

Anti Bacterial Activity of Aqueous Extract of *Coleus Amboinicus*.

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Summary

Coleus amboinicus (Fam. Lamiaceae) a member of *Plectranthus* commonly called as Indian Borage or French thyme. It is a perennial herb. The aqueous extract was found to be antibacterial and it was studied against various Gram positive and Gram negative bacterial strains by using Minimum Inhibitory Concentration, Agar well diffusion method to find Zone of inhibition. The microbial strains used in the test were *Escherichia coli*, *Proteus vulgaris*, *Klebsiella pneumonia*, *Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Bacillus subtilis*. The extract shows selective anti-microbial activity.

Key words: *Coleus amboinicus*, Antibacterial, Aqueous extract.

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Introduction

Coleus amboinicus is a powerful aromatic plant[1] belongs to the family - Lamiaceae Genus: *Plectranthus*, Species: *amboinicus* [2]. It is commonly called as Indian borage or Fresh Thyme.[1,4] It is said to have a properties to cure insect bite, head aches, fever, and bronchitis [3,4] Leaves are used as aromatic carminative ,used in case of dyspepsia and also to cure asthma . It has specific action on the bladder and is useful in urinary disease, vaginal discharge etc. It has been recommended for chronic coughs, epilepsy and convulsive disorders, allergies, Hay fever and sinusitis. It stimulates flow of the bile aiding digestion and reported to have antioxidant properties [4].The antimicrobial and inflammatory activities of the fresh juice and aqueous extracts of leaves have not been reported till date. Therefore, we have undertaken the current project to investigate the usefulness of aqueous extract and fresh juice of the *Coleus amboinicus* as anti bacterial and anti-inflammatory agent.

Material and Methods

Plant material:

The leaves of *Coleus amboinicus* were collected in Tumkur and identified and authenticated by Head of the Department, Department of Botany Sree Siddaganga Boys College Tumkur. SSBC /TMK/SP/L 054/2004-05 .The leaves were air dried under shade. The powder of the leaves was subjected to aqueous extraction by maceration process.

Preparation of aqueous extracts :

The powder of *Coleus amboinicus* were then macerated with distilled water as solvent. The extract was then concentrated on rotary flash evaporator. The extract was subjected to preliminary phytochemical investigations. The following microbial strains were used for anti microbial screening. *Escherichia coli*, *Staphylococcus aureus*, *Proteus vulgaris*, *Klebsiella pneumonia*, and *Pseudomonas aeruginosa*.

Anti microbial screening

To evaluate the minimum inhibitory concentration of aqueous extract of *Coleus amboinicus* the serial dilution method [5] and Zone of Inhibition by Agar well diffusion method were followed. The MIC carried out by transferring a loopful of culture in to test tube containing 10 ml of sterilized nutrient broth in aseptic condition The different concentration of aqueous extract of *Coleus amboinicus* (2mg ,4mg, 6mg, 8mg, 10mg, 12mg, 14mg, 16mg) and different volume of fresh juice (0.5ml,1ml,1.5ml,2ml, 3ml, 4ml,) were transferred to series of respective test tubes ,which contain different species of micro organism and incubated at 37 °c for 24 hour Control and standard studies were also carried out simultaneously . The turbidity which was observed. The results were tabulated in table no.1 and 2. The Zone of inhibition was carried out by Agar well diffusion method.

Results and discussion

The zone of inhibition in mm for the tested organism with the aqueous extract of *Coleus amboinicus* and standard antibiotic by agar well diffusion method and the MIC results are presented in the table no 1 and 2 respectively.

It was observed that aqueous extract of *Coleus amboinicus* showed selective anti microbial activity towards the micro organisms used in the study. The aqueous extract of *Coleus amboinicus* showed maximum antibacterial activity.

The MIC results of aqueous extract of *Coleus amboinicus* indicated that *Proteus vulgaris*, *Bacillus subtilus* and *Staphylococcus aureus* were least susceptible among the organisms tested .and *Escherichia coli*, *Klebsiella pneumonia* and *Pseudomonas aeruginosa* are not shown any inhibition to aqueous extract of *Coleus amboinicus*.

The results of the entire study reveals that the aqueous extract of *Coleus amboinicus* posses selective antimicrobial activity against the pathogens used for screening .Thus this extract can be subjected to more detailed assessment like chemical fractionation followed by biological evaluation.

Table-1. Zone of inhibition in mm for the tested organisms with aqueous extract of *Coleus amboinicus*, and the standard antibiotic by Agar well diffusion method

Microorganisms	Aqueous extract of <i>Coleus amboinicus</i> Mean±SD	Standard antibiotic Mean±SD
<i>Escherichia coli</i>	Nil	17.0±0.10
<i>Proteus vulgaris</i> ,	10.0±0.12	17.3±0.16
<i>Klebsiella pneumonia</i>	Nil	15.8±0.84
<i>Pseudomonas aeruginosa</i> .	Nil	16.4±0.47
<i>Staphylococcus aureus</i>	12.3±0.46	17.8±0.62
<i>Bacillus subtilus</i>	10.7±0.94	16.8±0.08

Table 2. The Minimum inhibitory concentration (mg/mL) of aqueous extract of *Coleus amboinicus* for various microorganisms

Microorganisms	Aqueous extract of <i>Coleus amboinicus</i> Mean±SD
<i>Escherichia coli</i>	Nil
<i>Proteus vulgaris</i> ,	1.8
<i>Klebsiella pneumonia</i>	Nil
<i>Pseudomonas aeruginosa</i> .	Nil
<i>Staphylococcus aureus</i>	1.4
<i>Bacillus subtilus</i>	1.6

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