

ANTIMICROBIAL ACTIVITY OF *MURRAYA KOENIGII***Tomar Arti^{2*}, Rawat Suman¹, Sharma Ankita¹**

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ABSTRACT

The present study was aimed at detecting and evaluating antimicrobial activities of *Murraya koenigii* known for their medicinal properties in folk medicine. The methanolic extract of leaves and the chloroform extract of bark shows good activity against some bacterial strains such as *Proteus vulgaris*, *Staphylococcus aureus*, *Salmonella typhi*, *Bacillus subtilis*, *Achromobacter ruhlandi*, *B. cereus*, *Escherichia coli* and *Acromobteenen-3*. The extract also shows good antifungal activity against *R. arrigeus*, *S. cereaisiae*, *A. niger*, and *P. carysogenum*.

Keywords: *Murraya koenigii*, Antimicrobial activity, Studies.

INTRODUCTION

Murraya koenigii. a plant belonging to family Rutaceae¹. It is a tree of about 2 meters tall, it often forms undergrowth in forest throughout India and in Andaman islands, growing up to an altitude of 1500m. The plant originates in the tarai region of Uttar Pradesh, India and is now widely found in hills of Uttaranchal, Sikkim, Bengal, Assam, central India and Kerala. The plant is used in Indian system of medicine.^[1-2]

The aromatic leaves, which retain their flavour and other qualities even after drying, are slightly bitter, cooling, weakly acidic in taste and are considered as tonic, anthelmintic, analgesic, digestive, appetizing and are widely used in Indian cookery for flavouring foodstuffs. The green leaves are used to treat piles, inflammation, itching, fresh cuts,

dysentery, vomiting, burses and dropsy. the roots are slightly purgative, stimulant and used for general body aches, whilst the bark is used to treat snakebite.^[3-4]

MATERIALS AND METHODS

1. Collection of leaves of *Murraya koenigii*

Leaves of *Murraya koenigii* were collected from area around Tilak nagar, Delhi during the month of Oct to Dec. The collected plant material was washed with water to remove mud and other undesirable material and dried under shade.

2. Extraction of leaves and bark of *Murraya koenigii*

The collected plant material was washed with water to remove other undesirable material and dried under shade. The air-dried leaves (300 gm) of *Murraya koenigii* were crushed. The crushed leaves were extracted with methanol at room temperature. The extract was evaporated till dryness to obtain residue. These extracts were concentrated under reduced pressure. The extract was used for antimicrobial activity.

The air-dried bark (100 gm) of *Murraya koenigii* was crushed. The crushed bark was extracted with chloroform by hot percolation method using Soxhlet Apparatus. The extract was evaporated till dryness to obtain residue. These extracts were concentrated under reduced pressure. The extract was used for antimicrobial activity.

4. Anti-microbial activity

The **anti-microbial activity** of the leaves and bark of *Murraya koenigii* was carried out. The leaves and bark extract were screened for anti bacterial and anti fungal activities.

Anti bacterial activity of leaves extract

In this study, the anti bacterial activity was studied against the micro organism and the bacterial cultures used in the study were:

1. *Escherichia coli*
2. *Acromobacter*-3
3. *Bacillus cereus*

These bacterial cultures were maintained on nutrient agar slants at first being incubated at 37⁰ c for about 18-24 hours and then stored at 4⁰ c as stock for anti bacterial activity. Fresh cultures were obtained by transferring a loop full of cultures into nutrient broth and then incubated at 37⁰c overnight. To test anti bacterial activity, the well diffusion method was used.

Culture media preparation

The microbiological media prepared as standard instruction provided by the HI-Media Laboratories, Mumbai. The media used for anti-bacterial activity Muller- Hinton Agar (MHA) and Nutrient broth (NB). They were prepared and sterilized at 121⁰C at 15 psi for 15-30 minutes autoclave.

Plate preparations

25 ml of pre autoclaved Muller-Hinton agar (MHA) was poured into 90 mm diameter pre sterilized petri-plates. These petri-plates were allowed to solidify at room temperature.

Well diffusion method

After the plated solidified the freshly prepared microbial growth culture suspension (about 20µl) was spread over the Muller – Hinton agar (MHA) media using L shaped sterilized glass spreader separately under the aseptic condition using laminar air flow. Then well were made in each plate with the help of borer of 8 mm diameter .In these well, about 100µl of each leaves extracts individually was loaded. This method depend upon the diffusion of leaves extracts from hole through the solidified agar layer of petri-dish to such an extent that the growth of added micro organism is prevented entirely in a circular area or Zone around the hole containing leaf extract.

Incubation: Petri plates were incubated for overnight at 37⁰C ± 0.5⁰C in the incubator.

Inhibition Measurement of zone of inhibition

After incubation, the diameter of clear zone of incubation produced around the well or holes were measured in mm by ESR Tube and compared with standard drug.

RESULTS

Table-1 Antibacterial activity of the extract of *Murraya koenigii* leaves and bark

Test organism	Leaves Inhibition zone (cm)	Bark Inhibition zone (cm)
B.cereus	1.3	1.5
Escherichia coli	1.5	0.8
Acromobteenen-3	1.0	1.0

Table- 4 Antifungal activity of the extract of *Murraya koenigii* leaves and bark.

S. No.	Test organism	Leaves	Bark
1	R.arrigues	+	+
2	S.cereaisiae	+	+
3	A.niger	+	+
4	P.chrysogenum	+	+
5	C.albican	—	—

- = No activity + = Active

DISCUSSION

The methanolic extract of leaves and the chloroform extract of bark shows good activity against some bacterial strains such as *Proteus vulgaris*, *Staphylococcus aureus*, *Salmonella typhi*, *Bacillus subtilis*, *Achromobacter ruhlandi*, *B. cereus*, *Escherichia coli* and *Acromobacter*. The extract also shows good antifungal activity against *R. arrigues*, *S. cereaisiae*, *A. niger*, and *P. carysogenum*.

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