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In vitro Anthelmintic Activity of *Clerodendrum infortunatum*

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Abstract: Alcohol and aqueous extracts from the leaves of *Cleodendrum infortunatum* were investigated for their anthelmintic activity against Pheretima posthuma and five concentrations (5, 10, 15, 20 and 25 mg/ml) of each extracts were studied in activity, which involved the determination of time of paralysis and time of death of the worm. Both the extracts exhibited significant anthelmintic activity at highest concentration of 100 mg/ml. Piperazine citrate in same concentration as that of extract was included as standard reference and distilled water as control. The anthelmintic activity of alcohol and aqueous extracts of *Cleodendrum infortunatum* has therefore been demonstrated for the first time.
Keywords: Anthelmintic Activity, *Cleodendrum infortunatum*, Pheretima Posthuma

Introduction

Clerodendrum infortunatum Linn. (Verbanaceae: Bhat in Hindi, Ghentu in Bengali, Bhania in Oriya) is a terrestrial shrub having square, blackish stem and simple, opposite, decussate, petiole, exstipulate, coriacious, hairy leaves with a disagreeable odour.[1,2] The plant is common throughout the plains of India. Various parts of the plant have been used by tribes in colic, scorpion string, snake bite, tumour and certain skin diseases.[3, 4] also used in Indian folk medicine as in the treatment of bronchitis, asthma, fever, diseases of the blood, inflammation, burning sensation and epilepsy.[7, 8, 9] Fresh juice of the leaves has been used as vermifuge and in treatment of malaria.[4, 5] *Clerodendrum infortunatum* leaves on preliminary chemical analysis are found to contain saponin, clerodin (a bitter diterpene) [4, 6] and some enzymes. Leaves also contain a fixed oil which consists of Glycerides of Lenoleic, oleic, stearic and lignoceric acid.[9] Previous phytochemical investigation of the plant revealed the presence of alkyl sterols and 2,-(3, 4-dehydroxyphenyl) ethanol 1-O-α-2 rhamnopyranosyl-(1→3)-β-D-(4-O-caffeoyl) glycopyranoside (acteoside) in this plant.[10, 11] The present study has been designed to evaluate anthelmintic activity of the ethanol and aqueous extract of the leaves of C. infortunatum Linn. Traditionally, the plant is used as an aphrodisiac, antipyretic, and anthelmentic. Hence present study was undertaken to prove efficacy of extracts of *Cleodendrum infortunatum* against selected worms.

Materials and method

Extraction of Plant Material

The fresh leaves of Clerodendrum infortunatum of were collected in the months of July-August from the local market of Amaravati, Maharashtra state, India, and authenticated by the authority of the botany department, VMV, Amaravati. A voucher specimen was submitted at Institute's herbarium department for future reference. Dried leaves were ground to coarse powder. Powder was first defatted with pet. Ether and then extracted with ethanol. Which is further evaporated to dryness to obtain alcoholic extract aqueous extract was obtained by maceration for 24 hours.

Anthelmintic activity

Indian adult earthworms (*Pheretima posthuma*) collected from moist soil and washed with normal saline to remove all faecal matter were used for the anthelmintic study.[12, 13] The earthworms of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental protocol. Various concentrations (10-50

mg/ml) of each extract were tested in the bioassay, which involved determination of time of paralysis and time of death of the worms. Piperazine citrate was included as standard reference and distilled water as control. Observations were made for the time taken to paralyze and death of individual worms. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Death was concluded when the worms lost their motility followed with fading away of their body colors.

Results and discussion

Both the extract showed significant anthelmintic activity on selected worms. EE found to be more active as compared to WE. The EE demonstrated paralysis as well as death of worms in a less time as compared to piperazine citrate especially at higher concentration of 50 mg/ml in case of *Pheretima posthuma*. While WE also shown significant activity. Phytochemical analysis of the crude extracts revealed presence of saponin, steroids, alkaloids, triterpenoids and bitter principles as are the chemical constituents. Triterpenoids and bitter principals are known to have anthelmintic activity.

Conclusion

In conclusion, the use of leaves of *Cleodendrum infortunatum* as an anthelmintic have been confirmed as the leaves extracts displayed activity against the worms used in the study. Further studies involving *in vivo* models of anthelmintic activity to establish the mechanisms (S) of action are required.

Table: 1 Anthelmintic activity of extracts of *C. infortunatum*

Extracts	Concentration mg/ml	*Pheretima posthuma*	
EE		P	D
	5	25.03 ± 0.2	65.05 ± 0.3
	10	16 ±0.12	47 ± 0.96
	15	12.07 ± 0.5	35.23 ± 0.11
	20	7.3 ± 0.67	23 ± 0.87
	25	4.8 ± 0.98	15 ± 0.30
WE	5	72.75 ± 1.7	178.15 ± 0.3
	10	55 ± 0.56	135± 0.07
	15	43.75 ± 0.4	120.9 ± 0.5
	20	35 ± 0.12	100± 0.54
	25	31.25 ± 0.81	60.34 ± 0.02
PC	5	28.33 ±1.5	64.43 ± 0.8
	10	22.56 ± 1.23	54.98 ± 1.45
	15	17.65 ±1.5	46 ± 0.5
	20	14.09 ± 0.8	37.8 ± 0.65
	25	12.76 ± 0.5	26.7 ± 0.5

Where EE: Ethanolic extract, WC: Water extract, PC: piperazine citrate
P: Time taken for Paralysis (min), D: Time taken for Death of worms (min)

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