Fungitoxic Activity of *Sterculia foetida* L. against Some Plant Pathogenic Fungi

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***Abstract*: The extensive use of synthetic fungicides creates number of problems of pollution and toxicity. A modern trend to develop biofungicides has emerged recently. Sterculia foetida L. a well-known medicinal plant was screened for its fungi toxic activity against some plant pathogenic fungi by using methanol leaf extract. The extract seems to be more toxic against aspergillus niger and can be further investigated as potential biofungicide.**

***Keywords*: *Sterculia foetida* L., biocontrol, leaf extracts, pathogenic fungi.**

Introduction

The combat of man with fungi started from the dawn of agriculture as economic losses due to fungal disease are tremendous. The problem of pollution and toxicity of synthetic chemicals have provocated the search for herbal bio- fungicides. Various workers have screened number of angiospermic plant extracts for assay of fungi toxic activity (Verma et.al 1999. Singh and Singh, 2000 etal. 2000) and it is being done continuously.

Sterculia foetida L. is a common tree of Sterculiaceace occurring in many parts of India (Sharma and Sanjappa 1993) plant is useful in many respect its seeds are roasted and eaten like chestnusts, wood is used in making rough packages. The leaves are used as herbal medicine as aperient diuretic and insect repellent (Chopra atal 1992).

Pharmacological studies on leaves of this plant are conducted (Mujumdar etal 2000). The Chemical examination of leaf extract reveals the presence of taraxerol . B- sitosterol n-octacosanol (Anjeneyulu and Suryanarayan 1981). A Literature survey indicates lack of investigations on its fungi toxic activity. So the methanolic leaf extracts of this plant are tested against plant pathogenic fungi. Helminthosporium turcicum, Alternaria helianthi and saprophytic fungus Aspergillus niger.

A preliminary phytochemical investigation for presence of alkaloid also conducted.

Materials and methods:

The plant used in this study collected from Aurangabad city it was correctly identified botanically. The methanolic leaf extract was prepared by dissolving 10 gram of dried leaf powder in 100ml of 80% methanol. It was filtered and filtrate was used testing fungi toxic activity. Poisoned food technique was used to test the activity. The three fungi helminthosporium turcicum , Alternaria helianthi and Aspergillus niger obtained from pure cultures where inoculated in 250 ml conical flask in hundred ml. Glucose nitrate medium, 1 ml of methanolic leaf extract was added to each flask. Appropriate control was also maintained 4 replica of each treatment made. The flask where incubated at 37°C ± 1°C for 5 days. On 6th day the mycelial growth was filtered filter paper and the dry mycelial weight was determined. The leaf extract was also tested for presence of alkaloid by using Drangendrof reagent.

Result and Discussion:

The results of mycelial growth treatment of methanolic leaf extract of the test fungi are shown in table. No 2 The result shows that the methanolic leaf extract was considerable toxic to growth of all the three fungi but it was more toxic to Aspergillus niger seed borne fungus. The leaf extract has shown positive test for presence of alkaloid, which can be the cause of fungitoxicity. Further investigations are in progress to determine the potential of these plants as herbal bio fungicides.

Table 1 : Effect of Fungal Inoculum (mixture Of Spore Suspension) on Seeds And Seedlings Of Jowar.

Fungal Inoculum	Dominant Fungus Appeared	Abnormalities Produced in				
		Seeds			Seedling	
		% germination	Rot	Discoloration	Shoot	Root Condition
Alternaria tenuis	A. flavus	30	+	Green	Chlorosis	Root rot
Aspergillus flavus	A. niger	40	+	Brown	Blight	Root rot and Root
Aspergillus niger	Penicillium	20	_	Yellow	Browning	Browning curling,
Penicillium	Rhizopus	20	+	Brown	Ashy	Browning
chrysogenum	A. flavus	10	+	Green	Tip rot	Root rot
Rhizopus nigricans	A. niger	30	+	Black	Browning	Reddish brown
Curvularia lunata	Curvularia	20	_	Black	Chlorosis	Root curling
Aspergillus flavus	Rhizopus	40	_	Brown		Root decay
Aspergillus niger	A. flavus	50	+	Grey	Tip rot	Root rot
Penicillium	Drechslera	10	_	Black	Browning	
chrysogenum	Penicillium	30	+	Green	Whitening	Browning
Rhizopus nigricans	Rhizopus	30	_	Brown	Chlorosis	Root rot
Drechslera	Fusarium	20	+	Green	Tip rot	Root proliferation
longirostrata	Fusarium	30	+	Brown	Browning	Root rot
Aspergillus flavus	Fusarium	10	+	Grey	Chlorosis	No effect
Aspergillus niger	Fusarium	40	_	Grey	Chlorosis	Root rot
Penicillium chrysogenum						
Rhizopus nigricans						
Fusarium moniliforme						
Aspergillus flavus						
Aspergillus niger						
Penicillium chrysogenum						
Rhizopus nigricans						

Table 2.: Effect of methanolic leaf Extract on growth of some fungi

Sr. No	Name of Fungi	Average Dry mycelial Weight in miligrams after 5 days	
		Control	Treatment
1.	Alternaria helianthi	20.0	13.0
2.	Helminthosporium sp	30.0	19.0
3.	Aspergillus niger	60.0	41.0

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