

**PRELIMINARY PHYTOCHEMICAL AND ANTI-MICROBIAL EVALUATION OF  
DIFFERENT EXTRACTS OF LEAVES OF *ACACIA MONILIFORMIS* GRISE**

P.VENKATESH<sup>1</sup>, V.K.R.H.SUDHEER<sup>1</sup>, R.KARTHIKEYAN<sup>1\*</sup>,

<sup>1</sup>Department of Pharmacognosy, Vignan Pharmacy College, Vadlamudi-522213, A.P. India

**Summary**

*Acacia moniliformis* (family Mimosaceae) commonly known as “Auri”, is a fast-growing, crooked tree, native of Australia and also found in Indonesia, Papua etc. The present study aimed to explore the presence of phytochemical substance and to know the efficacy of antimicrobial activity of different solvent extracts of leaves of *Acacia moniliformis* by disc diffusion method. This study reveals that chloroform extract showed significant antimicrobial activity against microorganisms used in this study.

**Keywords:** *Acacia moniliformis*, Flavonoids, Disc diffusion method, Antimicrobial activity

\*Corresponding author

[rkcognosy@gmail.com](mailto:rkcognosy@gmail.com)

Mobile: 91- 9966847127

## Introduction

*Acacia moniliformis* is a fast-growing, crooked tree which is used as a source of firewood and charcoal production. It is grown upto 30m height. Commonly known as “Ear leaf acacia” or ear pod wattle belonging to the family Mimosaceae. Medicinally it was found to have antimutagenic, chemopreventive (1), antihelminthic (2), antioxidant property (3) and sperm immobilizing activity (4). This study explored phytochemicals present in various extracts of leaf parts and antimicrobial activity of different extracts, clarifies the preliminary information of the leaf parts of the species.

## Materials and Methods

### Plant collection and authentication

The leaves of *Acacia moniliformis* were collected from Vatticherrikkuru, A.P. India. The plant specimen was authenticated by the Botanist Dr. S.M.Khasim, Department of Botany and microbiology, Acharya Nagarjuna University, Guntur, A.P. and voucher specimen was deposited on the department for future reference.

### Preparation of plant Extracts

Fresh plant material was collected in bulk, washed under running tap water to remove adhering material, dried under shade and pulverized in a mechanical grinder. The coarse powder was passed through sieve no.60#. The different extracts were carried out by using 1 kg of dried coarse leaf powder of *Acacia moniliformis* with the help of Soxhlet extractor. Different solvents used for the extractions are with petroleum ether (60-80°C), n-Hexane, chloroform, acetone, ethanol and water according to the polarity basis. They were then filtered through muslin cloth and were concentrated under reduced pressure to obtain residues.

### Preliminary Phytochemical studies

Preliminary phytochemical screening of the leaves extracts of *Acacia auriculiformis* was performed as per standard procedure. (5,6)

### Test microorganisms

Microorganisms like *Klebsiella pneumoniae*, *Staphylococcus subtilis*, *Escherichia coli* and *Staphylococcus aureus* were used for the screening of antimicrobial activity.

### Evaluation of antimicrobial activity

The antimicrobial activities of different extracts of *Acacia auriculiformis* leaves were determined at different concentrations (10µg/ml, 15 µg/ml, 20µg/ml in dimethyl sulfoxide) against microbes by agar diffusion technique using a paper disc. Microbial cultures were firmly swept over the agar (nutrient agar medium) plate using sterile cotton swab to make uniform culture lawns. The saturated disc of different concentration of test compounds was placed on agar plates. Allowed the plates to stand at room temperature for 30 minutes (pre-incubation). Inoculated plates were incubated at 37°C for 24 hr. The inhibition zones were recorded with the help of scale and the result is summarized in Table 2. Sterile dimethyl sulfoxide without plant extracts served as negative control DMSO (20µl/disc).(7,8)

### Results and Discussion

The different extracts explored different phytoconstituents such as Glycoside, proteins, tannins and resins majorly. Flavonoids, Saponins, waxes, Carbohydrates and are present only trace amount. The alkaloids, mucilage, volatile oils, steroids are absent in all the above extracts. Results were tabulated in table no 1. The antimicrobial activity of the extracts at different concentration was determined. All the six extracts at different concentration (10µg/ml, 15 µg/ml, 20µg/ml in dimethyl sulfoxide) exhibited antimicrobial activity against all microbial strains tested. Results were tabulated in table no 2. Chloroform extract exhibited comparably a high degree of activity than the other extracts (petroleum ether, n-hexane, ethyl acetate, ethanol and water). In the present antimicrobial screening, 20µg/ml of all the extracts were taken for the evaluation of the activity. Chloroform extract (20µg/ml) was found to possess the broadest antimicrobial activity and, n-hexane, ethyl acetate, petroleum ether was found to be moderately active, while ethanol and water extract did not show considerable activity. The ethanolic extract was most effective against *K.Pneumonia* and *S.Aureus* with diameter of zone of inhibition 1.1cm and 1.2cm at a concentration of 20µg/ml respectively. It was least effective against *E.Coli* (Gram negative bacteria). Amongst the Gram negative bacteria, the ethanolic extract showed less activity against all the four microorganism. Phytochemical studies on *Acacia moniliformis* leaves revealed the presence of carbohydrates, glycosides, tannins, Saponins, and phenolic compounds. The antimicrobial activity of *Acacia moniliformis* may be due to one/more group of above phytoconstituents.

**Preliminary phytochemical screening of different extracts of leaves of *Acacia moniliformis* grise**

Table: 1

TEST	PET.ETHER	N-HEXANE	CHLOROFORM	ACETONE	ETHANOL	WATER
Alkaloids	--	--	--	--	--	--
Anthraquinone Glycosides	--	--	--	++	--	++
Cardiac Glycosides	--	--	++	++	--	++
Saponin Glycosides	--	--	--	--	--	++
Coumarian Glycosides	--	--	++	--	++	--
Carbohydrates	--	--	--	++	--	--
Flavanoides	--	--	--	--	--	++
Protein	++	--	++	--	++	--
Amino acids	++	--	++	--	++	--
Steroids	--	--	--	--	--	--
Tannins	--	--	--	--	++	++
Resins	--	--	--	--	++	++
Volatile oil	--	--	--	--	--	--
Waxes	++	--	--	--	--	--
Mucilage	--	--	--	--	--	--

++ present, -- absent

**Anti-microbial evaluation of different extracts of leaves of *Acacia moniliformis* grise**

Table:2

Average zone of inhibition (cm)

Micro Organism /disc 20	Pet ether			n-hexane			Chloroform			Ethyl acetate			Ethanol			Aqueous			DMSO
	10µ	15µg	20µg	10µg	15µg	20µg	10µg	15µg	20µg	10µg	15µg	20µg	10µg	15µg	20µg	10µg	15µg	20µg	20µl
K.Pneumonia	0.7	0.9	1.1	0.7	1.0	1.3	0.9	1.1	1.4	0.7	1.0	1.3	0.7	0.9	1.1	-	-	-	-
B.Subtilis	0.9	1.1	1.3	0.8	1.1	1.3	0.7	1.2	1.4	0.8	1.0	1.2	0.7	0.9	1.0	-	-	-	-
E.Coli	0.8	0.9	1.2	0.7	0.9	1.2	0.8	0.9	1.0	0.8	0.9	1.2	-	-	-	0.6	0.7	0.9	-
S.Aureus	0.8	1.0	1.3	0.9	1.1	1.4	0.9	1.0	1.2	0.7	0.9	1.2	0.7	0.8	1.2	-	-	-	-

**Conclusion**

The present study reveals preliminary information of leaves of *Acacia moniliformis*. From the results, it can be concluded that the *Acacia moniliformis* leaves extracts found to be used as narrow-spectrum antimicrobial agent after extensive investigation. Further work will emphasize the isolation and characterization of active principles responsible for antimicrobial activity of leaf extracts of *Acacia moniliformis*.

**Acknowledgment**

The authors are grateful to N.Chandrasekhar for his valuable suggestions and help throughout this work. Whole hearted thanks to teaching and non teaching staff of Vignan Pharmacy College for their encouragement and for providing necessary facilities to carry out the research work successfully.

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