Short Communication

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TOWARDS A MYCOBIOCONTROL OF AN INSECT DEFOLIATOR OF KUSUM

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During the survey of entomopathogenic fungi of forest insect pests, a severe infestation of an insect commonly known as Kusum defoliator was observed at Kalpi forest, about 45 km from Jabalpur, The trees became defoliated and dried leaves suspending in air with silk threads of insects. Insect larvae consumed all the parts of leaves including petioles.

The caterpillars were identified as *Acrocerops tenera* (Lepidoptera : Lithocolletidae). Since Kusum, *Schleichera oleosa* (Lour.) Oken forms an important component of forest economy an effort was made to decrease the pest population through a microbial agent. Study was designed to investigate the potential of *Beauveria bassiana* towards biocontrol of insect pest.

The standard methods of Agarwal *et al.* (1985) were followed. The experimental larvae were collected from the forest, in sterilized big polythene bags. Healthy individual larval stages were sorted out and used for pathogenicity. A conidial suspension of 10 days old sporulating culture of *Beauveria bassiana* was prepared in 0.05% tween 20 in distilled water (1×10^6 conidia/ml) was sprayed with the help of a hand sprayer on different larval stages.

Treated larvae were kept in the set of 50 individuals in each glass globes with fresh tender Kusum leaves. A cotton strip swabbed in sterilized distilled water was also hanged in the globe to provide higher humidity. These globes were then incubated at $28° \pm 1°C$ temperature. Untreated disease free, larvae were also sprayed with sterilized 0.05% tween 20 aqueous solution and were incubated under similar conditions which seved as controls. Observations were recorded daily till all the treated larvae either died (mummified or colonised) or moulted into next successive instar with or without carry over infection. As a result of infection the larvae in the beginning became very active exhibiting typical movements, started consuming more leaves and also showed increase excretion. After 24 hours the infected caterpillars became sluggish and there was a gradual reduction in feeding. There were observed decreased irritability, inability to right itself up, colour changes from pale to brown and shrinking of the body. Later, the body became dark brown and mummified, soon covered with white mycelial growth of the fungus *Beauveria bassiana*, colonising the whole insect body. Such symptoms were also reported by Sussman (1952), Kawakami (1972), Aoki & Yanase (1970), Agarwal *et al*, (1985), Rajak *et al.* (1988).

Results presented in table 1 show that all the test larval stages of *Acrocerops tenera* were susceptible to *Beauveria bassiana* showing differential mortality. Early larval stages were highly susceptible than late larval stages. I instar larvae showed 100% mortality in control set, whereas II instar and III instar also exhibited 100% mortality after 4 days of incubation, IV instar and prepupal stage showed 90 and 74% mortality after 5 days of incubation respectively. Pupae were quite resistant as compared to the larval instars and exhibited 52% fungal mortality after 5 days of inoculation.

In general, the infection in insect varies with ageing host. Agarwal *et al,* (1985) also reported that pathogenicity of *Beauveria bassiana* to *Hyblaea puera* and *Pyrausta machaeralis* larvae varied with age. Present studies could demonstrate that the fungus *Beauveria bassiana* is a highly virulent pathogen to reduce the population of the distructive pest of *Schleichera oleosa*, if optimum conditions prevail in environment during pathogenesis. Work on management of *Schleichera oleosa* is in progress in this department.

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Table 1: Pathogenicity of *Beauveria bassiana* parasitizing different larval stages of *Acrocerops tenera* @ 50 insect larvae in each set.

Temperature : 28° ± 1°C
Relative Humidity : 95 ± 5%
Dose : Ca. 1 x 10^6 Conidia/ml

Stages of insect	Time taken for mortality					% Mortality in Control after 5 days	Remarks
	1[a]	2	3	4	5		
(A) Larvae							
I instar	2[b]	58	100	100	100	10 NPM	Infected larvae were covered with white mycelial growth just after 3 days of their death
II instar	18	52	88	100	100	10 NPM	
III instar	18	44	82	100	100	-	
IV instar	10	46	74	86	90	-	
(B) Prepupal Stage	8	28	60	72	74	-	
(C) Pupal Stage	0	18	32	48	52	-	

NPM = Non pathogenic mortality
a = Incubation days
b = Percent mortality
(-) = No mortality.

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