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Antifungal activity of *Polyalthia longifolia* Sonn. extracts against *Candida* species

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Abstract

In the present study the antifungal potential of different solvent extracts of bark and leaves of *Polyalthia longifolia* Sonn. against some yeast pathogens was determined. Maximum activity was observed against *C. albicans* in acetonic extract of bark with 23mm zone of inhibition. The methanol extract of bark and leaves respectively showed positive results against tested pathogens. The plant extracts revealed presence of secondary metabolites.

P*olyalthia longifolia* Sonn. is commonly known as 'false ashoka', besides being an ornamental street tree and belongs to the family annonaceae. It is an evergreen plant commonly used as an ornamental street tree due to its effectiveness in combating noise pollution[3]. The tall and slender tree grows symmetrically over 30 ft in height and produces fresh shining green foliage.

Candida is an opportunistic pathogen that causes fungal infection in in immuno-compromised individuals. Different species of *Candida like Candida albicans, Candida glabrata, Candida parapsilosis and Candida krusei* are known to be aetiological agents of human fungal infection; however, more than 90 % of invasive infections are caused by *Candida albicans, Candida glabrata, Candida parapsilosis, Candida tropicalis* and *Candida krusei*[7].

Medicinal plants are source of vide variety of biologically active compounds which are used extensively in the treatment of various diseases. Many plants are known to possess fungicidal substances which are mostly of secondary metabolites[6].

Preparation of plant extract:

Bark and leaves of healthy and mature *Polyalthia longifolia* plants were collected from R.D.V.V. campus, Jabalpur. These materials were washed thoroughly with tap water, dried in shade then grind to fine powder using electrical grinder and stored in airtight container till further use[2]. Aqueous extract was prepared through cold percolation method while for organic solvent extraction (ethanol, petroleum ether and acetone) continues hot extraction method used with the help of Soxhlet extractor.

Test organisms:

Five different species of Candida *i.e. Candida albicans, Candida glabrata, Candida glorumundi, Candida krusei* and *Candida parapsilosis* were used as test pathogens. They were maintained in SDA medium at 4°C .

Antifungal assay:

The antifungal activity was observed by agar well diffusion method[5]. The plant extracts (10mg/ml) were filled in to wells and pure solvents used as control. All plates were then incubated at 28°C for 24hrs. The Zone of inhibition (mm in diameter) was measured with the help of scale.

Phytochemical Screening:

Presence of secondary metabolites in the plant extract having antifungal activity was obtained by following the method of Banso[1].

The antifungal activity against *C. abicans* was observed by ethanol, petroleum ether and acetonic extracts of bark.whereas in case of leaves it was observed only in methanolic extract. In case of *C. crusie* it was recorded only in ethanoloic extract of bark and methanolic extract of leaves. The highest zone of inhibitions was recorded in acetonic extract of bark against *C. albicals*. *Candida glorumundi, Candida glabrata* and *Candida parapsilosis* were showed resistance against solvent extract of bark as well as leaves. Kavitha[5] also reported positive antibacterial activity in methanolic extracts of leaves.

Table-1. Antifungal potential of *P. logifolia* bark and leaves extract

Plants parts	Zone of Inhibition (in mm)					
	Solvent extract	*C. albicans*	*C. glabrata*	*C.glorumundi*	*C. krusei*	*C. parapsilosis*
Bark	Acetone	23	-	-	-	-
Leaves		-	-	-	-	-
Bark	Aqueous	-	-	-	-	-
Leaves		-	-	-	-	-
Bark	Ethanol	10	-	-	20	-
Leaves		-	-	-	-	-
Bark	Methanol	-	-	-	-	-
Leaves		15	-	-	22	-
Bark	Petroleum	21	-	-	-	-
Leaves	ether	-	-	-	-	-

Phytochemical analysis revealed the presence of secondary metabolites like glycoside, flavonoids, tannins, saponins and alkaloids in methanolic extract of leaf and ethanolic extract of bark and methanolic extract of leaves.

It is well known that *P. longifolia* is used in digestive problems, skin infections, urinary infections etc.[4]. The ethanolic and methanolic extract of bark and leaf of *P. longifolia* showed antifungal potential against *C. albicans* and *C. krusei*. Therefore, besides being ornamental tree it has disease curing efficiency. Thus, the present study reflects a hope for the use of this plant after further detailed study.

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