



ANTIMICROBIAL ACTIVITY OF ROOT EXTRACTS OF *Glochidion zylanicum*

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ABSTRACT

Solvent root extracts of *Glochidion zylanicum* was tested for its antibacterial and antifungal activities against the organisms, *Bacillus subtilis* NICIM 2493, *Flavobacterium tegeticola* NICIM7765, *E. coli*, NCIM 2068, *Serratia Rubidiae*, *Streptomyces sp.*, *Flavobacterium oxysporium*. In the present study, maximum inhibitory activity was observed in the aqueous extract against *Flavobacterium tegeticola*.

Key words: *Glochidion zylanicum*, Solvent extraction, Antibacterial, Antifungal.

INTRODUCTION

Many antibiotics are more effective in destroying the bacteria as well as also produce side effects. In order to reduce side effects of some drugs, the need of traditional medicines is increasing because naturally occurring medicines do not produce hazards to health. To solve this problem, antibacterial and antifungal activities of *Glochidion zylanicum* were studied¹.

The plant (Euphorbiaceae) commonly named as Neerumamdi in Telugu is having many medicinal activities like stomachic, anticancer, refrigerant etc.². To the best of our knowledge, no reports are available on the antimicrobial activity of *Glochidion zylanicum* roots. As there is no reference in the literature regarding the antimicrobial aspects, it was considered worthwhile to investigate the antimicrobial properties of the roots of *Glochidion zylanicum* with various organic solvents and screening the resultant extracts for the antimicrobial activity.

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EXPERIMENTAL

Collection and extraction of roots

Glochidion zylanicum roots were collected in the month of July, 2008 from Papanasanam Forest A.P. India. Identification of the material was carried out by Dr. Madhava Chetty, Assistant Professor, Department of Botany, Sri Venkateswara University, Tirupati, A.P. A voucher specimen is being maintained in Biotechnology Department J.N.T.U., Hyderabad.

Table 1: Antimicrobial activity of extract of *glochidion zylanicum*

(The values are represented in terms of zone of inhibition in mm)

Name of the bacteria	Solvent extracts					Standard drugs	
	Petroleum ether	Ethyl acetate	Chloroform	Water	Aq. Alcohol	Cpr.	Gri.
<i>Bacillus subtilis</i>	10	14	8	8	9	18	NA.
<i>Flavobacterium tegeticola</i>	10	15	0	18	16	NA.	NA.
<i>Seretia rubidiae</i>	0	16	11	16	8	NA.	NA.
<i>Streptomyces sp.</i>	10	11	7	0	8	20	0
<i>E. coli</i>	9	10	7	18	9	NA.	NA.
<i>Flavobacterium oxysporium</i>	10	11	6	0	11	0	20

The disc diameter 8 mm. is subtracted from readings, NA denotes no activity, Cpr. and Gri. indicate standard drugs Ciprofloxacin and Griseofulvin

The roots of *Glochidion zylanicum* were washed, air dried and then powdered well. 25 g. of powdered extract³ were soaked in petroleum ether, n-butanol, methanol, chloroform, water, ethyl acetate and benzene separately for 10 days. Then extract was separated from the sample solution by a separating funnel and concentrated⁴. The solvent extract thus obtained from the roots of *Glochidion zylanicum* was tested for its antimicrobial activities against the following organisms, *Bacillus subtilis* NICIM 2493, *Flavobacterium tegeticola* NICIM7765, *E. coli*, NCIM 2068, *Seratia Rubidiae*, *Streptomyces sp.* and *Flavobacterium Oxysporium*.

Disc paper method was employed for determining the antimicrobial activities⁵. All the extracts were dissolved in DMSO (Dimethyl sulphoxide) and used in the concentration of 200 µg/mL. The diameter of disc is 8 mm. Ciprofloxacin and griseofulvin (10 µg/mL) were used as standards for antibacterial and antifungal activities, respectively.

Antimicrobial activity was determined based on the inhibitory zones around the colonies. In the present study, maximum inhibitory activity was observed in aqueous extract against all the bacterial and fungal species.

RESULTS AND DISCUSSION

The maximum antibacterial activity was observed in aqueous extract against *Flavobacterium tegtosticola* (zone of inhibition, 18 mm) and the maximum antifungal activity was observed in ethyl acetate and aqueous alcohol extract (zone of inhibition; 11 mm).

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