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STUDIES ON ENZYME MAKE UP OF *DAEDALEA FLAVIDA* LEV ASSOCIATED WITH BAMBOO ROT IN TRIPURA

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Bamboo is one of the best natural wealth of Tripura, which has great role for the economy of the state for its country famous handicraft products. But the raw material *Bambusa pallida* from which these handicraft products are manufactured, their basic structures are being damaged due to some enzymes secreted from mycelium of *Daedalea flavida* which is responsible for infection of bamboo in bambooyard.

Keywords : *Bambusa pallida; Daedalea flavida;* Enzymes.

Fungal pathogens secrete enzymes in the normal course of their activities when grows on hosts or on nutritional media, inducing diseased condition. Such enzymes act as chemical weapons of pathogens by disintegrating the structural components of host cells, breaking down inert food substances in the cells or affecting the protoplasts directly and interfering with its functioning systems in hosts. A pathogen produces one or more sets of enzymes by the action of which different complex insoluble substances, present in cells and cell walls of hosts, are disintegrated into smaller molecules with the obvious function of making them available as substrate to be absorbed and utilized by the pathogen for growth and energy. Enzymes, which are generally required in minute amount to carry out any of these reactions, are of different types depending on their functions and specificity. From the available literature[1-8] it appears that some investigators have studied the role of these enzymes in the host tissue distintegration leaving a vast field still unexplored. With this end in views, the present investigation has been undertaken to study the enzyme make-up of *Daedalea flavida* Lev. by means of qualitative methods.

The test fungus, isolated from infected stem of *Bambusa pallida* was collected for the determination of the extra and intracellular enzymes, pure culture of the fungus was grown on Leonian & Lily synthetic medium (pH 4.5) in Erlenmeyer flasks. The culture filtrate was freed of the mycelium and by filtering through Whatman's (No. 42) ashless filter paper in Buchner funnel and stored with a few drops of toluene. The culture filtrate thus obtained served as the extracellular enzyme extract.

For obtaining intracellular enzymes, the mycelium was washed and freed from the adhering media, and then dried in a desicator over anhydrous calcium chloride for 7 days. The dried mycelium was mixed with a small quantity of acid washed sand (20 parts sand to 1 part mycelium) and ground well in distilled water. The mycelial extract was filtered and the filtrate was stored with a few drops of tolune.

The capacity of the fungus to grow on certain meida was also taken as an index of the formation of particular extracellular enzyme. Different compounds such as Pyragallol, Methylene Blue etc. were added to this medium and good fungal growth with changes in colour on a particular source was taken as positive test.

The extra and intracellular enzyme extracts were tested by the method mentioned in the Table 1. The enzyme extract inactivated by autoclaving at 15 lbs pressure for 20 minutes was taken as control for comparison. The results are presented in Table 1.

Table 1. Qualitative determination of extracellular and intracellular enzymes of *Daedalea flavida* Lev in culture.

Enzymes	Substrate	Incubation time and temperature	Enzyme activity	
			Extra cellular	Intra cellular
I. Carbohydrate metabolisum				
i) Amylase	Starch (5%)	24 hrs at 37^{0}C	+	+
ii) Invertase	Sucrose (2%)	-do-	+	+
iii) Zymase	Glucose (1%)	-do-	-	-
iv) Maltase	Maltose (1%)	-do-	+	-
II. Protein metabolism				
i) Rennatase	Milk (fresh)	45 min. at 37^{0}C	-	-
ii) Protease	Gelatin (7%)	24 hrs. at 37^{0}C	-	+
III. Respiratory enzyme				
i) Oxidase	Pyragallol (1%)	7 days at 37^{0}C	+	-
ii) Reductase	Methylene blue	-do-	+	-

It appears that the pathogen is characterised by the presence of a number of extra and intracellular enzymes, viz., amylase, invertase, maltase, protopectinase, cellulase, protease, oxidase and

reductase, of which the first two are produced in larger amount by both intracellular and extracellular activities. These enzymes act as effective chemical weapons in disintegrating different complex organic components of the cells and cell walls of the host into simpler ones, thereby making them available for easy utilization by the test funges and ultimately lowering the value of the bamboo host.

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