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## EVALUATION OF ANTIBACTERIAL ACTIVITY OF *DECHASCHISTIA CROTONIFOLIA*

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### ABSTRACT

The leaves of *Dechaschistia crotonifolia* Wight & Arn. was evaluated for antibacterial activity. The leaves were subjected for drying and extracted by hot percolation process using ethanol as solvent. The antimicrobial activity of ethanolic leaf extracts of *Dechaschistia crotonifolia* Wight & Arn. (EEDC) was assayed by cup plate method. The strains were used for the current study is *B. subtilis*, *E. coli*, *P. aeruginosa* and *S. aureus*. The Minimum Inhibitory Concentration of leaf extract of *Dechaschistia crotonifolia* Wight & Arn. was analysed for different concentrations from 1 µg/ml to 10 µg/ml. The antimicrobial activity was tested for the concentrations viz., 10 µg/ml, 20 µg/ml, 30 µg/ml, 40 µg/ml and 50 µg/ml. The results shown that the Minimum Inhibitory Concentration is found to be around 10 µg/ml. The ethanolic leaf extracts of *Dechaschistia crotonifolia* Wight & Arn. was effective at the concentration 50 µg/ml against all the strains.

### INTRODUCTION

Microbial diseases undoubtedly played a major role in historical events such as the decline of the Roman Empire and the conquest of the new world<sup>1</sup>. In general, bacteria have the genetic ability to transmit and acquire resistance to drugs, which are utilized as therapeutic agents<sup>2</sup>. The problem of microbial resistance is growing and the outlook for the use of antimicrobial drugs in the future is still uncertain. Therefore, actions must be taken to reduce this problem, for example, to control the use of antibiotic, and develop research to better understand the genetic mechanisms of resistance and to continue studies to develop new drugs, either synthetic or natural. The ultimate goal is to offer appropriate and efficient antimicrobial drugs to the patient. To overcome the drawbacks of synthetic antimicrobials, many

Researchers have focused their attention on antimicrobials of plant origin. As they have enormous therapeutic potential. The recent advance and restrictions on the use of animal antibiotic growth promotes stimulated interest in bioactive secondary metabolites of plant sources as alternative performance enhancers. A systematic investigation was undertaken to screen flora for anti bacterial activity of leaves of *Dechaschistia crotonifolia* Wight & Arn.

### MATERIALS AND METHODS

#### Plant material:

The Leaves of plant *Dechaschistia crotonifolia* Wight & Arn. belonging to the family to Ebaenaceae were collected from surroundings of Tirumala, Andhra Pradesh, India in the month of June and it was authenticated by Dr. K. Madhava Chetty,

Head of Department, Department of Botany, SV University, Tirupati. The leaves of *Dechaschistia crotonifolia* Wight & Arn. were shade dried for 7 days and stored in air tight containers.

#### Description of the plant:

It is a shrub with stems and branches densely whitish woolly. Ovate lance shaped leaves, 3-6 cm long, 2-4 cm wide, have heart shaped or rounded bases, pointed tip and coarsely toothed margins. Leaves are velvety on both sides and are carried on 1.5cm long stalks. Yellow flowers occur singly in leaf axils. Sepal cup is bell shaped with sepals 1-1.5cm long. Flowers have a dark maroon center and are 5-7cm across with obovate petals, 3-4 x 2-2.5cm. Capsules are enclosed in the sepal cup and seeds are kidney-shaped. It is common in the deciduous forests of peninsular India. Flowering takes place in the month of March to June.

#### Extraction

50gms of the air-dried powder drug of *Dechaschistia crotonifolia* Wight & Arn. extracted by using ethanol with Soxhlet extractor for 72hrs. Concentrate each extract by distillation off the solvent and then evaporating to dryness on the water-bath. Weigh the extract obtained with each solvent and calculate its percentage in terms of the air-dried weight of the plant material.

#### Evaluation of anti-bacterial activity

The antibacterial activity of ethanolic leaf extract of *Dechaschistia crotonifolia* Wight & Arn. (ELDC) was carried out by Cup Plate Method. The test organism used for evaluation of anti-bacterial activity is *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Staphylococcus aerus* and *E. coli*. These cultures were maintained on nutrient agar by sub culturing them on fresh slants after every four weeks. Temperature for incubation was at 30°C for 24 hours. The Minimum Inhibitory Concentration of the ELDC is evaluated by using 1µg/ml to 10µg/ml. Antimicrobial activity of ethanolic leaf extract of different concentrations 10, 20, 30, 40 and 50µg/ml was evaluated by dissolving in DMSO (Dimethyl sulphoxide). For the present study Amoxicillin was taken as standard drug and Control as DMSO. These solutions were sterilized using filtrate sterilization technique (membrane filter # 0.45µ).

#### RESULTS AND DISCUSSION

**Anti-bacterial activity:** The Minimum Inhibitory Concentration of ethanolic extract was shown at 10 µg. The antimicrobial study of ELDC revealed that it had shown the antimicrobial activity against *E. coli*, *B. subtilis*, *P. aeruginosa* and *S. aerus* effectively at concentration of 50 µg (Table 1)

**Table 1: Antibacterial activity of Ethanolic Leaf Extract of *Dechaschistia crotonifolia***

S. No.	EXTRA CT	STRAIN	ZONE OF INHIBITION (mm)							
			CONCENTRATION (µg/ml)							
			Standard (5µg/ml)	Control	1	10	20	30	40	50
1.	Ethanolic leaf extract of <i>Dechaschistia crotonifolia</i>	<i>E. coli</i>	18 mm	0	No Zone	5.0 mm	8.00 mm	12.0 mm	15.0 mm	17.0 mm
		<i>P. aeruginosa</i>	19 mm	0	No Zone	4.0 mm	6.0 mm	8.0 mm	9.0 mm	12.0 mm
		<i>S. aureus</i>	17 mm	0	No Zone	5.0 mm	9.0 mm	13.0 mm	14.0 mm	15.0 mm
		<i>B. subtilis</i>	16 mm	0	No Zone	6.0 mm	8.0 mm	11.0 mm	13.0 mm	14.0 mm

Recently, much attention has been directed toward plant extracts as the use of medicinal plants<sup>6,7</sup> plays a vital role in basic health and the plants may offer a new source of antibacterial, antifungal and antiviral agents with significant activity against infective microorganisms<sup>8,9</sup>.

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