ANTIMICROBIAL ACTIVITY OF METHANOLIC LEAVES EXTRACT OF *MELOTHRIA MADERASPATANA Linn.*

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Summary

Objective: To study the anti microbial activity of methanolic leaves extract of *Melothria maderaspatana linn.*

Materials and methods: Antimicrobial Activity of petroleum ether (60 -80 ºC) and methanol extracts of *Melothria maderaspatana* were tested against Gram Positive, Gram Negative bacteria and fungus strains using zone of inhibition. The bacteria used in test were Staphylococcus aureus, Bacillus subtilis, Pseudomonas aeurginosa and Escherichia coli and the fungus were Candida tropicalis and Trichophyton rubrum.

Result and Discussion: It was observed that all extracts have inhibitory effect towards all microorganisms used in test. Methanol extract was most effective than petroleum ether extract.

Conclusion: The methanolic extract possesses significant antimicrobial activity.

Keywords: *Melothria maderaspatana*, petroleum ether, methanol extracts.

Introduction

Finding healing power in plants is an ancient idea. People of all continents and civilizations used plants in one form or the other like poultice or decoction. Due to problems like adverse effects, limited lifespan and misuse of traditional antibiotics, efforts are currently underway to look for products of natural origin. Presently there is in increasing interest in the use of plant microbicides because of the necessity of finding safer microbicides and the need for preventing environmental degradation.

Melothria maderaspatana is a climber plant commonly cultivated in Indian gardens for its finely divided foliage and the leaf of *Melothria maderaspatana* was collected from Tiruvannamalai District Tamil Nadu and dried under shade. Mr. N.Pandian Dept of Botany, Government College identify the plant, where the voucher specimen has been maintained. The plant leaves and roots have expectorant and astringent property. The dried leaves was powered and extracted with petroleum ether and methanol. All the extracts were dissolved in dimethyl sulphoxide (DMSO). This plant has diuretic and stomachic property and it is commonly called as Musu- musukkai.

Matherials and Methods

Antibacterial activity

Staphylococcus aureus, Bacillus subtilis, Pseudomonas aeurginosa and Escherichia coli were used in antibacterial activity testing. Cup-plate agar diffusion method[2] was used to determine the minimum inhibitory concentration (MIC) of the extracts for antibacterial activity[3]. The petroleum ether and methanolic extracts at 10µg/ml in dimethyl sulphoxide were used. The ampicillin solution 10µg/ml for cup-plate method and 1 µg/ml for tube dilution methods were used as a standard for antibacterial activity.

Antifungal activity

Candida tropicalis and Trichophyton rubrum were used in antifungal testing. For antifungal activity the extracts, 100µg/ml, and ketoconazole 1 µg/ml in dimethyl sulphoxide was used as a standard. The minimum inhibitory concentration of the each extract was determined by a reported procedure[4].

Results and Discussion

All two extracts exhibited prominent antimicrobial activity against all microorganism used in the study. Table I shows the zone of inhibition produced by the extracts, it was observed that methanol extract showed prominent antibacterial activity against all organisms. From the zone of inhibition some material was removed aseptically and suspended in sterile water. One ml of this suspension was inoculated in nutrient media and incubated, after 24 hrs no growth was observed, indicating the bactericidal effects of the extracts.

Table I: Antibacterial Activity of extracts of *Melothria maderaspatana*

Name of the microorganism	**Average zone of inhibition (in millimeters)**		
	Pet. Ether Extract	**Methanol Extract**	**Standard (Ampicillin)**
S.aureous	14	18	24
B.subtilis	15	20	23
P.aeruginosa	16	15	24
E.coli	20	22	25

Table II gives the average value of MIC in µg/ml of various extracts. It was observed that methanol extract showed prominent activity. All the two extracts have shown higher activity against Pseudomonas aeurginosa (MIC- 0.625 µg/ml), Candida tropicalis (MIC- 12.5 µg/ml), and Trichophyton rubrum (MIC- 25 µg/ml). Thus the methanol extract was more potent compared to the petroleum extract which explains the use of this plant in folk medicine for the treatment of various diseases whose symptoms might involve fungal infections, and underline the importance of the ethnobotanical approach, for the selection of this plant in the discovery of new bioactive compounds. Further phytochemical research is needed to identify the active principles responsible for the anti microbial and anti fungal activity of *Melothria maderaspatana.*

Table II: Minimum inhibitory concentration of two extracts of *Melothria maderaspatana*

Name of the microorganism	Average zone of inhibition (in millimeters)		
	Pet. Ether Extract	**Methanol Extract**	**Standard (Ampicillin)**
Bacteria			
S.aureous	2.5	1.25	0.25
B.subtilis	0.625	1.25	0.125
P.aeruginosa	0.625	0.625	0.125
E.coli	1.25	0.625	0.25
Fungus			
C.tropicalis	12.5	12.5	0.062
T.rubrum	25	25	0.625

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