

EFFECT OF SOME INDIAN MEDICINAL PLANT EXTRACTS ON PHYTOPATHOGENIC FUNGI

By

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Some of the Indian medicinal plants e. g. *Acacia catechu*, *Arbus precatorius*, *Ficus glomarata* and *Santalum album* used against human diseases are also inhibitory to many plant pathogenic fungi. Total inhibition of all the test fungi in the extract of wood of *Santalum album* is significant in this respect.

INTRODUCTION

Different parts of medicinal plants such as *Acacia catechu*, *Arbus precatorius*, *Ficus glomarata* and *Santalum album* have been traditionally used in India in the treatment of various human diseases (Kirtikar and Basu, 1975 ; Gupta, 1908).

The bark of stem, root, wood, flower and exudate of *Acacia catechu* are used as medicine. The main constituents of various plant parts are catechu tannic acid, catechu red gum and quercetin. It is powerful astringent, digestive and used against ulcers.

The root leaf and seed of *Arbus precatorius* contain arabic acid and some proteid poisons. These are used against skin diseases such as leucoderma and venereal diseases.

The different plant parts used for medicine in case of *Ficus glomarata* are root, fruit, bark and exudate. The important constituents are tannins and an alkaloid caoutchoue. Medical use is against venereal diseases and rheumatism and for wash of ulcers.

Only wood of *Santalum album* is used for medicine. The wood contains a volatile oil, a dark resin and tannic acid. As paste, it is applied to the skin infection and to inflammatory swellings.

The extracts of different plant parts of the medicinal plants, mentioned above were tested for antifungal activity against some phytopathogenic fungi and the results are presented in this paper.

MATERIALS AND METHODS

A number of plant pathogenic fungi namely, *Helminthosporium oryzae*, *Sclerotium rolfsii*, *Alternaria tenuis* and *Aspergillus niger* were used as test organisms.

Standard solution of test materials such as root, leaf, seed, fruit, bark and wood of different medicinal plants were prepared by pulverising the test material with distilled water (1 ml of distilled water per g of test material) in a pestle and mortar, extracting the liquid and centrifuging it at 5000 rpm for 5 minutes. Exudates were collected from the plant and diluted with equal volume of water, and used directly as standard solution.

The test fungi were grown in petridish culture using potato dextrose agar. The petridish containing the test organism was flooded with sterilized distilled water and the surface of the culture was scraped. The spore mycelium suspension, thus prepared was passed through double layer of sterilized muslin cloth. The spore concentration in the suspension was adjusted to 50,000 spores per litre.

One drop of the standard solution of the test material was placed in depression slide and the drop was allowed to be evaporated rapidly by passing air current over the slide at room temperature. One drop of the spore suspension was placed on the dried drop of the test material. The test material was thoroughly mixed with the spore suspensions. The slide was incubated in moist chamber at 25°C. In case of *S. rolfsii*, sclerotia were directly placed in the drop of standard solution of test material in depression slide and the slide was incubated. The spore suspension only without the test material incubated similarly served as control. The results on spore germination of each test material was recorded after 48 hrs. and were expressed as germination quotients (no. of spores germinated in test material / no. of spores germinated in control).

Table 1. Germination quotients of spores of different test organisms in the extracts of different plant parts of medicinal plant

Name of medicinal plant	Plant part used	Germination quotients			
		<i>Helminthosporium oryzae</i>	<i>Sclerotium rolfsii</i>	<i>Alternaria tenuis</i>	<i>Aspergillus niger</i>
<i>Acacia catechu</i>	exudate	0.00	1.00	0.97	0.91
	root	0.91	0.00	1.01	0.91
<i>Arbus precatorius</i>	leaf	1.02	0.00	0.96	1.09
	seed	0.97	0.00	0.89	0.98
<i>Ficus glommarata</i>	root	1.08	1.00	0.91	0.00
	fruit	1.02	1.00	0.98	0.00
	bark	0.97	1.00	0.94	0.00
	exudate	1.05	1.00	0.97	0.00
<i>Santalum album</i>	wood	0.00	0.00	0.00	0.00

RESULTS AND DISCUSSION

Out of nine test material preparations, only one, extract of wood of *Santalum album* was found to be total inhibitor of all the test fungi (Table 1). The fungus

H. oryzae was totally inhibited in the extract of *Acacia catechu* exudate. Complete inhibition of *A. niger* was observed in the extract of root, fruit, bark and exudate of *Ficus glomerata*. *Sclerotium rolfsii* was totally inhibited in the extracts of root, leaf and seed of *Arbus precatorius*.

The investigation shows that some of the medicinal plants traditionally used in India in the cure of human diseases are inhibitory to many plant pathogenic fungi. Total inhibition of all the test fungi in the extract of wood of *Santalum album* is significant in this respect.

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