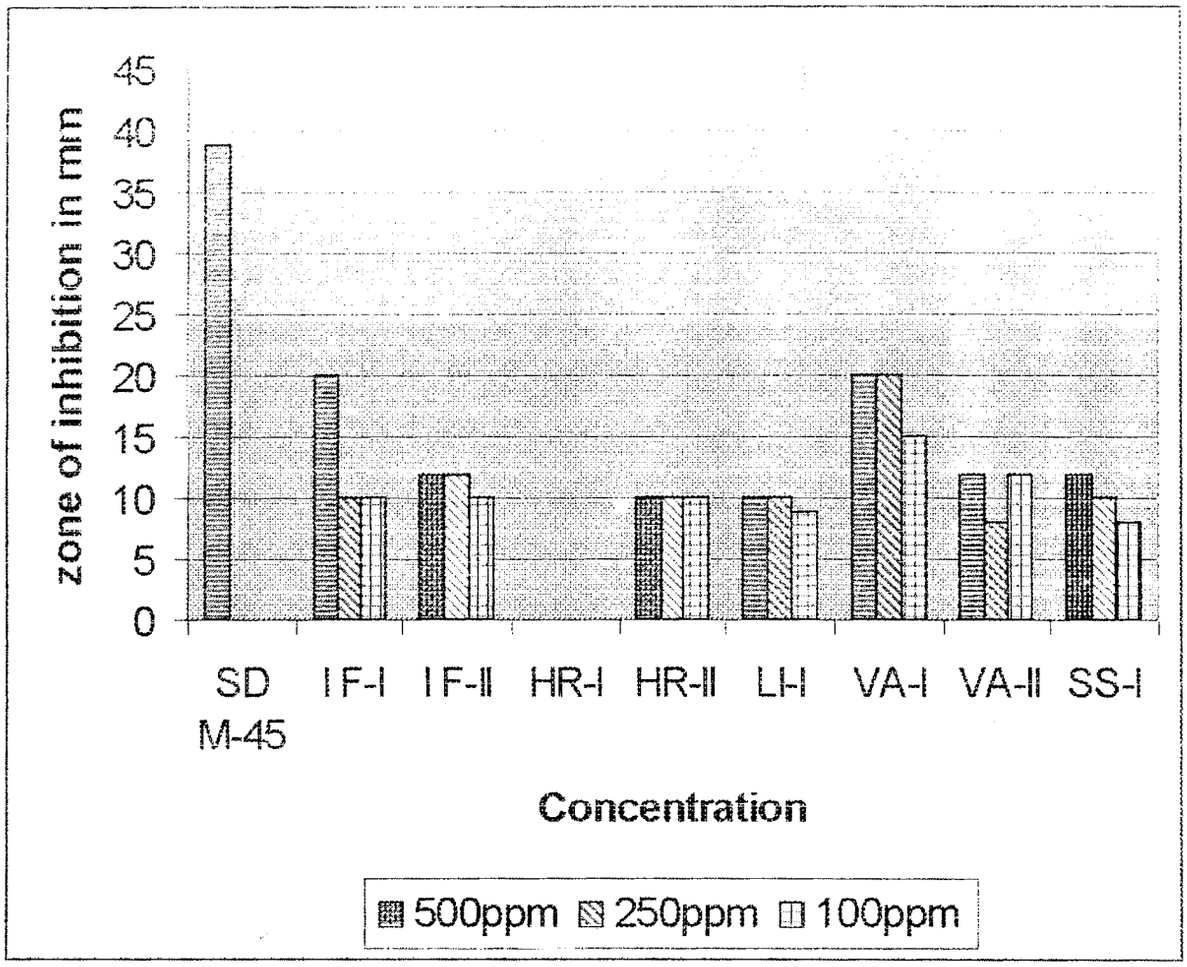
SD M-45	:-	Standard Dithane M-45
IF-I	:-	*Inchinocarpus frutescenes* - I
IF-II	:-	*Inchinocarpus frutescenes* - II
HR-I	:-	*Homononia riparia* - I
HR-II	:-	*Homononia riparia* - II
LI-I	:-	*Laportea interrupta* - I
VA-I	:-	*Vernonia anthelmintica* - I
VA-II	:-	*Vernonia anthelmintica* - II
SS-I	:-	*Solanum surettense* - I

Different fractions indicating zone of inhibition against the fungus *Penicillium spp.*



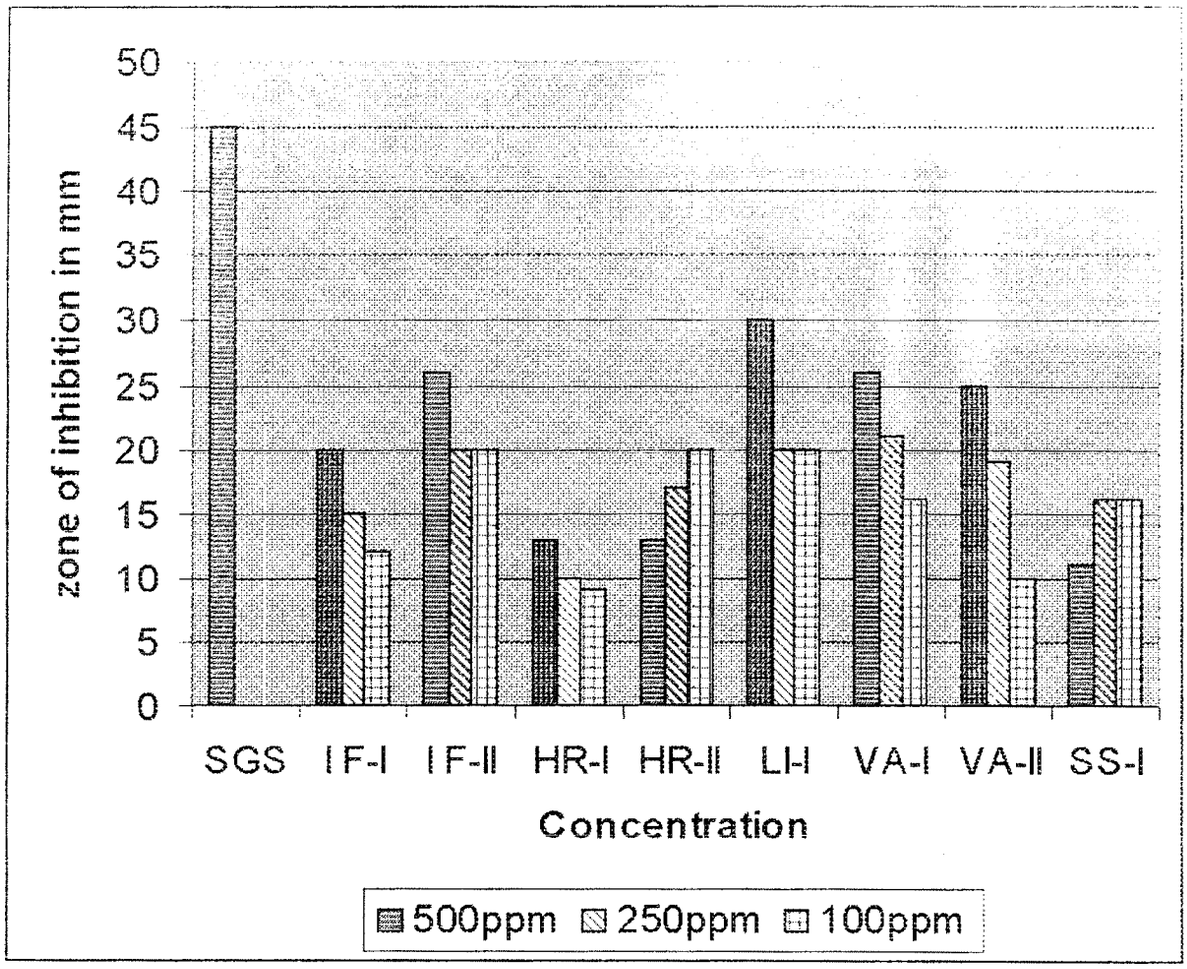
SD M-45	:-	Standard Dithane M-45
IF-I	:-	*Inchinocarpus frutescenes*-I
IF-II	:-	*Inchinocarpus frutescenes*-II
HR-I	:-	*Homononia riparia*-I
HR-II	:-	*Homononia riparia*-II
LI-I	:-	*Laportea interrupta*-I
VA-I	:-	*Vernonia anthelmintica*-I
VA-II	:-	*Vernonia anthelmintica*-II
SS-I	:-	*Solanum surettense*-I

Different fractions indicating zone of inhibition against the fungus *Cercospora arachidicola*.



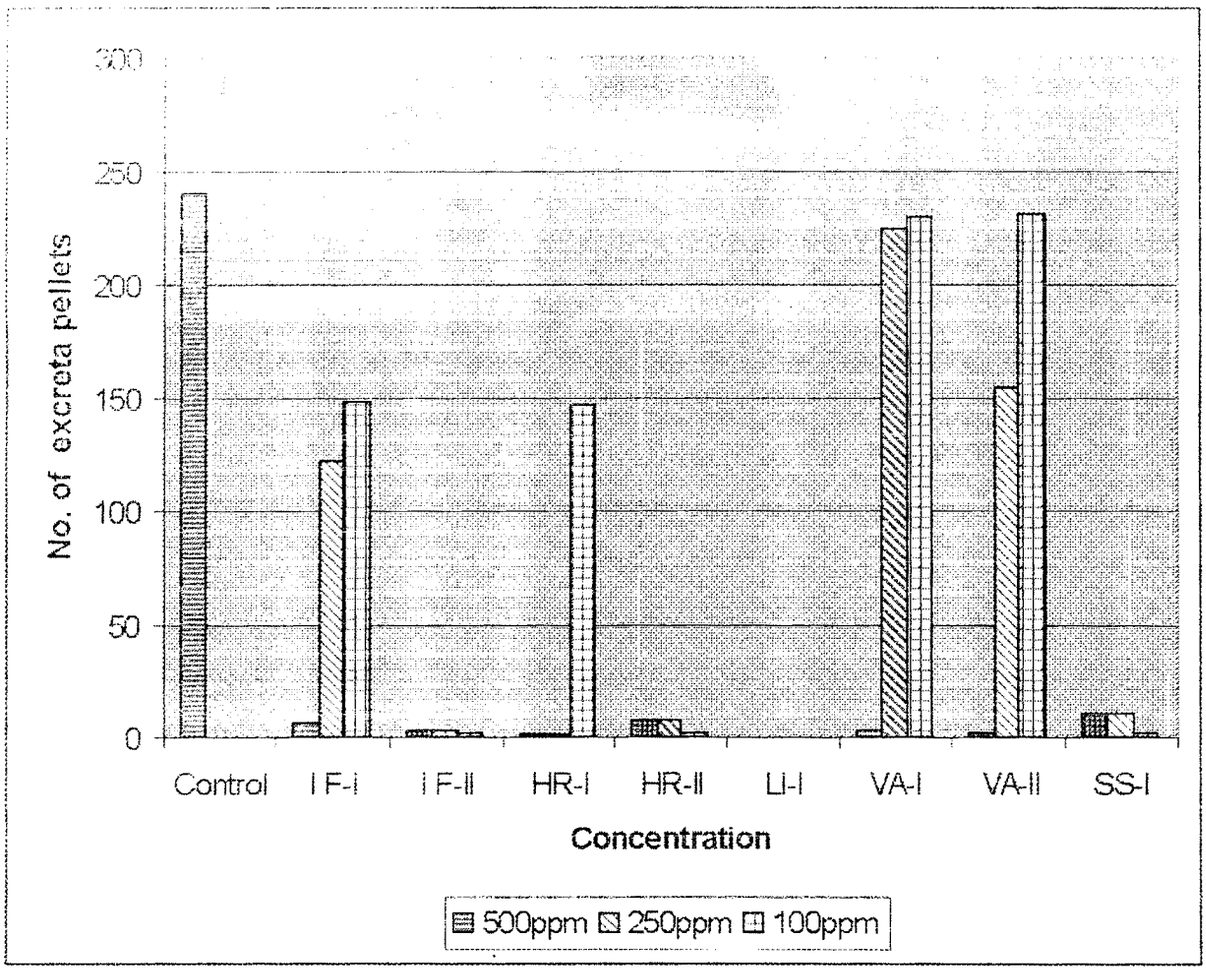
SD M-45	:-	Standard Dithane M-45
IF-I	:-	*Inchinocarpus frutescenes* - I
IF-II	:-	*Inchinocarpus frutescenes* - II
HR-I	:-	*Homononia riparia* - I
HR-II	:-	*Homononia riparia* - II
LI-I	:-	*Laportea interrupta* - I
VA-I	:-	*Vernonia anthelmintica* - I
VA-II	:-	*Vernonia anthelmintica* - II
SS-I	:-	*Solanum surettense* - I

Different fractions indicating zone of inhibition against the bacteria *Xanthomonas citri*.



SGS	:-	Standard Gentamicin Sulphate
IF-I	:-	*Inchinocarpus frutescenes*- I
IF-II	:-	*Inchinocarpus frutescenes* -II
HR-I	:-	*Homononia riparia* -I
HR-II	:-	*Homononia riparia* -II
LI-I	:-	*Laportea interrupta* -I
VA-I	:-	*Vernonia anthelmintica* - I
VA-II	:-	*Vernonia anthelmintica* -II
SS-I	:-	*Solanum surettense* -I

Antifeedant activity of plant fractions at different concentrations against Red Hairy Catterpillar.



IF-I : - *Inchinocarpus frutescenes* - I

IF-II : - *Inchinocarpus frutescenes* -II

HR-I : - *Homononia riparia* -I

HR-II : - *Homononia riparia* -II

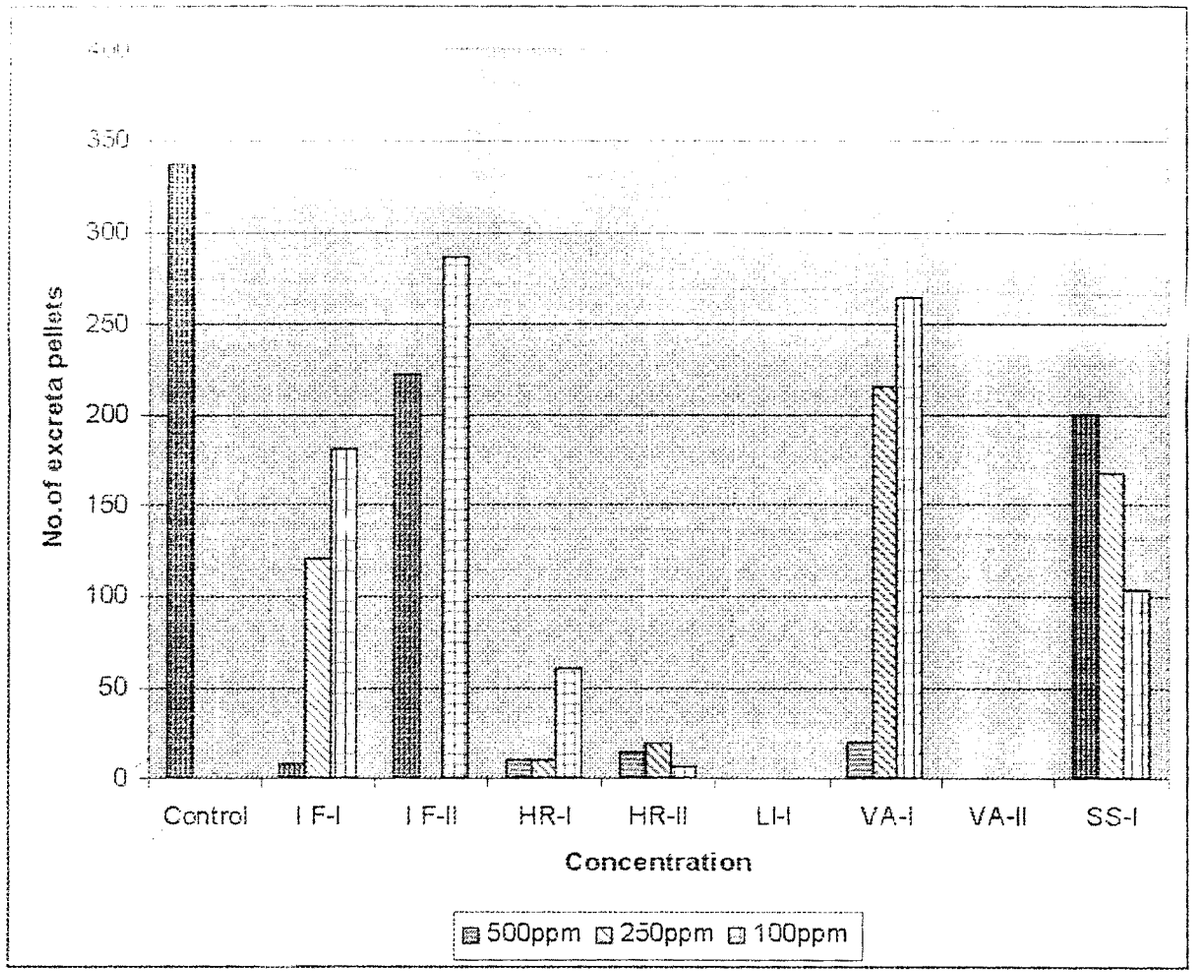
LI-I : - *Laportea interrupta* - I

VA-I : - *Vernonia anthelmintica* - I

VA-II : - *Vernonia anthelmintica* - II

SS-I : - *Solanum surettense* - I

Antifeedant activity of plant fractions at different concentrations against Gram Pod Borer.



IF-I : - *Inchinocarpus frutescenes* -I

IF-II : - *Inchinocarpus frutescenes* -II

HR-I : - *Homononia riparia* -I

HR-II : - *Homononia riparia* -II

LI-I : - *Laportea interrupta* -I

VA-I : - *Vernonia anthelmintica* - I

VA-II : - *Vernonia anthelmintica* -II

SS-I : - *Solanum surettense* - I

ANTIMICROBIAL ACTIVITY

Many plants reported to posses antimicrobial activities against various fungi and bacteria. These plant products are harmless and nonphytotoxic, unlike synthetic pesticides (Bhargava et.al 1981[60], Dubey et. al. 1983[61], Dwivedi et.al. 1985[62], Moori & Atkins 1977[63], Fawcett & Spencer 1970[64]), and also reported fungicidal properties of some plant proudcts. Dubey et.al. 1983[65], demonstrated the efficacy of essential oils of *Ocimum canum* and *Citrus medica* as a volatile fungitoxicant in potection of some spices against their post harvest fungal deteriation. Verma et.al.(1998)[66] indicated strong volatile activity in the protection of wheat samples from fungal deterioration caused by *Aspergillus flavipus*.Sanju et.al.(1998)[67]carry out antifungal activity of Turmeric,(*Curcuma longa*

L.)against *Aspergillus spp.* and show inhibitory results upto 53%.

Shrivastava et.al (1984)[68] recorded antifungal activity of *Parthenium hysterophorous* against four Spp.of *Aspergillus*.Antimicrobial studies of essential oil of *Veteria indica* was also carried out by Grover et.al in 1981[69] against *Aspergillus flavipus,A.fumigants,A.niger,Candida albicans, Penicillium digitatum, Rhizopus stolonifera* and shows that the oil is more active against *A.niger, Candida albicans* and also active against *A.flavipus* and *Penicillum digitatum.* Mangamma and Sreeramulu (1991)[70] reported that the Garlic bulb extract 30 gm/100 ml shows the maximum inhibition against *Xanthomonas compestric* pv *vesicatoria* on chilli.Patil et.al (2000)[71] also reported antimicrobial properties of *Narium indicum* against *Aspergillus niger* and Penicillum spp. and observed that pet.ether extract of *Narium indicum* is effective against *Penicillium*

spp. Only Kumbhar et.al,(2000)[72] studied antifungal property of some common plant extract against *Aspergillus niger* fungus and observed that all the plant extracts are effective against *A.niger.*

The extract of *Ichinocarpus frutescens* is found to be devoid of antibacterial and antifungal activity. Dhar et.al in 1968[73],reported that plant extract of *Ichinocarpus frutescens* posses antibacterial activity against *Bacillus subtilis, Staphylococcus aureus, E.coli, Salmonella typhi, Agrobacterium tumefaciens, Mycobacterium tuberculosis.* It was also reported to show antifungal activity against *Candida albicans, Cryptococcus neoformans, Tricophyton mentagrophytes,Microsporum cannis* and *Aspergillus niger.*

It is evident from our observations that in the seed extract of *Ichinocarpus frutescens,* fraction - I and fraction - II showed moderate

activity against *Aspergillus spp.* the maximum concentration needed for inhibition is 500 ppm and 100 ppm respectively i.e. at this concentration the *Aspergillus spp.* is found to be inhibited.In case of *Penicillum spp.* both fractions shows moderate activity,the maximum inhibition occurred at 100 ppm i.e. the effective concentration for inhibition is 500 ppm and 100 ppm respectively. In *Cercospora arachidicola* fraction I shows good activity at 500 ppm and moderate activity in fraction-II is observed at 500 ppm. In antibacterial activity against *Xanthomonas citri*,both fractions of *Ichinocarpus frutescens* show high activity at 500 ppm. Thus, from these observations it is clear that the seed extract of *Ichinocarpus frutescens* shows spectacular antifungal and antibacterial activity against the test microorganism.

Bhakuni et.al, (1969)[38], reported various properties of *Homononia riparia*.The whole plant

excluding roots shows antibacterial properties against *B.subtilis, S.aureus, Salmonella typhi, E.coli, Agrobacterium tumefaciens* and *Mycobacterium tuberculosis* and less antifungal activities against *C.albicans, Cryptococcus neoformans, Trichophyton mentagrophytes, Microsporum canis* and *Aspergillus niger.*

Our observations indicates that against *Homononia riparia* extract some organisms are resistant. In case of *Aspergillus spp.*both fractions shows moderate activity at higher concentration. While fraction - I shows no inhibition against *Penicillium spp.* and *Cercospora arachidicola* means that both the organisms are resistant to the pet. ether fraction, fraction II i.e. benzene extract shows moderate to good activity against *Penicillum spp.* and *C.arachidicola.* In case of *Xanthomonas citri* both fractions shows good activity and the maximum inhibition occurs at higher concentration while

for fraction - II maximum inhibition occurs at lower concentration.So it is observed that in *Homononia riparia* fraction -I shows antifungal activity against *Aspergillus spp.* only,while *Penicillum spp.*and *Cercospora arachidicola* are resistatnt to both fractions.Both fractions also shows good antibacterial activity against *Xanthomonas citri.*

In case of *Laportea interrupta* antifungal and antibacterial activity is not reported earlier, but our study shows that it posses good antifungal as well as good antibacterial activity.The benzene fraction of *Laportea interrupta* shows good inhibitory activity against *Aspergillus spp.*and *Penicillium spp.*the maximum inhibition being occured at higher as well as at lower concentrations. The extract also shows good inhibition of *Cercospora arachidicola* at higher concentration.In case of bacteria *Xanthomonas citri* the extract shows higher activity at higher

concentration. This means that the seed extract of *Laportea interrupta* shows spectacular antibacterial and antifungal activity.

The antibacterial and antifungal activity of *Vernonia anthelmintica* is also not reported.It is evident from our observation that it shows good antifungal and antibacterial activities.In case of *Aspergillus spp.*and *Penicillum spp.*fraction-I shows lower activity,while fraction - II shows moderate to good activity. In case of *Cercospora arachidicola* fraction - I shows higher activity than fraction -II this means that the benzene fraction shows good activity than ethanol fraction. The maximum inhibition is occurred at higher concentration.

Dhar et.al.in 1968[73] reported various biological activities of plant extract of *Solanum surettense.* They also reported that the fruit extract of *Solanum surettense* possess antibacterial activity against *B.subtilis S.*

aureus, *S.typhi*, *E.coli*, *Agrobacterium tumefaciens* and *Mycobacterium tuberculosis* and antifungal activity against *C.albicans*, *C.neoformans*, *M.canis* and *Aspergillus niger*.

It is evident from our observation that fruit extract of *Solanum surettense* posses good antifungal and antibacterial activity against test microorganism. In case of *Aspergillus spp.* the extract shows higher activity at higher concentration i.e. maximum inhibition is occurred at higher higher concentration while in case of *Penicillum spp.* and *Cercospora arachidicola*,the extract shows moderate activity at higher concentration. In case of *Xanthomonas citri* the extract shows moderate activity at lower concentration. From these observations it is clear that the fruit extract of *solanum surettense* shows spectacular antifungal and antibacterial activity against the test microorganisms.

Antifeedant activity

Antifeedants are the substances which when tested can result in cessasition of feeding, either temporarily or permanantly depending upon the potency.So many plants have been studied for their antifeedant activity and reported to posses antifeedant activity against various insect pest. Recently, many plant species have been reported for antifeeding and insecticidal properties, utilising different insects. (Warthen et.al.1982[74], Singh 1983[75], Abivardi and Georg benz 1984[76], Mikolajczak 1987[77], Agarwal and Mall,1988[78], Agarwal,1988[79])

In 1962,Pradhan and Coworkers[80] reported antifeedant activity of neem,*Azadirachta indica* against desert locust, *Schistocera gregaria*. Absinthin,a dimeric sesquiterpene obtained from *Artemisia absinthium* and Ajugarins isolated from

leaves of *Ajuga remota* are reported to exhibit antifeedant activity against no. of insects (Jaya Verma and N.K.Dubey 1999)[81].Gebreyesus,et.al in 1983[82],reported that the two coumarins,imperatorin and xanthoxyletin isolated from petrolium ether extract of *Clausena anisata* have antifeedant activity against African armyworm, *Spodoptera exempta*, they also reported that the witanolides, extracted from solanacious plants belonging to the genera Withania,Acnistus,Physalis,Jaborosal and Datura are also reported as antifeedants.The azadirachtin has the systemic property as it also protects the newly growing leaves of the crop plant from feeding damage (Nakanishi,K.1977)[83].

Desai S.K. and R.S.Patil[84] in 2000 screened acetone extract of 17 plats species for their antifeedant properties against *Spodoptera litura* and indicated that the extract of *Azadiracta indica,Holarrhena antidysenterica,Glyricidia maculata*,and *Acorus calamus* posses strong

antifeedant activity on the basis of minimum percent feeding and maximum protection over control.Koul (1982)[85] compiled the information on insect feeding deterrents in plants,while Benerji et.al (1985)[86] listed different indigenous plant species belong to 27 families possessing antifeedant or insecticidal properties.Prabal Saikia and S.Parmeshwaran[55] in 2000 evaluated EC and dust formulation of neem,*Azadirachta indica* and *Pongamia glabra* for their antifeedant activity against Rice leaffolder,*Cnaphalocrocis medinalis* and proved that these derivatives are most effective antifeedant against Rice leaffolder. K.Sahayaraj (1998)[87],studied antifeedant effect of some plant extract on the Asian armyworm, *Spodoptera litura* (Fabricus),he evaluated plant extract of *Azadirachta indica, A.juss, Citrus sinensis* Linn, *Vitex negundo* Linn, and *Zingiber officinale* for their antifeedant and growth inhibitory activities against last instar

larvae of *Spodoptera litura* (Fabricius),the results indicate existance of deterrent effect in all the botanicals and the higest general deterrant action is found in *Vitex negundo*. Tripathi et.al in 1987[88] also studied antifeedant activity of 26 plant extract against *Spilosoma cbliqua*,(Bihar hairy catterpillar).

Antifeedant property is also reported in *Solanum khasianum* and *Solanum indicum* seed oil against *Tribolium castaneum*.(Khan,et.al 1983)[89]. Tripathi and rizvi,1985[90], reported antifeedant activity of indiginous plant extract against Diacrisia obliqua (Bihary hairy catterpillar), Mallick et.al,1985[91],also reported antifeeding properties of *Swertia chirata* against Jute semilooper, *Anomis sabulifera* Guen. Apart from crude extracts,different oils have been reported to posses feeding deterrency (Dale & Saradamma,1981)[92].

In present investigation the antifeedant effect of plant extract is reflected in less number of excreta pellets indicating the reduced larval feeding on the treated leaves.In the study of antifeedant activity, of *Amsacta moori* in *Ichinocarpus frutescens*,fraction - I shows high antifeedant activity at higher concentration, while at lower concentration total leaf area is eaten by the larvae showing no antifeedant activity meaning thereby that at higher concentration only the fraction shows antifeedant activity. Fraction II excreta pellets voided by larvae are less in no. at each concentration that means less food is consumed by the larvae so the fraction II shows high antifeedant activity.In case of Gram pod borer, fraction -I shows higher antifeedant activity at higher concentration, but in case of fraction-II, at 250 ppm concentration no excreta pellets are observed that means this fraction has strong antifeedant activity.From

these observations it is clear that the methanol fraction of *Ichinocarpus frutescens* have strong antifeedant activity against Red hairy catterpillar and Gram pod borer.

In *Homononia riparia* both the fractions shows high antifeedant activity against Red hairy catterpillar and Gram pod borer.In case of Red hairy catterpillar fraction -I shows very less number of excreta pellets at higher concentration as compared to lower concentration,while in fraction - II very less number of excreta these means that fraction - II possess higher activity against the larvae at each concentration.In case of Gram pod borer fraction - I shows higher antifeedant activity at higher concentration, while in case of fraction - II higher antifeedant activity is observed at lower concentration. So from these observations it is clear that both the fractions of *Homononia riparia* posses antifeedant activity against both the insect pest.

The extract of *Laportea interrupta* shows strong antifeedant activity against both Red hairy catterpillar and Gram pod borer,no excreta pellets are observed during testing,i.e. no food is consumed by the larvae. Thus it is concluded that the benzene fraction of *Laportea interrupta* shows strong antifeedant activity against Red hairy catterpillar and Gram pod borer.

In *Vernonia anthelmintica* both the benzene and methanol fractions shows high antifeedant activity at higher concentration against Red hairy catterpillar, but less number of excreta pellets are observed at higher concentration as compared to lower concentration. In case of Gram pod borer the fraction-I antifeedant activity is observed at higher cocentration only. However at lower concentration more food is consumed by larvae showing no antifeedant activity. The fraction-II shows strong antifeedant activity as no food is consumed by larvae, thus it is clear

that both the benzene and methanol fractions show higher antifeedant activity against Red hairy catterpillar and Gram pod borer.

Solanum surettense shows strong antifeedant activity against Red hairy catterpillar at lower concentration indicated by, the excreta pellets voided at lower concentration. In case of Gram pod borer *Solanum surettense* does not show any antifeedant activity,as more food is consumed by the larvae,thus the *Solanum surettense* shows strong antifeedant activity against Red hairy catterpillar only.

From all these observations it is concluded that all these plant possess strong antifeedant activity against Red hairy catterpillar. In case of Gram pod borer all the plants except *Solanum surettense* show antifeedant activity. Some plant shows spectacular antifeedant activity at higher conentrations and some plants at lower

concentrations and will be of agricultural importance as ecofriendly pesticides.