



## ANTIMICROBIAL AND ANTHELMINTIC ACTIVITY OF *CANSJERA RHEEDII* ROOT EXTRACT

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### ABSTRACT

Root extracts of *Cansjera rheedii* in different solvents were tested and studied for their antimicrobial and anthelmintic activities. The petroleum ether and n-butanol extracts showed high inhibitory activity against *Bacillus subtilis*. The ethanolic extract of *cansjera root* showed good anthelmintic activity. Antimicrobial and anthelmintic activities of the extract were compared with that of the standard drugs - ciprofloxacin, griseofulvin and albendazole.

**Key words:** *Cansjera rheedii*, Antimicrobial activity, Anthelmintic activity, Solvent extraction.

### INTRODUCTION

Antibiotics show more effectiveness to destroy the bacteria, but they also produce some side effects. In order to reduce side effects of some drugs, the use of traditional medicines is increasing day by day, because naturally occurring medicines do not produce health hazards or side effects. The details of *Cansjera rheedii* are reported in the literature<sup>1</sup>.

The plant *Cansjera rheedii* (Opiliaceae) commonly named as Mallimadugu teega or Adavi karedu in Telugu commonly grows in slopes and altitudes of forest in all over Chittoor District, A.P., India and abundant at Japalitheertham area (Tirumala), A.P., India It plays an important role to cure many diseases like diabetes, jaundice, cancer and kidney stone problems<sup>2</sup>.

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To the best of our knowledge, no report is available on the antimicrobial and anthelmintic activity of *Cansjera rheedii* roots. As there is no reference in literature regarding the antimicrobial and anthelmintic aspects, it was considered worthwhile to investigate the antimicrobial and anthelmintic properties of the roots of *Cansjera rheedii* by extracting its active components with various organic solvents and screening the resultant extracts for the antimicrobial and anthelmintic activities.

## EXPERIMENTAL

### Collection of roots and extraction

The plant roots were collected in July 2008 from Japalitheertham area (Tirumala), A.P., India Forest and the plant was authenticated by Dr. Madhava Chetty, Assistant Professor, Botany Department, Sri.Venkateswara University, Tirupathi, A.P., India.

The roots of the plant were removed, dried under shade and powdered in a mechanical grinder.

25 g of powdered extract<sup>3</sup> were soaked in petroleum ether, ethanol, n-butanol, methanol, chloroform, water, ethyl acetate and benzene separately for 10 days. Then extracts were separated from the sample solution by separating funnel and concentrated<sup>4</sup>. All chemicals and reagents used for study of antimicrobial and anthelmintic activities are of analytical grade.

### Antimicrobial activity

The extracts thus obtained from the roots of *Cansjera rheedii* were tested for the antimicrobial activity against the following organisms *Bacillus Subtilis* NICIM 2493, *Flavobacterium tegeticola* NICIM 77765, *Serratia rubidae*, *E. Coli* NCIM 2068, *Streptomyces species* and *Flavobactirum oxysporum*. The activities were compared with that of standard drugs ciprofloxacin and griseofulvin.

### Anthelmintic activity

The anthelmintic activity was evaluated on adult Indian earth worms, *Pheretima Posthuma* collected from Dilshuknagar, Hyderabad due to its anatomical and physiological resemblance with the intestinal round worm parasites of human beings<sup>5-7</sup>. The methods of Mathew et al. and Dash et al.<sup>9,10</sup> were followed for anthelmintic screening. The activity of aqueous extract and ethanolic extract was compared with that of standard drug albendazole.

## RESULTS AND DISCUSSION

Antimicrobial activity of *Cansjera rheedii* root extract was studied by employing disc paper method<sup>8</sup>. All extracts were dissolved in DMSO (Dimethyl sulphoxide) and used in the concentration of 200 µg/mL. The diameter of the disc is 8 mm. Ciprofloxacin and griseofulvin at 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. Petroleum ether extract and n-butanol extract exhibited good antimicrobial activity and it was compared with standard antibiotic ciprofloxacin and griseofulvin. The results are shown in Table 1.

**Table 1: Antimicrobial activity of *cansjera rheedii* root extract**

Micro-organisms	Zone of inhibition (mm)								
	Solvent extracts							Standard drugs	
	Petroleum ether	n-Butanol	Methanol	Chloroform	Water	Ethyl acetate	Benzene	Cpr.	Gri.
<i>Bacillus subtilis</i>	17	17	13	14	9	12	11	18	NA
<i>Flavobacterium tegeticola</i>	7	9	9	8	10	9	11	NA	NA
<i>Seretia rubidiae</i>	14	10	13	8	9	12	11	20	NA
<i>Streptomyces sp.</i>	7	11	8	9	6	12	11	21	NA
<i>E. coli</i>	9	10	13	9	9	13	12	26	NA
<i>Flavobacterium oxysporium</i>	8	7	9	6	6	8	7	0	20

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

Anthelmintic activity of the aqueous and alcoholic extracts was evaluated. Aqueous extract showed good anthelmintic activity (Table 2) and this activity was compared with the effect produced by reference standard drug albendazole. The data in the Table 2 reveals a significant anthelmintic activity of *Cansjera rheedii* root extract.

**Table 2: Anthelmintic activity of *cansjera rheedii* root extract**

Type of extract	Dose (mg/mL)	Time taken for paralysis (min)	Time taken for death (min)
Ethanollic	5	70 ± 0.35	120 ± 0.50
	10	38 ± 0.75	85 ± 0.32
	20	30 ± 0.45	52 ± 0.50
Aqueous	10	63 ± 1.2	120 ± 0.40
	20	40 ± 0.50	68 ± 0.50
Albendazole (Standard drug)	10	30 ± 0.50	65 ± 0.92
Vehicle (Distilled water)	-----	-----	-----

### CONCLUSION

The present study revealed that the root of plant *Cansjera rheedii* posses good antimicrobial and anthelminitic activities. Further work is still under progress to explore the chemical nature of the active constituents and other pharmacological investigations are also under evaluation.

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