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Phytochemical screening and antifungal activity of *Bauhinia racemosa* and *Dolichandrone falcata*

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Abstract

The present work deals with the antifungal activity and phytochemical screening of the aqueous leaf extract of *Bauhinia racemosa* & *Dolichandrone falcata*. Antifungal activities were found against vegetable diseases of fungi like *Alternaria alternata*, *Colletotrichum capsici* and *Phytophthora infestans* by using antimicrobial assay method. Significant inhibition was recorded in both the plant extract against *Alternaria alternata* and *Colletotrichum capsici* were it was less effective to *Phytophthora infestans*. The phytochemical screening of *Bauhinia racemosa* and *Dolichandrone falcata* showed the presence of tannins, alkaloids, glycosides, steroids and saponins.

Keywords: *Bauhinia racemosa*, *Dolichandrone falcata*, *Alternaria alternata*, *Colletotrichum capsici*

1. Introduction

Plants consist of different types of chemical compounds which are used by mankind for thousands of years to cure Diseases. It contain many chemical compounds such as alkaloids, flavonoids, glycosides, phenols, resins, steroids, saponins, tannins and volatile oils which were deposited in their specific parts such as bark, flowers, fruits, leaves, root and seeds etc. (Tonthubthimthong *et al.*, 2001) [1]. Dahikar *et al.*, (2011) [2] studied the photochemical investigation of leaves of *B. racemosa* by using various solvent extract. The study showed that *B. racemosa* contains chemical compounds like alkaloids, flavonoids, saponins and tannins. Hossary *et al.*, (2000) [3] also evaluated flavonoids content from *B. racemosa*. Phytochemical analysis of *Dolichandrone falcata* leaf extracts which revealed the presence of alkaloids, glycoside, carbohydrates, saponins, phenolic compounds, proteins and flavonoids. (Borkar *et al.*, 2016, Wikhe *et al.*, 2012) [4, 5]. Phytochemical studies of the plant have revealed that the ethanol extract of *B. racemosa* leaves showed antimicrobial activity against fungal organisms such as *Candida albicans*, *Aspergillus niger*, *Aspergillus flavus* and *Alternaria solani* (Ali *et al.*, 1995) [6]. Kumar *et al.*, (2010) [7] evaluated the aqueous and methanol extract of leaves of *B. racemosa* L. was tested against standard fungal cultures such as *Candida albicans* and *Aspergillus niger*. Patil and Biradar (2013) [8] studied the antifungal activity of *Dolichandrone falcate* against *Candida albicans*.

2. Materials and Methods

2.1. Collection of Plant Material

The fresh and Healthy Leaves of both the plants were collected from Jalna district during October 2013. The identification is done with the help of standard floras (flora of Marathwada by V.N. Naik *et al.*, 1998) [9]. The leaves were shade dried, powdered and stored in airtight container for further study.

2.2. Preparation of Extract

About 30 gm of leaf powder was subjected to soxhlet extraction with 300 ml of the Distilled water for 8 hrs (60-70 °C). Leaf powder was successively extracted with Distilled water.

3. Antifungal Activity of Plant Extract

The food poisoned technique (Schmitz, 1930) [10] was used to test the antifungal activity of the extracts. The cultures were prepared and incubated at 37⁰ ± 1 °C for 24 hours. The antifungal activity was observed on basis of inhibition zone that was compared with

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Fungicides. 5% Extract was added with Potato Dextrose Agar & poured in sterile Petri plates. Fungal Disc of 4 mm of 7 days old culture were used for inoculated aseptically on Potato Dextrose Agar plates were incubated at $37^{\circ} \pm 1^{\circ}C$ for 24 hours and the diameter of zone of inhibition of fungal growth was measured in mm.

4. Antifungal Activity of Fungicide

The antifungal activity of the fungicide Propiconazole was used to study the comparative account of fungal inhibition by using the food poisoned technique (Schmitz, 1930) [10] with reference to the antifungal activity of the plant extract.

Table 1: Mycelium growth of fungal disc in mm

Fungal pathogen	7 days growth (triplicate) <i>D. falcata</i> Extract			Mean	7days growth (triplicate)Fungicide			Mean
<i>Alternaria alternata</i>	30	29	31	30	31	32	33	32
<i>Colletotrichum capsici</i>	21	19	20	20	22	21	23	22
<i>Phytophthora infestans</i>	36	35	37	36	35	36	34	35

Table 2: Mycelium growth of fungal disc in mm

Fungal pathogen	7 days growth (triplicate) <i>B. racemosa</i> Extract			Mean	7days growth (triplicate)Fungicide			Mean
<i>Alternaria alternata</i>	21	19	20	19	31	32	33	32
<i>Colletotrichum capsici</i>	17	18	19	18	22	21	23	22
<i>Phytophthora infestans</i>	33	32	31	32	35	36	34	35



Plate 1: Antifungal activity of Leaves Extract of *D. falcata* & *B. racemosa* (Aqueous)

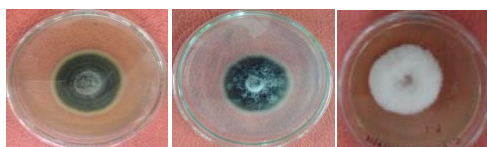


Plate 2: Antifungal activity of Fungicide (Propiconazole)



A. alternata *C. capsici* *P. infestans*

Plate 3: fungal plant pathogen on PDA (Control)

5. Phytochemical screening

Aqueous Extract of *Bauhinia racemosa* and *Dolichandrone falcata* recorded the presence of saponins, tannins, alkaloids, glycosides, steroids, terpenoids and flavonoides, through the qualitative analysis.

Table 3: Phytochemical analysis of Aqueous extract of *B. racemosa* & *D. falcata*

Phytochemical	<i>B. racemosa</i>	<i>D. falcata</i>
Tannins	+++	+++
Alkaloids	+++	+++
Saponins	+	++
Terpenoids	++	++
Glycosides	+++	+++
Flavonoids	+++	+
Steroids	-	++

+++ strongly present, ++ present, + weekly present, - absent

6. Result and Discussion

The present work was carried out for phytochemical screening and antifungal activity of *Dolichandrone falcata* & *Bauhinia racemosa*. The study reveals that the presence

of alkaloids, flavonoids, tannins, saponins, terpenoids, glycosides and steroids were present in aqueous extracts of leaves.

According to the recorded antifungal assay (Table 1 & 2), both the plant extract showed maximum inhibitory effect in *Alternaria alternata*, *Colletotrichum capsici* and less inhibitory effect on *Phytophthora infestans* in comparison with fungicide (Propiconazole). *Bauhinia racemosa* Showed excellent result against all the selected pathogen & *Dolichandrone falcata* also showed good result against in controlling the fungal diseases of *Alternaria alternata* & *Colletotrichum capsici* than fungicide Through the study the results clearly reveals that the plant extract play the role in controlling the vegetable diseases. Ramdas *et al.*, (2006) [11] revealed that the phytochemical plays an important role in the treatment of diseases without any side effects. There is a need to search new drugs from natural sources. India is a home to a variety of traditional medicine system that relay to a very large extent on native plant species for new drug materials. Therefore now there is a need to look back towards traditional medicine which can serve a novel therapeutic agent (Chitravadivu *et al.*, 2009) [12]. The

pharmacognostical evaluations also give valuable information which is essential to standardize the drug.

7. Conclusion

Dolichandrone falcata & *Bauhinia racemosa* has highest importance for its valuable secondary metabolites. Plant extracts that inhibit the growth of plant pathogen without harming the host may have potential application as therapeutic agents. The study reveals the important role of phytochemical which are released in the form of secondary metabolites in controlling the fungal vegetable diseases without effecting the environment helping in reducing the soil salinity and increase the fertility.

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