



Antifungal Activity of Ethanol Extract of *Pouzolzia zeylanica* (L.) Benn

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COMMENTARY

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Abstract

The main objective of the present study was to determine the ethanolic extract of *Pouzolzia zeylanica* (L.) Benn for antifungal activity. To determine the antifungal activity agar disc diffusion method was used. The antifungal activity of the extracts was compared with standard drug Griseofulvin (500 µg/disc). The ethanol extract of *Pouzolzia zeylanica* (L.) Benn showed very good antifungal activity ranging from zone of inhibition (7.0-26) mm and *Aspergillus niger* was the most susceptible fungal strain of the Ethanolic extract of *Pouzolzia zeylanica* (L.) Benn. Due to these promising results, further *in vivo* studies over *Pouzolzia zeylanica* (L.) Benn must be conducted.

Keywords: *Pouzolzia zeylanica* (L.) Benn; ethanol extract; antifungal activity.

Introduction

Vast natural resources of medicinal plants are being used for thousands of years for the cure of many diseases in all over the world. If we could use medicinal plants properly we could get medicines at low cost and then it might be possible to fulfill the demand of our medication. This will supply low cost medicine to our poor people and we could establish a better health care system^[1]. Recently, some higher plant products have attracted the attention of microbiologists to search for some phytochemicals for their exploitation as antimicrobials. Such plant products would be biodegradable and

safe to human health^[2]. *Pouzolzia zeylanica* (L.) Benn. (Chakma- Biskatali, English name: Graceful Pouzolzbush; Pouzolzbush, Graceful, Family: Urticaceae) is extensively grown in Bangladesh. It also occurs in Western Australia (WA), Northern Territory (NT), and the northern part of Cape York Peninsula (CYP). North East Queensland (NEQ). Altitudinal range from near sea level to 550 m. Grows in rain forest and monsoon forest. It also occurs in Asia and Malaysia. Urticaceae is a perennial herb, very variable in size and habit; stem erect or prostrate, 15-30 cm long. Leaves 2-3.8 cm long, ovate or ovate-lanceolate, obtuse, acute or acuminate, entire. Flowers minute, in small auxiliary androgynous clusters. Its duration is perennial which means it will grow year after year. This species has been used medicinally in Malaysia and Indonesia. Leaves are anthelmintic and vulnerary; used as a cicatrizant for gangrenous ulcers, in syphilis and gonorrhoea. Leaf juice is used as galactagogue. Poultice of the herb is applied to sores, boils and to relieve stomachache^[3]. A preliminary phytochemical screening was carried out to identify the presence of various types of phytoconstituents present in the extract. This will ultimately lead to proper use of this important medicinal plant without having side effects and toxicity for various diseases.

Material and Method Conclusion

Plant material

The whole plant of *Pouzolzia zeylanica* (L.) Benn. was collected from Hathazari, Chittagong, Bangladesh in the month of August. 2011, After selection of plants suitable herbarium sheet for plant with some general information were prepared and send to Bangladesh Council of Scientific & Industrial Research (BCSIR), Baluchara, Chittagong for identification. They identified and provided us the scientific name of the plants.

Preparation of plant Extract

After collection, the plant was cut into small pieces and air dried for several days. The plant materials were then ground into coarse powder. The dried and ground plant powder (138gm) were soaked in



ethanol(750ml) in an air tight, clean flat bottomed container for 7 days at room temperature with occasional stirring and shaking. The extract was then filtered first through a fresh cotton plug and finally with a whatman filters paper. The filtrate (ethanol extract) obtained was evaporated under ceiling fan until dried. It rendered a greenish color concentrate paste. The weight of the crude extract was 8.202 gm and the yield value of powdered plant material of *Pouzolzia zeylanica* (L.) Benn was 5.94% .The concentrated paste was designated as crude extract or ethanolic extract.

Fungal Strains

The antifungal activity of plant extract were investigated against six pathogenic fungal strains such as *Aspergillus niger*, *Blastomyces dermatitidis*, *Candida albicans*, *Pityrosporum ovale*, *Trichophyton spp*, *Microsporum spp*. All the fungal strains were collected from Bangladesh Council of Scientific and Industrial Research(BCSIR), Bangladesh.

Antifungal Assay

In vitro antifungal screening was performed by disc diffusion assay method [4, 5], where Potato Dextrose Agar (PDA) medium was used for the antifungal activity. Their antifungal activity were tested against six fungal strains at a concentrations of 250 µg/disc, 500 µg/disc for each and the results were compared with griseofulvin (500 µg/disc). The activity was determined after 72 hours of incubation at 37.5oC.

Preparation of the medium

The weight amount of potato slice was boiled with a little amount of distilled water for 30 minutes and applied for coarse filtration by the help of cotton. The required amount of dextrose and bacterial agar medium were properly mixed in a conical flask. Finally the constituents of two flasks were mixed thoroughly after the adjustment of volume by the distilled water the medium was sterilized in an autoclave. The pH of the medium was adjusted to 5.6.

Table- 1: Composition of the Potato Dextrose Agar (PDA) medium

Potato Dextrose Agar (PDA) medium (1000 ml)	
Ingredients	Amount
Potato slice	200.0 gm
Dextrose	20.2 gm
Bacterial agar medium	16.0 gm
Distilled water	q.s

Results

Result of the antifungal screening

The result of the antifungal screening assay of ethanol extract of *Pouzolzia zeylanica* (L.) Benn against the tested fungal strains were shown in Table- 2

Table- 2: Anti-fungal activity of the ethanol extract of EEPZ, standard and blank

Tested fungi	Zone of inhibition (mm)			
	EEPZ		S	C
	A	B	500 µg/disc	
<i>Aspergillus niger</i>	15	26	27	-
<i>Blastomyces dermatitides</i>	12	25	22	-
<i>Candida albicans</i>	7	15	26	-
<i>Pityrosporum ovale</i>	10	19	22.5	-
<i>Trichophyton spp</i>	12	18	29	-
<i>Microsporum spp</i>	9	20	23	-

EEPZ = ethanol extract of *Pouzolzia zeylanica* (L.) Benn
 A = 250µg/disc,
 B = 500µg/disc, S = Standard (Griseofulvin) & C = Control]

Discussion

The antifungal activities of the crude extracts were evaluated by the disc diffusion method against six fungal strains using Griseofulvin as standards. In the screening, the ethanol extract of *Pouzolzia zeylanica* (L.) Benn showed strong antifungal activity with zone of inhibition of 7.0-26 mm respectively while the highest antifungal activity was seen against *Blastomyces dermatitides*, *Aspergillus niger*, *Microsporum spp* & *Aspergillus niger* was the most susceptible fungal strain of the ethanolic extract of *Pouzolzia zeylanica* (L.) Benn.

Conclusion

The result shows that the ethanolic extract of *Pouzolzia zeylanica* (L.) Benn possessed antifungal activity against all the tested fungal strains.. So the active principles which are responsible for this antifungal activity is to be explored. The isolation of these active constituents showing antifungal activity can be more useful and work is to be done in this regard.

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AUTHORS' CONTRIBUTIONS

Authors contributed equally to all aspects of the study.

PEER REVIEW

Not commissioned; externally peer reviewed

CONFLICTS OF INTEREST

The authors declare that they have no competing interests