ANTIBACTERIAL ACTIVITY OF COLEUS AROMATICUS L.

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ABSTRACT

Objectives: Ethanolic extract of Coleus aromaticus leaves was investigated for antibacterial activities. Methods: The well diffusion method was followed for antibacterial assay. Antibacterial activity of coleus aromaticus leaves extract (50µl,100µl, 150µl) using well diffusion method. In this disc was prepared by using whatmann No.1 filter paper. Then, the filter paper disc of 5mm diameter were sterilized and soaked in the different concentration of plant extract. Results: The antibacterial activity of Coleus aromaticus was tested against 3 species of bacteria, viz, Klebsiella, pseudomonas and Staphylococcus. Conclusion: Aqueous ethanolic extract of coleus aromaticus leaves was screened for their antibacterial potential. The zone of inhibition was seen to be largest when ethanolic extract of coleus aromaticus was used.

INTRODUCTION

Existence of human beings on earth possible because of the vital role played by plant kingdom. Many traditional societies all over the world value a large number of plant species for a wide variety of reasons viz., food, fibre, shelter, medicine etc. worshipping and giving respect to sacred groves and sacred trees are ancient traditions in india.[1] Karpuravalli (Coleus aromaticus L.) with its distinctive smelling leaves is a common home remedy for infantile cough, cold and fever. They are useful in cephalagia, anorexia, dyspepsia, colic, diarrhea and cholera especially in children, halitosis, convulsions, epilepsy, chronic asthma, bronchitis, renal vesical calculi stroangury, hepatopathy and malarial fever. Juice is mixed
with sugar is given to children in colic. Its also useful for gonorrhea, piles. Crushed leaves are used as a local application of the head in headache and relieve the pain and irritation caused by sting centipedes.[2]

Many new biological pathogens have been recognized in the past twenty five years, which are responsible for causing numerous diseases.[3] The diseases produced microorganism are controlled by several antimicrobial. The use of antimicrobial agent for treating infections disease has led to greatly increase life expectancy.

The present study was undertaken to the antibacterial effect of *Coleus aromaticus* against *Klebsiella, pseudomonas* and *Staphylococcus*.

**MATERIAL AND METHODS**

**Plant material**
The leaves of *Coleus aromaticus* were collected from S.T.E.T Medicinal plant garden, Mannargudi, Thiruvarur District and authenticated by Botany Department of A.V.V.M. Sri Pushpam College, Poondi. After authentification the plant material were washed under running water.

**Preparation of plant extract**
*Coleus aromaticus* leaves were dried (without direct sunlight) and converted to powder form. The powder obtained was successively extracted in methanol and distilled water by using soxhlet apparatus. It was stored at 4º C until used when needed the residual extract was suspended in distilled water and used in the study.

**Antibacterial activity**
The antibacterial activity was carried out against *Klebsiella, pseudomonas* and *Staphylococcus*.

The well diffusion method was followed for antibacterial assay. Antibacterial activity of the leaves extract (50µl, 100µl, 150µl) using well diffusion method according to Bauer et al.[4] In this disc was prepared by using what mann No.1 filter paper. Then, the filter paper disc of 5mm diameter were sterilized and soaked in the different concentration of plant extract.

**PROCEDURE**
10ml of sterilized agar medium for *Klebsiella, pseudomonas, Staphylococcus* were poured into the each sterile petridish. After solidification, the sterile cotton swab dipped into the culture
or broth of staphylococcus, pseudomonas and klebsiella. The entire agar surface of each plate was inoculated with this swab first in a horizontal direction and then in a vertical direction, which ensure the distribution of organism over the agar surface. The filter paper disc soaked in leaves extracts was placed on the surface of the bacteria seeded agar plate and then the plate was incubated at 37 hours. The antibacterial activity was recorded by measuring the width of the clear zone around each disc.

RESULT
Antibacterial activities of ethanolic extract of Coleus aromaticus leaves were given in Table 1, 2 and 3. The inhibition development was observed by measuring zone inhibition. The fresh leaf extract of Coleus aromaticus by using ethanol solvent at varying concentration of 50 µl, 100 µl, 150 µl and was treated against klebsiella, staphylococcus and pseudomonas.

Among three organisms studied the maximum zone of inhibition (30 mm) was observed in the 150 µl concentration of ethanolic extract of coleus aromaticus against klebsiella (Table 3) (Plate 1). The maximum zone of inhibition was noticed against pseudomonas. Even in 150 µl concentration of ethanolic extract of coleus aromaticus the inhibition zone only (15mm) (Table 3) (Plate 3). There was a maximum zone of inhibition at 150 µl concentration of ethanolic extract of coleus aromaticus (25 mm) against staphylococcus (Table 3) (Plate 2). In pseudomonas inhibition zone was not seen in the 50 µl and 100 µl concentration. The minimum zone of inhibition was noticed against kelbsiella (20mm) (Table 1) (Plate 1) even in 50 µl concentration of ethanol solvent.

Table 1: Antibacterial effect of ethanol solvent extract of Coleus aromaticus

<table>
<thead>
<tr>
<th>S.No</th>
<th>Species Name</th>
<th>Concentration (µl)</th>
<th>Zone of inhibition (in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Klebsiella,</td>
<td>50 µl</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>pseudomonas,</td>
<td>50 µl</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Staphylococcus</td>
<td>50 µl</td>
<td>15</td>
</tr>
</tbody>
</table>

Table 2: Antibacterial effect of ethanol solvent extract of Coleus aromaticus

<table>
<thead>
<tr>
<th>S.No</th>
<th>Species Name</th>
<th>Concentration (µl)</th>
<th>Zone of inhibition (in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Klebsiella,</td>
<td>100 µl</td>
<td>25</td>
</tr>
<tr>
<td>2.</td>
<td>pseudomonas,</td>
<td>100 µl</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Staphylococcus</td>
<td>100 µl</td>
<td>20</td>
</tr>
</tbody>
</table>
Table 3: Antibacterial effect of ethanol solvent extract of *Coleus aromaticus*

<table>
<thead>
<tr>
<th>S.No</th>
<th>Species Name</th>
<th>Concentration (µl)</th>
<th>Zone of inhibition (in mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Klebsiella,</td>
<td>150 µl</td>
<td>30</td>
</tr>
<tr>
<td>2.</td>
<td>pseudo monas,</td>
<td>150 µl</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>Staphylococcus</td>
<td>150 µl</td>
<td>25</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The developed as well as developing countries nowadays use the medicinal plants because antibiotics have proved to be prohibitive due to their higher cost, drug resistant strains and their harmful side effects. Generally extracts of all plants parts effectively controlled the growth of both gram negative and gram positive bacteria.

In this context, Gupta *et al.*[^4^] have reported that the ethanolic extract of *A. Panciculato* was reported to exhibit significant anti diarrhoeal activity against *E. Coli* enterotoxin in animal model. Antibacterial activities were tested against *E. Coli, klebsiella, aerogenus, klebsiella pneumonia, staphylococcus aureus* and *Bacillus subtills* in the leaf extract of *Indigo fera oblongifolia* by Jain.[^5^] Khan *et al.*[^6^] have reported that the Antimicrobial activity of *Castanopsis accuminatissima*. Many of the workers studied anti microbial activity in many different plant they were some *Shrilonkon rubiaceae* and *metiaceae. Baubinia scandens[^7^]. *Urania hameltonii*. [^8^]

In line with our findings Harborne *et al.*[^9^] reported that the presence of antibacterial activity are due to flavanoids. Antibacterial activity of *Coleus aromaticus* leaves, ethanolic extract of *Coleus aromaticus* leaves showed good activity against *klebsiella, Staphylococcus, Pseudomonas*.

**CONCLUSION**

Thus the presents study reveals that the selected plant extract have potential bacterial effect against the selected bacterial species and the efficiency was found to be varied according to the nature of solvent system.

**ACKNOWLEDGEMENT**

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REFERENCES