



## Asian Journal of Phytomedicine and Clinical Research

Journal home page: [www.ajpcrjournal.com](http://www.ajpcrjournal.com)



### MICROBIOLOGICAL INVESTIGATION ON *VETIVERIA LAWSONII*

D. Viji Saral Elezabeth<sup>1</sup> and P. Ramachandran\*<sup>1</sup>

\*<sup>1</sup>PG & Research Department of Chemistry, Nehru Memorial College, Puthanampatti – 621 007, Tiruchirappalli, Tamilnadu, India.

#### ABSTRACT

Various traditional systems of medicine enlightened the importance of Indian plants to have a great medicinal value. The present study was aimed to evaluate the antimicrobial activity of *Vetiveria lawsonii* (Family-Poaceae). The benzene extract was prepared by Soxhlet extraction. The preliminary phytochemical investigation revealed the presence of Alkaloids, Terpenoids, Steroids, and Saponins. The benzene extract of *Vetiveria lawsonii* showing high antimicrobial activity against the microbes revealed by Agar well diffusion method. Hence, we can conclude that the benzene extracts of *Vetiveria lawsonii* was possess antimicrobial activity.

#### KEYWORDS

*Vetiveria lawsonii*, Benzene extract, antimicrobial activity, Agar well diffusion method and Soxhlet extraction.

#### Author for Correspondence

P. Ramachandran,  
Research Scholar,  
PG & Research Department of Chemistry,  
Nehru Memorial College (Autonomous),  
Puthanampatti – 621007, Tiruchirappalli,  
Tamilnadu, India.

**Email:** [Psrchandran47@gmail.com](mailto:Psrchandran47@gmail.com).

#### INTRODUCTION

Many medicinal plants are used in modern medicine where they occupy a very significance place as raw material for important drugs and plants used in traditional system of medicine in pharmaceutical houses are collected from wild sources<sup>1</sup>. *Vetiveria lawsonii* is an Indian plant belongs to the family Poaceae. The plants of Poaceae family are used as analgesic, antibacterial, antiperspirant/ deodorants, astringent, depurative, digestive, emmenagogue, galactagogue, insect repellents and skin tonic. The literature review revealed that there is no documentation of scientific work on *Vetiveria lawsonii*. An attempt has been made to evaluate the antimicrobial activity of this plant<sup>2-4</sup>.

## MATERIAL AND METHODS

### Collection of identified Plant material

The powdered plant material of *Vetiveria lawsonii* (Figure No.1) were collected from Sri Venkateswara Agencies, Siddha & Ayurvedic Medical in Tiruchirappalli District, Tamilnadu State, India and authenticated by Dr. K. G. Sathishbabu MD (Siddha), Tiruchirappalli District, Tamilnadu State, India. The plant material was used for the study.

### Preparation of Flower Extracts

The Benzene extract was successively prepared by hot continuous percolation method in 1:10 (w/v) ratio by Soxhlet extraction and concentrated. Then it was subjected to dryness to yield crude residue. This residue was employed for Antimicrobial evaluation.

### Phytochemical Screening

The Benzene extracts were analyzed for the presence of phytochemicals according to standard methods given by J.B. Harborne.

### Microbial strain

For the evaluation, the pure microbial strain cultures were collected from the Biotechnology Laboratory of Bishop Heber College, Tiruchirappalli (Ref. No.:BHC-BT-CTS03/2014/NMC) and used. The gram-positive and gram-negative bacterias namely *E.coli*, *Proteus sp.*, *Streptococcus sp.* and *Klebsiella sp.* were taken for this investigation and they were cultured on Nutrient Agar (Hi Media) Slants at 4°C. In this evaluation, Streptomycin (100µg/mL) was used as a reference standard<sup>5</sup>.

### Antibacterial assay

The antibacterial activity assay of flower extract was performed by Agar well diffusion method. 20mL of sterile muller Hinton agar (Hi Media) was poured in sterile petri dishes. The plates were allowed to solidify and used. 10mL of sterilized Muller Hinton agar medium (Seed Agar) was seeded with organisms (about 0.2mL according to 0.5 McFarland's standard), in semi hot conditions and was poured uniformly on the base agar. 8mm bores were made each equal distance from one another on the medium using sterile borer and 100µL of different urine preparation were added to respective bore. The plates were incubated at 37°C for 24 hrs and zone of inhibition were measured. For each test, three replicates were performed. Here an attempt was made to compare the antibacterial efficiency of flower extract along with activity of standard antibiotic<sup>6-8</sup>.

## RESULT AND DISCUSSION

The results of Preliminary Phytochemical analysis were (Figure No.2) furnished in Table No.1.

The results of Antimicrobial activity of Benzene extracts of *Vetiveria lawsonii* are furnished in Table No.2. The Benzene extract was exhibited maximum potential against *E.coli* (8mm) and no potential against *Streptococcus sp.* (0mm)

The results revealed that the Benzene extract is potent antimicrobials against the test organism. The antibacterial activity was observed from the zone of inhibition. The preliminary evaluation emphasizes further research to describe the bioactive compounds involved for their antimicrobial activity and to evaluate their other pharmacological activities of the plant.



Figure No.1: Photograph of *Vetiveria lawsonii* powder



Figure No.2: Preliminary phytochemical analysis

**Table No.1: Results of Preliminary Phytochemical analysis of *Vetiveria lawsonii***

S. No.	Compounds	Benzene Extracts
1	Alkaloids	+
2	Flavonoids	-
3	Carbohydrates	-
4	Saponins	+
5	Phenols	-
6	Tannins	-
7	Terpenoids	+
8	Proteins	-
9	Cardiac Glycosides	-
10	Steroids	+
11	Anthocyanins	-

+ Indicates the presence of phytoconstituents, - Indicates the absence of phytoconstituents

**Table No.2: Result of Zone of inhibition of Antibacterial activity of Benzene extracts of *Vetiveria lawsonii***

S.No.	Name of the bacteria	Mean Zone of Inhibition of Benzene Extract
		(mm)
1	<i>E.coli</i>	8
2	<i>Proteus sp.</i>	1
3	<i>Streptococcus sp.</i>	0
4	<i>Klebsiella sp.</i>	5

## CONCLUSION

It has been concluded that the Benzene extracts of the *Vetiveria lawsonii* showed significant antimicrobial activity against selected microbes by Agar well diffusion method.

## ACKNOWLEDGEMENT

The Authors would wish to acknowledge the Management and Principal of Nehru Memorial College for providing research facilities and encouragement. They would like to acknowledge Dr. K. G. Sathishbabu MD (Siddha), Tiruchirappalli District, Tamilnadu State, India.

## REFERENCES

1. Sani Ali Audu, Ilyas Mohammed, Haruna Abdul Kaita. Phytochemical screening of the leaves of *Lophira lanceolata* (*Ochanaceae*), *Life science Journal*, 4 (4), 2007, 75-79.
2. Alagesaboopathi C. Antimicrobial screening of selected medicinal plants in Tamilnadu, India, *African Journal of Microbiology Research*, 5 (6), 2011, 617-621.
3. Harborne JB. Phytochemical methods, Chapman and Hall Ltd, London, 1973, 49-188.
4. Muhit Md Abdul, Apu Apurba Sarker, Islam Md Saiful, Ahmed Muniruddin. Cytotoxic and Antimicrobial activity of the crude Extract of *Abutilon Indicum*, *International Journal of Pharmacognosy and Phytochemical Research*, 2 (1), 2010, 1-4.
5. Patil SM, Saini R. Antimicrobial Activity of Flower Extracts of *Calotropis Gigantea*, *Int. J. Pharm. Phytopharmacol. Res.*, 1 (4), 2012, 142-145.
6. Surendra kumar M, Rajeswari, Astalakshmi N. Evaluation of Antimicrobial Activities of *Aristolochia Indica* (Linn), *International Journal of Pharmacy and Pharmaceutical Sciences*, 3 (4), 2011, 271-272.
7. Umamaheshwari S, Mahadeva Murthy S. Antibacterial Activity of Root of *Aristolochia Indica* on *Bacillus Subtilis*, *J Pharm Sci.*, 2 (2), 2012, 82-85.
8. Vats Manisha, Sharma Neha, Sardana Satish. Antimicrobial Activity of Stem Bark Extracts of *Nyctanthes arbortristis* linn. (*Oleaceae*), *International Journal of Pharmacognosy and Phytochemical Research*, 1 (1), 2009, 12-14.