



Evaluation of anti-mycotic activity of *Acacia catechu* Willd. (Mimosaceae)

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ABSTRACT

An attempt was made to assess the antimycotic activity of *Acacia catechu* Willd. extracts using three different solvents such as ethanol, acetone and hexane. Agar well diffusion technique was followed for screening against chosen fungi like *Aspergillus niger*, *Fusarium oxysporum*, *Alternaria alternata*, *Rhizopus stolonifer* and *Macrophoma phaseolina*. The maximum inhibition was recorded in ethanol, acetone and hexane roots extracts. *A. niger* growth was controlled by acetone extract of bark, where as *F. oxysporum*, *A. alternata*, *R. stolonifer* and *M. phaseolina* by acetone extracts of *A. catechu* extract. These extracts can be utilized for the management of this plant. It is recommended to isolate, identify and integrate the bioactive principle in these pathogens management.

Keywords: *Acacia catechu*, Fungal pathogens, Biofungicide

INTRIODUCTION

Acacia catechu Willd (Mimosaceae) is a moderate sized deciduous tree growing in tropical countries commonly known as Kath is an indispensable ingredient of "pan" which a betel leaf preparation chewed in India. It possesses anti-helmentic anti dysenteric and antipyretic properties. It is also use in melancholia, conjunctivitis, haemoptysis and skin diseases, in sore mouth, chest pain, asthma, colicky pain, gravel, bronchitis etc., (Joshi, 2000). The chief phytochemical constituents are catechin and epicatchin (Goodwin and Mercer, 1972). The catechins have significant anti toxicant and antimicrobial properties (Machado. *et al.*, 2003). Previously it was reported that both the natural dyes (Singh *et al.*, 200) and bark (Tripathi *et al.*, 2003) and whole plant (Brahmachari *et al.*, 2006) has microbicidal activity. Hence, an attempt has been made to study the antimicrobial activity of *A. catechu* using different solvents against five economically important fungi such as *Aspergillus niger*, *Fusarium oxysporum*, *Alternaria alternata*, *Rhizopus stolonifer* and *Macrophoma phaseolina*.

MATERIALS AND METHODS

Fresh leaves, roots and bark of *Acacia catechu* Willd. were collected in the morning hours from Shivaji University campus, Kolhapur and were washed thoroughly in tap water and then rinsed with distilled water, and shade dried at room temperature. The dried samples were ground well using domestic grinder into fine powder. The 15 gm of samples each were used separately in three different solvent viz., ethanol, acetone and hexane, using Soxhlet

apparatus for 12-14 hours. The extract were then filtered, and concentrated in a steam bath, till a brownish green semi-solid gummy material was obtained. The concentrated extracts were used for studying anti microbial activity.

The five different species of fungi viz., *Aspergillus niger*, *Fusarium oxysporium*, *Alternaria alternata*, *Rhizopus stolonifer* and *Macrophoma phaseolina* obtained from Department of Botany, Shivaji University, Kolhapur and were maintained on PDA and Czapek dox agar media. After solidification a well was scooped out at the center using 7mm sterile cork borer. The test solutions 1ml were poured into the well (Alice and Sivaprakasam, 1996). Similarly fungal spore suspension was prepared with distilled water, 5ml of fungal suspension was mixed with 100ml sterilized PDA with constant shaking. 20ml seeded medium was transferred to sterile Petri plate and kept for solidification (Collins and Lyne, 1976). Three replicates were maintained for each treatment and the cultures were incubated at 28±1°C for 48 hours and inhibition zone was recorded and measured in millimeter

RESULTS AND DISCUSSION

The results of the experiment were presented in Tables 1 inhibition zones were not found in control counterpart; however, irrespective of the solvent and the plant part, all the experimental categories recorded inhibition. The ethenolic and acetone extracts showed highest inhibition zone as compared to hexane extract. The results of the anti fungal activity of *A. catechu* were recorded. The ethenolic root extract of *Acacia catechu* exhibited a

Table 1. Anti fungal activity of *Acacia catechu* Willd extracts against some fungi.

Species	Zone of inhibition (diameter-mm)		
	Leaf	Root	Bark
Alcohol			
<i>Aspergillus niger</i>	0.5	0.4	1.0
<i>Fusarium oxysporum</i>	0.5	1.0	1.4
<i>Alternaria alternata</i>	0.4	10.1	0.3
<i>Rhizopus stolonifer</i>	0.2	16.1	1.2
<i>Macrophoma phaseolina</i>	0.2	6.2	1.2
Acetone			
<i>A. niger</i>	1.1	2.0	5.0
<i>F. oxysporum</i>	5.0	12.1	11.2
<i>A. alternata</i>	0.4	12.2	2.2
<i>R. stolonifer</i>	0.3	22.1	10.1
<i>M. phaseolina</i>	1.0	10.0	0.4
Hexane			
<i>A. niger</i>	0.2	1.2	0.3
<i>F. oxysporum</i>	0.3	1.2	1.3
<i>A. alternata</i>	0.3	0.4	0.4
<i>R. stolonifer</i>	0.2	2.0	1.2
<i>M. phaseolina</i>	0.4	0.4	0.4

maximum inhibition against *R. stolonifer* (16.1 mm) followed by *A. alternata* (10.1mm). A least zone of inhibition was recorded in extract of leaf, root and bark against *A. niger* followed by *F. oxysporum*. A negligible zone of inhibition was observed in leaf alcoholic extract. Alcoholic extract of root exhibited high potency against *R. stolonifer* and *A. alternata*.

Acetone extract of leaf, root and bark of *A. catechu* depicted in Table 1. A highest zone of inhibition (22.1 mm) was recorded against *R. stolonifer*, followed by *A. alternata* and *F. oxysporum*. Negligible zone of inhibition was recorded against *A. niger*. Acetone extract of root and bark possess a high potency against *R. stolonifer*, *A. alternata*, *F. oxysporum* and *M. phaseolina*. The Hexane extract of leaf, root and bark of *A. catechu* Table 1 signifies, a very low inhibition zone among all five test fungi, it reflects no antifungal potency. Previously it was reported that bark (Tripathi *et al.*, 2003) and whole plant of *A. catechu* (Brahmachari *et al.*, 2006) has antifungal activity. This antimicrobial study may helpful in the development and explore the anti microbial properties of plant and also for exploitation of bio-active compounds of plant origin for eco-friendly disease management.

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