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 aereus*, *Pseudomonas aeruginosa* and *Escherichia coli*. among these extracts, Ethanol, Acetone, Methanol extract showed antibacterial activity against *Staphylococcus aereus*, 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 Shankhpushpi substitute for *Convolvulas pluricaulas* 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 4°C and used for further investigation.

MICROORGANISMS

The three different species of bacteria used in the screening process were Gram-positive Staphylococcus aereus
and gram negative Psudomonas 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
120 °C 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 sterilised and imperginated with 50 microliter plant extracts and placed on
seeded plate blank disc imperginate solvents used as a control these plate were incubated at 37 °C 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
Psudomonas aeruginosa. Methanol, Ethanol, Acetone extract shows zone of inhibition 10 mm, 9 mm, 12 mm
respectively against Staphylococcus aereus. Chloroform and Distilled water extract not shown zone of inhibition against
Staphylococcus aereus. 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 aereus and all selected
extract inactive against Psudomonas aeruginosa Table 1.

Table 1. Antibacterial activity of solvent extract of Lavandula bipinnata o. ktze. against Psudomonas aeruginosa, Staphylococcus aereus , Escherichia Coli

<table>
<thead>
<tr>
<th>Sr no</th>
<th>solvent extracts</th>
<th>Microorganisms ( Zone of inhibition in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Psudomonas aeruginosa</td>
</tr>
<tr>
<td>1</td>
<td>Methanol</td>
<td>0.0</td>
</tr>
<tr>
<td>2</td>
<td>Ethanol</td>
<td>0.0</td>
</tr>
<tr>
<td>3</td>
<td>Chloroform</td>
<td>0.0</td>
</tr>
<tr>
<td>4</td>
<td>Distilled Water</td>
<td>0.0</td>
</tr>
<tr>
<td>5</td>
<td>Acetone</td>
<td>0.0</td>
</tr>
</tbody>
</table>
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.

REFERENCES