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ANTIBACTERIAL ACTIVITY OF MURRAYA KOENIGII L. LEAF EXTACTS

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ABSTRACT

The Plants are known for their diverse pharmacological activities including antimicrobial activity. Plant products work as a substitute to synthetic products because of easy availability. In the present work an attempt has been made to find out the antimicrobial activity of Murraya koenigii L.. The various solvent extracts of leaves of the plant were screened for anti bacterial activity. The anti bacterial activity was done by Broth dilution Method.

KEYWORDS : Murraya koenigii L., anti bacterial activity, solvent extracts

INTRODUCTION

Infectious diseases are a major cause of death in many countries[1]. Due to the development of antibiotic resistance in harmful bacteria, there is a continuous need for the search of new antibacterial compounds. The plants are the best source of remedies for curing various infectious diseases[2-4].

Antimicrobial-resistant in *Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii* and *Pseudomonas aeruginosa* pathogens represent a global threat to human health. The acquisition of antimicrobial resistance genes by these pathogens has reduced the treatment options for serious infections, increased the burden of disease, and increased death rates due to treatment failure and requires a coordinated global response for antimicrobial resistance surveillance. This looming health threat has restimulated interest in the development of new antimicrobial therapies.

Murraya koenigii L.

Taxanomic classification:

Kingdom- Plantae
Class- Magnoliopsida
Order- *Sapindales*
Family- Rutaceae
Genus- Murraya
Species- *Murraya koenigii* L.
Vernacular name:
English- Curry Leaf Tree
Hindi- Kadi patta ped
Telugu- Karivepaku chettu

MATERIALS AND METHOD

Description:

A small spreading shrub, about 2.5 metres high; the main stem, dark green to brownish, with numerous dots on it; its bark can be peeled off longitudinally exposing the white wood underneath; the girth of the main stem is 16 cm. Leaves, exstipulate, bipinnately compound, 30 cm long, each bearing 24 leaflets, having reticulate venation; leaflets, lanceolate, 4.9 cm long, 1.8 cm broad, having 0.5-cm-long petiole[5].

Flowers, bisexual, white, funnel-shaped, sweetly scented, stalked, complete, ebracteate, regular, actinomorphic, pentamerous, hypogynous, the average diameter of a fully opened flower being 1.12 cm; inflorescence, a terminal cyme, each bearing 60 to 90 flowers; calyx, 5-lobed, persistent, inferior, green; corolla, white, polypetalous, inferior, with 5 petals, lanceolate, length, 5 mm; androecium, polyandrous, inferior, with 10 stamens, dorsifixed, arranged into circles of five each; smaller stamens, 4 mm. long whereas the longer ones, 5 to 6 mm; gynoecium, 5 to 6 mm long; stigma, bright, sticky; style, short; ovary, superior[6]. Fruits, round to oblong, 1.4 to 1.6 cm long, 1 to 1.2 cm in diameter; fully ripe fruits, black with a very shining surface. Seed, one in each fruit, 11 mm long, 8 mm in diameter, colour spinach green. Flowering and fruiting occurs between December to July. This suckering plant can grow to a tree up to 6m tall in warm, humid climates, but it can also be grown very successfully in a pot as a much smaller plant[5-7]. It will also generally be smaller if grown out of its normal climate zone. The pungently - flavoured pinnate leaves are borne on opposite slender branchlets and have an unusual pendant habit. The leaves themselves are smooth and shiny with paler undersides. Blackish berries follow white, perfumed flowers in summer[7,8].

Figure 1: *Murraya koenigii* L.Plant.

Plant material:

Murraya koenigii L. plants were collected from the region of Wanaparthy, Telangana, India, in the month of December.

Preparation of extracts:

Leaves extract-

Murraya koenigii L. leaves were washed in water, shade dried, broken into coarse powder, grinded to fine powder using mechanical grinder and stored in air tight containers at room temperature till further use. Each solvent extract of sample was prepared by soaking 100 g of dried fine powdered samples in 200 ml of respective solvent(Ethyl acetate, Acetone, Carbontetrachloride) separately for 4 days at room temperature with occasional shaking. The extracts were filtered using Whatman filter paper and then concentrated.

Anti bacterial Activity Test by Broth dilution Method:

In this study, *Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii* and *Pseudomonas aeruginosa* species were tested. As per the European Committee for Antimicrobial Susceptibility Testing (EUCAST)/CLSI, the broth dilution method was used to determine the minimum inhibitory concentration (MIC) of compounds against rapidly growing bacterial pathogens.

Cation supplemented Muller-Hinton broth II was used as a medium. In brief, 100 μL was added in well to serve as a sterility control well. Further, 50 μL were added to another well and served as a control well. Then, 50 μL of each dilution (2:1) of antibiotic, were added to the respective well and further inoculated with colonies of bacteria. The inoculation was

performed in such a way so that it could contain 5×10^5 CFU/mL. The plate was incubated at 35-37^{0}C for 18-24 hrs. The concentration at which there is no visible growth of bacteria was observed was taken as MIC.

RESULTS AND DISCUSSION

The antibacterial activity of plant extracts is shown in Table 1.The plant extracts showed activity against *Staphylococcus aureus*.

CONCLUSION

The present study reveals the antibacterial property of leaf extracts of *Murraya koenigii* L.

Table.1 Antibacterial activity of leaves extracts of *Murraya koenigii* L.

Solvent extract	MIC(μg/mL)				
	E.coli ATCC 25922	S.aureus ATCC 29213	K.pneumoniae BAA 1705	A.baumannii BAA 1605	P.aeruginosa ATCC 27853
Acetone	>64	2	>64	>64	>64
Carbontetrachloride	>64	4	>64	>64	>64
Ethylacetate	>64	8	>64	>64	>64
Levofloxacin	0.0156	0.25	64	8	1

Solvent -DMSO

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