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In vitro Anthelmintic activiy of Leaves extracts of *Tabernaemontana coronaria*

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Abstract: The aim of the present study is to investigate the anthelmintic activity of pet ether (60^0-80^0), chloroform and ethanol crude extracts of *Tabernaemontana coronaria* leaves using *Pheritima posthuma.* Four concentrations (10, 15, 20, 25 mg/ml) of each extracts were studied in the activity which involved in determination of paralysis and death time of the worms. Albendazole is used as standard and normal saline as control. The present study indicates the usefulness of *Tabernaemontana coronaria* leaves as potent anthelmintic agent.
Key words: Anthelmintic activity*, Tabernaemontana coronaria, Pheritima posthuma.*

INTRODUCTION:

Tabernaemontana coronaria (syn .*Ervatamiacoronaria*) is a glabrous, evergreen, dichotomously branched shrub, belonging to the family Apocynaceae. It is distributed in upper gangeticplain, Garhwal, East Bengal, Assam, Karnataka, Kerala and in Burma[1]. In Ayurveda, the root is using for kapha, biliousness and the diseases of the blood. The root has a bitter taste. It is aphrodisiac; tonic, especially to the brain, liver and spleen; and purgative. The milky juice mixed with the oiland when rubbed on to the head cures pain in the eye. It is also known to kill intestinal worms and when its root part is chewed, causes the relief in the toothache[2]. The allied species *Tabernaemontana divaricata,* when administered p.o. or i.p. to rats 1 hr before subplantar injection of carrageenan, had a significant anti-inflammatory activity[3]. A number of chemical constituents namely indole alkaloids, phenols and sterols have been reported from the leaves, stem and roots of this plant[4-6]. The present study was undertaken to screen the anthelmintic activity of leaves of this plant.The literature survey reveals that no reports were found on the anthelmintic activity of the leaves extracts of *Tabernaemontana coronaria.* This promoted us to investigate the anthelmintic activity of *Tabernaemontana coronaria* leaves extracts.

MATERIALS AND METHODS:

Plant material:

The leaves of *Tabernaemontana coronaria* were collected in the month of May-June from the fields around the area of Aagardhalli in Shimoga district, Karnataka. The plant was authenticated by Retd. Prof. M.S. Pushpalatha, Department of Botany, Sahyadri Science College, Shimoga.

Preparation of extracts:

Leaves were shade dried and coarsely powdered. The powdered plant material (1000g) was

successfully extracted using Soxhlet extractor by the solvents viz., petether(60^0-80^0), chloroform and ethanol, according to their increasing polarity respectively. The extract obtained was filtered and evaporated to dryness under reduced pressure in rotary vacuum evaporator. The details of the extraction of plant *Tabernaemontana coronaria* were presented in the table 1.

Screening of anthelmintic activity

The anthelmintic activity was evaluated on Indian adult earthworms *Pheritima posthuma* collected from Earth worm rearing center, Dumalli, Shimoga (Karnataka). The worms with length of 3-5cm and 0.1-0.2 mm in width were used for the experiment. The worms were washed with normal saline to remove all fecal matter before experimentation. Due to its anatomical and physiological resemblances with the human parasitic intestinal round worms[7-10] and because of their easy availability, they have been used widely for the initial evaluation of anthlemintic compounds *in vitro*[11-14]. All the worms of equal size were divided into 14 groups, and each group contains 3 worms.I group treated with vehicle (1% Tween- 80 in normal saline) served as control, II group is treated with albendazole (screened standard) 10 mg/ml and III – XIV groups were treated with different concentrations (10, 15, 20, and 25 mg/ml in normal saline containing 1% Tween-80) of all three extracts. Observations were made for the time taken to paralysis and death of individual worm. Paralysis was said to occur when the normal group did not revive in the saline. Death was concluded when the worm lost their motility followed with fading of their body colour. The experiment was carried out in triplicate for each groups and data was statiscally analyzed.

Table-1: Details of the extraction of plant *Taebernamountana Coronaria* leaves

Total plant material used for extraction is 1000 gms	**Solvent used**	**Colour and consistency**	**Yield in gms**
	Pet ether (60^0-80^0)	Green paste	36.00
	Chloroform	Blackish paste	13.55
	Ethanol	Brown paste	66.78

Table: 2 Anthelmintic activity of various extracts of *Taebernamountana Coronaria* leaves

Treatment	**Concentration used(mg/ml)**	**Time taken for paralysis(min)**	**Time taken for death**
Vehicle		----	----
Albendazole	10	23±1.15	61±0.88
Pet ether	10	55.77±0.48	71.66±0.96
	15	51.66±0.96	61.66±0.88
	20	43.33±0.86	50.00±1.18
	25	36.66±1.93	44.64±1.13
Chloroform	10	41.99±0.68	55.77±0.48
	15	39.78±0.78	48.16±o.30
	20	35.22±0.99	43.55±0.78
	25	29.13±1.24	35.23±0.11
Ethanol	10	18.07±0.65	33.05±0.45
	15	21.25±0.76	28.61±0.82
	20	23.04±1.08	24.72±0.77
	25	12.74±1.51	18.34±1.29

Results expressed as mean ±SEM from six observations.

RESULTS AND DISCUSSION:

All the three extracts showed significant anthelmintic activity. The time taken for paralysis and death of the earth worms are tabulated in table 2. The ethanolic extract at 25 mg/ml showed significant anthelmintic activity. The conclusion drawn from table is that the *Tabernaemontana coronaria,* used traditionally to treat intestinal worm infections, showed significant anthelmintic activity. The experimental evidence obtained in the laboratory model could provide rational for the traditional use of this plant as an anthelmintic agent. The plant extracts will be further explored for its phytochemical profile to recognize the active constituent which is accountable for anthelmintic activity.

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