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Antifungal activity of medicinal plant Boswellia Serrata

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Abstract

The antifungal activity of medicinal plant Boswellia Serrata was tested against plant pathogenic fungus (red rot disease causing agent) Colletotrichum falcatum by agar well –diffusion method. The plant leaves was extracted with various solvents like chloroform, ethanol and aqueous. The aim of the study was to evaluate the antifungal activity of extracts of plant species used in traditional herbal medicine. The results obtained in the present study suggest that they can be used in treating diseases caused by the test organism.

Key words: Medicinal plants, Antifungal activity, Colletotrichum falcatum, Red rot disease.

Introduction

Traditional medicines for human diseases have been widely used in many parts of the world. Medicinal plants represent a rich source of antimicrobial agents. Many of the plant materials used in traditional medicine are readily available in rural areas at relatively cheaper than modern medicine. Plants have provided a source of inspiration for novel drug compounds, as plant derived medicines have made large contributions to human health and well being. Their role is twofold in the development of new drugs. They may become the base for the development of a medicine of new drugs or a phytomedicine to be used for the treatment of diseases. Traditional medicine using plant extracts continues to provide health coverage for over 80% of the world's population, especially in the developing world. Among plants of economic importance medicinal and aromatic plants which played a vital role where it utilized as therapeutic agents since old days. Herbal medicine represents one of the most important fields of traditional medicine all over the world.

Boswellia serrata (Family: Burseraceae) is a deciduous middle sized tree, which is mostly concentrated in tropical; parts of Asia and Africa. In India it occurs in dry hilly forests of Rajasthan, Madhya Pradesh, Gujarat, Bihar, Assam, Orissa as well as central peninsular regions of Andhra Pradesh, Assam etc. B. serrata gum resin has been reported to have analgesic, anti-inflammatory, antiarthritic and anti-pyretic activity. Antifungal activity of plant Boswellia serrata was

carried out by agar well diffusion method. The aim of this present study was to evaluate the activity of different extracts against fungus.

Materials and Method

Plant Material: The plant used in the study was collected from Pachmarhi district Hoshangabad Madhya Pradesh. The collected plant materials were cleaned, shade dried, powdered coarsely in a blender and then stored in air-tight containers for further use.

Preparation of extracts :

Five grams of sterilized plant leaves were kept in the 15ml organic solvents such as methanol, ethanol and aqueous. Then they were ground well with the help of mortar and pestle. The plant materials were subjected to centrifugation, for 15-20 min (at 10000 rpm) again it was filtered through whatman No.1 Filter paper. The supernatant was collected and made to known volume by adding sterile aqueous, methanol and ethanol stored for further antimicrobial screening purpose.

Activation of Fungi :

The plant extracts were assayed for antifungal activity against the fungal strain C.falcatum. This fungus was grown on PDA plate at 28^{o}C and maintained with periodic sub – culturing at 4^{o}C.

Preparation of potato dextrose agar medium (PDA agar medium) :

The potato tubers were peeled off and weighed for about 200g tubers were chopped in to small pieces in to the sterile conical flask. After boiling the supernatant were collected and dextrose (12g) with agar (15g) to dissolve the ingredients. The medium was mentioned and adjusted to 6.6pH. finally the medium was sterilized in pressure cooker for 15min.

Antifungal Activity :

Antifungal activity was screened by agar well diffusion method. The methanol, ethanol and aqueous extracts of plant was tested against plant pathogen C.falcatum. The PDA medium was poured in to the sterile petriplates and allowed to solidify. The test fungal culture was evenly spread over the media by sterile cotton swabs. Then wells (6 mm) were made in the medium using sterile cork borer. 200µl of each extracts were transferred in to the separate wells. The plates were incubated at 27°C for 48-72 hrs. After the incubation the plates were observed for formation of clear incubation zone around the well indicated the presence of antifungal activity. The zone of inhibition was calculated.

Results and Discussion

Effect of antifungal activity of medicinal plant against Colletotrichum falcatum:

Antifungal activity of medicinal plant extract was assayed by agar well diffusion method.

Inhibition Spectrum of the Medicinal Plant against *Colletotrichum falcatum*

Zone of inhibition (mm)		
Aqueous	Ethanol	Chloroform
-	24	19

The ethanol extract of the plant (24mm) showed maximum antifungal activity compared with chloroform extract (19mm). The result of antifungal effect of aqueous extract of the plant showed no activity against *C. falcatum.*

Conclusion

The plant Boswellia Serrata was used for antifungal activity against Colletotrichum falcatum. The plant material was extracted with water ethanol and chloroform. The ethanol extract of plant is more efficient as compared to the chloroform.

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