International Journal of
Life Sciences
International Peer Reviewed Open Access Refereed Journal

Int. J. of Life Sciences, 2021; 9 (3):353-356
ISSN:2320-7817(p) | 2320-964X(o)

Research Article Open Access

Evaluation of Antibacterial Potentials of Some Ethno-medicinal Plants of Mahur Range Forest, MS, India

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Manuscript details:

Received: 23.08.2020
Accepted: 27.09.2021
Published: 30.09.2021

Cite this article as:
Vijigiri Dinesh, Shinde SR and Lande AA (2021) Evaluation of Antibacterial Potentials of Some Ethno-medicinal Plants of Mahur Range Forest, MS, India, *Int. J. of Life Sciences*, 9 (3): 353-356.

Available online on http://www.ijlsci.in
ISSN: 2320-964X (Online)
ISSN: 2320-7817 (Print)

ABSTRACT

Ethnomedicinal survey of Mahur range forest has been conducted during 2018-2019. It has been found that, some of the plant species are used by traditional tribal practitioners to cure human health ailments as ethnomedicines. Keeping this view, the present paper focused on ethnomedicinal uses and antibacterial activities of few plants species against some pathogenic bacteria. Some important traditional uses of *Lantana camara, Ipomoea obscura* and *Pergularia daemia* are recorded among these *P. daemia* showed a very significant activity against tested bacteria.

Keywords: Ethnomedicines, antibacterial potential, Mahur forest.

INTRODUCTION

Ethnobotany is a totally natural and traditional relationship and an interaction between man and his surroundings. It is the direct relationship of surrounding plants with peoples of the area. In general ethnobotany is a scientific relationship with oboriginal peoples and plants (Harshberger 1895).

Mahur range forest is located in Marathwada region of Maharashtra and rich in vegetation, valleys, and mountains with important traditional medicinal plants. Five tribal communities are native of this study area and residing since several years including ethnomedicinal practitioners. The ethnomedicinal plants of the area play an important role regarding health problems of the peoples of the area. The floristic survey of different ranges of Mahur forest has been done earlier by various workers (Zate,1983; Naik,1998; Chavan,2002). The ethnomedicinal practitioners are using the local flora to cure the various health problems in the society and it indicates the significant medicinal potential of the flora against human diseases. Gibbon (2005) reported the antibacterial activities of plant extracts against human pathogenic bacteria. To considering all these facts the present topic has been under taken for the antibacterial studies.

MATERIAL AND METHODS

a) Ethnobotany:

Ethnomedicobotanical survey of Mahur range forest was conducted in 2018-19 during the study. For the collection of ethnomedicinal informations and plant parts used as a medicine the traditional practitioners were interviewed by visiting their houses and also on fields. Interviews, enquiries and cross questioning was conducted with the practitioners. A special questionnaire was made in the Proforma and it has been adopted for interviews. This type of approach and communication skill yields valuable information about ethnomedicinal plants.

b) Preparation of Extract:

The plant material in the form of leaves collected from the forest during exploration trips and brought to the laboratory. They were washed thoroughly with tap water to remove contaminants and dried under shade about 8-10 days separately. The dried leaves can be grind into powder and store in airtight container at room temperature till the extraction. The extracts were prepared by extracting 10mg of leaf powder with 100ml of ethyl alcohol by sox let extractor for about 90-120min. separately. These extracts were used for antibacterial activity.

c) Antibacterial activity:

Antibacterial activities of plant extracts against human pathogenic bacteria were carried out during the study. The antibacterial activities of the extract evaluated by well plate agar diffusion method (Collins, 1967; Godkar, 1996) against tested bacteria. The bacteria grown on nutrient agar medium at pH7.6. The cups were made with the help of sterilized 8mm cork borer. The 100mg/ml of extracts were poured in each cup of plates. The plates were incubated at 30^{o}C for 24hours. The bacterial activity was measured in diameter of inhibition zone in mm. of the samples and compare it with control and a standard antibiotic streptomycin.

RESULT AND DISCUSSIONS

Morphological description of Ethnomedicinal plants:

a. Lantana camara L. var. ***aculeata*** (L.) Moldenke in Torreya 34: 9. 1934.

Shrubs, much branched. leaves ovate-elliptic. Inflorescence of terminal and axillary spikes. Flowers orange-red, turning into scarlet. Drupes globose, fleshy, black coloured when ripe.

Fls. & *Frts.* : Throughout the year.

Distrib. : Gregarious weed of wastelands and shrub forests and along canal borders;
ITI Road Mahur.

b. Ipomoea obscura (L.) Kar-Gawl. Bot. Reg. 3, t. 239. 1837; *Convolvulus obscurus* L. Sp. Pl. Ed. 2:220. 1762.

Herbs, slender, prostrate or twining. Leaves ovate or orbicular. Inflorescence of axillary, few flowered cymes, white or pale yellow with a dark purple centre. Capsules ovoid-globose, glabrous, 4-valved. Seeds 4, black, finely grey puberulent.

Fls. & Frts. : August-February.

Distrib. : Common in cultivated field edges and road sides; Anmal road side.

c. Pergularia daemia (Forssk.) Choiv. Result. Sc. Miss. Stefan. Paoli Somal. Ital. 1: 115. 1916; *Asclepias daemia* Forssk. Fl. Aeg.-Arab.51: .1775.

Twining undershrubs; stems terete, branched, densely pubescent. Leaves petiolate, pubescent, on lower side. Flowers pale yellowish-green. Follicles lanceolate. Seeds ovoid.

Fls. & Frts. : March-December.

Distrib. : Common in wastelands and road sides; Iwaleshwar road side.

Ethnomedicinal importance of Plants:

a. Lantana camara L. var. ***aculeate*****:** It is used against cold and cough. Dried leaves in the form of powder is used as inhaler to control cold and cough.

b. Ipomoea obscura**:** It is used to cure boils. Fresh leaves are made into paste and apply externally on boils till cure.

c. Pergularia daemia **:** It is used in stomach ache and tumor as well as veterinary medicine.

- One gram of fresh crushed flowers given to the patient suffering from stomach ache daily once for two days and found to relief in stomach ache.
- Fresh crushed leaves taken orally with *Piper betel* leaf (Pan) till cure.
- Eye infection in domestic animals treated by using leaf juice. It is practiced that the fresh leaves of this plants chewed and made in to saliva mixed juice. This juice poured in to opposite ear of the animal and found to recover the eye infection.

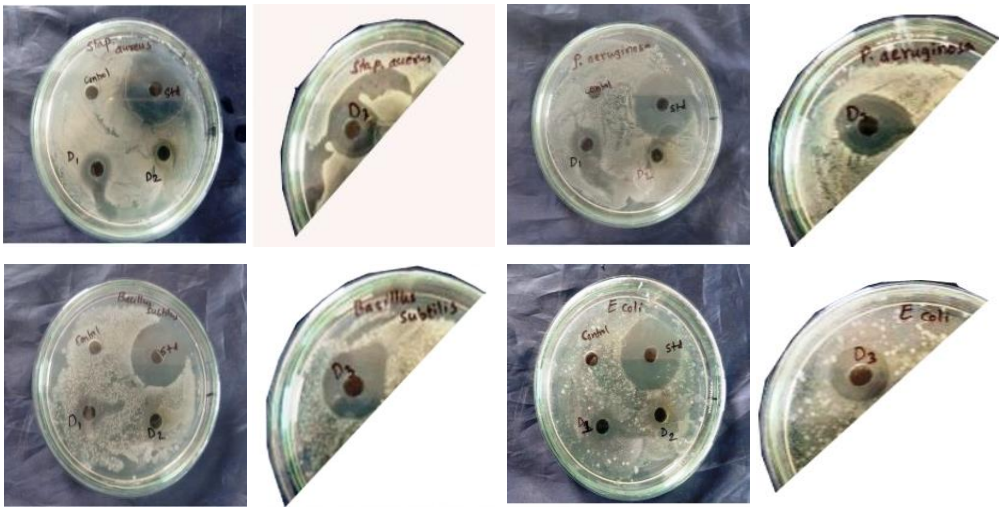
Antibacterial activities of the plants:

In order to understand the antibacterial potential of ethnolic extracts of leaves of the plants tested against pathogenic bacteria after screening the results are mentioned in table no 1. During screening the antibacterial activity of each extract measured in terms of inhibition zone. As noted in table no 1. The ethnolic leaf extracts showed inhibition action against all tested bacteria.

As mentioned in table no 1 the ethnolic leaf extract of *Pergularia daemia* showed good inhibitory action against *Staphylococcus aureus*, *Pseudomonas aeurogenosa, Bacillus subtilis* and is followed by *E. coli*. It is observed that the activity against *S. aureus.* is highest that is near about 72% as compared to standard. The activity against *E. coli* is moderate in compare to others, the *Lantana camara* extract showed in an average 30% activity against all tested bacteria. The *Ipomoea obscura* extract showed less significant activity against bacterial growth. It is very significant that the activity shown by *Pergularia daemia* to one of the tested bacteria is as good as the activity shown by standard (Streptomycin).

Table-I: Antibacterial activity of ethnolic extracts of leaves of ethnomedicinal plants.

S. No.	Name of the plant with sample code	Part used	Zone of Inhibitian (mm).			
			Staphylococcus aureus	***Pseudomonas aeurogenosa***	***Bacillus subtilis***	***E. coli***
1.	*Lantana camara* (D_1)	Leaf	08mm	09mm	08mm	07mm
2.	*Ipomoea obscura* (D_2)	Leaf	06mm	05mm	11mm	06mm
3.	*Pergularia daemia* (D_3)	Leaf	18mm	16mm	16mm	13mm
4.	Control	--	00mm	00mm	00mm	00mm
5.	Standard(Streptomycin)	--	25mm	28mm	26mm	27mm



Photographs of petri plates showing zone of inhibition in bacterial growth.

CONCLUSION

The Mahur range forest has huge wealth of Ethnomedicinally important plants including *Pergularia daemia, Ipomoea obscura* and *Lantana camara.* These plants are popularly used as ethnomedicines against the various ailments of human being as well as in domestic animals as mentioned during the ethnomedicinal survey. These plants have significant potential against tested bacteria as mentioned in table no1. This type of studies on ethnomedicinal plants indicates that there is a big scope for pharmacological studies in order to isolate the pure and potential drugs of the plants for betterment of human society. It is also helpful to draw

the attention of concerned researchers for further advanced studies in the field of medicines.

Conflicts of Interest: The authors declare no conflict of interest.

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