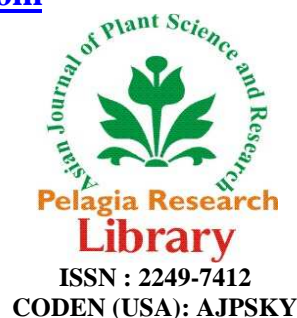




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Asian Journal of Plant Science and Research, 2013, 3(4):159-161



Antibacterial study of *Lavandula bipinnata* O. Ktze.

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ABSTRACT

Lavandula bipinnata O. Ktze. is a common medicinal plant. It is known to cure Diarrhoea, rheumatism, decayed tooth, and stings or bites of poisonous insects. In the present study whole plant of *Lavandula bipinnata* were shade dried, powdered and extracts were made by soxhlet extractor. Antibacterial efficiency were examined using distilled water, Methanol, Ethanol, Acetone, Chloroform as solvents and tested against three human pathogenic bacteria like *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli*. among these extracts, Ethanol, Acetone, Methanol extract showed antibacterial activity against *Staphylococcus aureus*, and *Escherichia coli*. *Pseudomonas aeruginosa* not shown antibacterial activity. The organic extract of *Lavandula bipinnata* O. Ktze. could be a possible source to obtain new and effective herbal medicine to treat infections. Antibacterial activity index for each tested extracts has been calculated.

Key words: Antibacterial efficiency, *Lavandula bipinnata* O.Ktze., Antibacterial efficiency, Medicinal plants, Human pathogen.

INTRODUCTION

Man always been surrounded by countless microorganisms. The disease producing microbes are playing a very important role in human life. Pathogenic microorganisms are always trying to develop resistance to the various antimicrobial agents used for their control. Therefore, the chemotherapy of infectious diseases has proved to be a continuous struggle. Scientists are always in search of new antimicrobial agents to control the ever increasing menace of the microbes. Thus it is of paramount importance for the microbiologists to develop new resistant strains. Therefore, medicinal plants are gifts of nature to cure limitless number of diseases among human beings (Bushra Beegum *et. al.*, 2003). The abundance of plants on the earth's surfaces has led to an increasing interest in the investigation of different extracts obtained from traditional medicinal plants as potential sources of new antimicrobial agents .

Lavandula bipinnata O.Ktze. Synonym *L. burmanni* Benth. is an important medicinal plant belongs to family Lamiaceae it is distributed in tropical and subtropical region. The essential oil obtained from has an antibacterial property. In literature review it was found that the plant is useful in stings or bites of poisonous animals act as an antidote against poison. The roots are rubbed with water and the solution or the paste is applied over the sting of wild animals, the powdered leaves are given for inhalation to the person who has been stung by a serpent in order to prevent him from falling into sleep (Kanga, 1914). Used as a Shankhapushpi substitute for *Convolvulus pluricaulis* Choisy.(Khare, 2007). Root paste applied daily on boils (Kamble *et.al.*, 2010) In combination with other herbs it is used internally in treatment of rheumatism. Leaf paste applied on decayed tooth to reduce pain. (Khyade, 2010). Paste of roots are used externally for stings and bites of poisonous animals. In combination with

other herbs, it is used internally in rheumatism (Oudhia, 2005). Due to its diverse medicinal uses the present in present investigation of Antibacterial study was carried out.

MATERIALS AND METHODS

The whole herb of *Lavandula bipinnata* O.Ktze. Where collected from Aurangabad Maharashtra state the plant was confirmed and voucher specimen was deposited at Vivekanand Arts Sardar Dalipsingh Commerce and Science College Aurangabad. Maharashtra State. Washed thoroughly with water. The cleaned plant parts are then allowed for the complete shade drying and then made to fine powder with a mechanical grinder and stored in an airtight container. A powdered plant parts were used to extract preparation.

PREPARATION OF EXTRACT

25 gram of powder drug were extracted successfully with Methanol, Ethanol, Chloroform, Distilled Water, and Acetone successively in the Soxhlet apparatus. The extract obtained from successive solvent extraction where concentrated and filtered stored in air tight bottles at 4⁰c. and used for further investigation.

MICROORGANISMS

The three different species of bacteria used in the screening process were Gram-positive *Staphylococcus aureus* and gram negative *Pseudomonas aeruginosa* and *Escherichia coli*. The bacteria where supplied by the Government Medical College Aurangabad Maharashtra.

ANTIBACTERIAL SCREENING

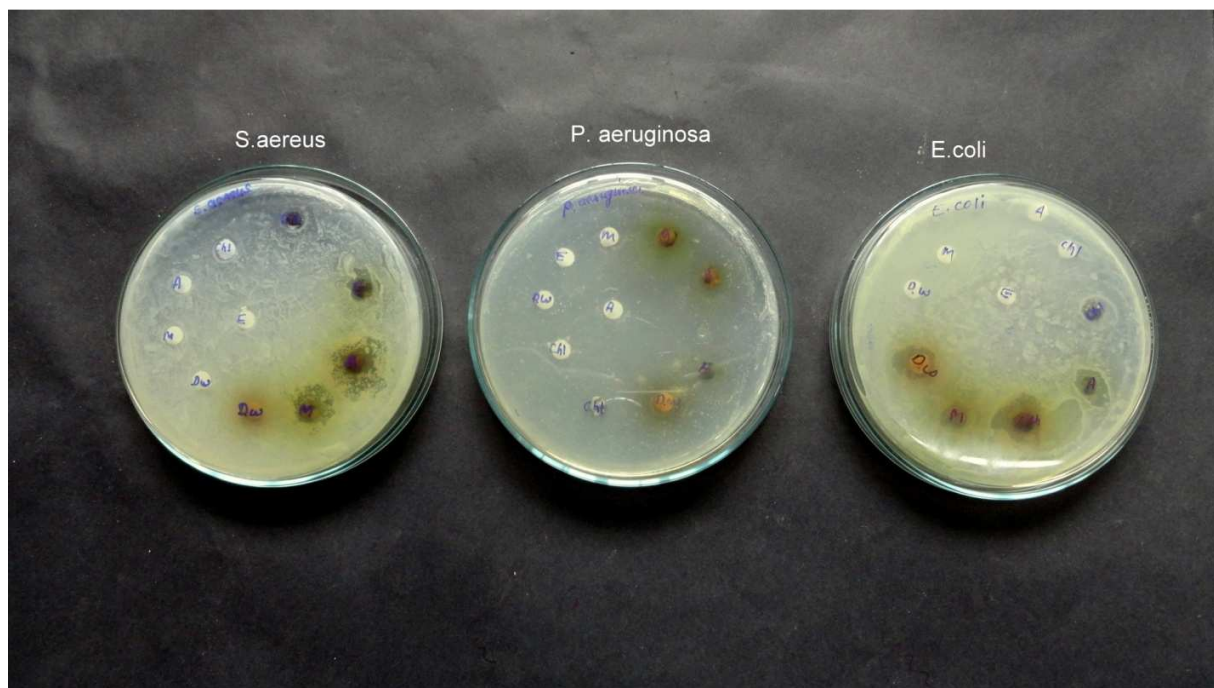
The bacterial activity was performed by Disc Diffusion method (Baur *et. al.*,1996). The sterilized (Autoclaved at 120⁰c for 30 min) Nutrient agar medium pour in to sterile petri plates paper discs made using Whatman filter paper no. 1 (6 mm diameter) discs were sterlised and impregnated with 50 microliter plant extracts and placed on seeded plate blank disc impregnate solvents used as a control these plate were incubated at 37⁰c for 24 hours to allow maximum growth of bacteria. Antibacterial activity of plant extracts determined by measuring the diameter of zone of inhibition expressed in millimeter the experiment carried out three times

RESULTS AND DISCUSSION

Methanol , Ethanol, Chloroform, Distilled Water , Acetone extract not shown zone of inhibition against *Pseudomonas aeruginosa*. Methanol, Ethanol, Acetone extract shows zone of inhibition 10 mm, 9 mm, 12 mm respectively against *Staphylococcus aureus*. Chloroform and Distilled water extract not shown zone of inhibition against *Staphylococcus aureus*. Methanol, Ethanol, Distilled Water, Acetone extract shows zone of inhibition 7 mm , 38 mm, 20 mm, 18 mm respectively against *Escherichia coli* Chloroform extract not shown zone of inhibition against *Escherichia coli*. Among five extract Ethanol, Distilled water, Acetone, extracts shown most activity against *Escherichia coli* and shown significant activity against *Staphylococcus aureus* and all selected extract inactive against *Pseudomonas aeruginosa* Table 1.

Table 1. Antibacterial activity of solvent extract of *Lavandula bipinnata* o. ktze. against *Pseudomonas aeruginosa* , *Staphylococcus aureus* , *Escherchia Coli*

Sr no	solvent extracts	control	Microorganisms (Zone of inhibition in mm)		
			<i>Pseudomonas aeruginosa</i>	<i>Staphylococcus aureus</i>	<i>Escherichia coli</i>
1	Methanol	0.0	0.0	10±2	7±2
2	Ethanol	0.0	0.0	9±2	38±2
3	Chlorofrom	0.0	0.0	0.0	0.0
4	Distilled Water	0.0	0.0	0.0	20±2
5	Acetone	0.0	0.0	12±2	18±2



A-Acetone, Chl- Chlorophorm ,M-Methanol, E-Ethanol, D.w –Distilled Water, C -Control

CONCLUSION

The results of present investigation clearly indicate that the antibacterial activity vary with the solvent extracts of *Lavandula bipinnata* O. Ktze. Among the extracts Ethanol, Distilled Water, and Acetone shows most antibacterial activity against *Escherichia coli* than *Staphylococcus aureus*. Thus, the study ascertain the value of plant used in ayurveda, which could be of considerable interest to the development of new drugs.

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