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ANTHELMINTIC ACTIVITY OF FRUIT PULP OF *CORDIA DICHOTOMA*

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ABSTRACT
Fruits of *Cordia dichotoma* Forst belonging to family Boraginaceae are used traditionally as analgesic, anti-inflammatory, hepatoprotective, diuretic, aphrodisiac, and anthelmentic activities. Pulp obtained after separation of seeds was shade dried, powdered and subjected to successive hot solvent (Soxhlet) extraction by petroleum ether (40-60 C) ethanol and maceration with chloroform water I.P. Five concentrations (10-100 mg/ml) of ethanolic and aqueous extracts were studied for anthelmentic activity by using *Eudrilus euginiae* earthworms. Both aqueous and ethanolic extracts showed paralysis and death of worms in concentration (10-100 mg/ml) dependent manner. Aqueous extract of *Cordia dichotoma* showed significant activity than ethanolic extract. Piperazine citrate (10 mg/ml) and distilled water were included in the assay as standard drug and control respectively. The result showed fruits of *Cordia dichotoma* possessed potential anthelmintic activity. The fruit pulp extract of *Cordia dichotoma* also showed presence of flavonoid, alkaloid and glycosides by preliminary phytochemical investigations, TLC and HPTLC methods.

KEYWORDS: *Cordia dichotoma*, fruit pulp, anthelmintic, *Eudrilus euginiae,* Piperazine citrate.

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INTRODUCTION

Cordila dichotoma Forst belonging to family Boraginaceae is medium sized tree with a short, usually crooked trunk (90-100 cm in girth) and bearing globose, grows in India, Srilanka and other warmer countries. The fruit of this arboreous plant is 0.5-1.0 in long, pink or nearly black when ripe. The fruit of the plant contains saponins, aminoacids, flavonoids, sugar, gum, proteins, palmitic, stearic, linoleic acids, oleic, arachidic, behenic acids. Its fruits are used as cooling, astringent, diuretic, aphrodisiac, emollient, expectorant, anthelmintic and purgative[1-4]. Kernels were good remedy in ringworms[5]. Analegsic, anti-inflammatory and hepatoprotective have also been reported from the plant[6]. The present study was undertaken to evaluate the anthelmintic activity of the fruits of pulp of *Cordia dichotoma* in a scientific manner.

MATERIALS AND METHODS

The fruits of *Cordia dichotoma* were collected from local areas of Belgaum, Karnataka state and authenticated by botanist, Prof. R. S. Goudar. R.L. Science Institute, Belgaum, Karnataka.

Preparation of Extracts

The seeds were separated from fruits *Cordia dichotoma* plant and obtained after separation of seeds were shade dried, powdered and subjected to hot solvent (Soxhlet) cold maceration with chloroform water I P. Extracts were dried with Rotavapour (Buchii Switzerland)[7].

Worms Collection and Authentication

The Australian earth worms *Eudrilus euginiae* was collected and authenticated by department of zoology from K.L.E.S's school of agricultural training and research, Lingaraj college campus, college road, Belgaum, Karnataka state.

Anthelmintic Activity

Sample for the anthelmintic study were prepared by dissolving 2.5g of dried crude extract in 25 ml of 1% Tween 80 prepared in normal saline to obtain a stock solution of 100 mg/ml. From this stock solution, different dilutions were prepared to get a concentration range of 10, 25, 50, 75, and 100 mg/ml.

The anthelmintic activity was evaluated on adult Australian earthworms *Eudrilus euginiae* obtained from Horticulture Department. The method of Mathew et al and Dash et al[8,9,10] was followed for anthelmintic screening twelve groups; each consisting of six earthworms of approximately equal size were released in to the 50 ml prepared samples at room temperature.

Each group was treated with one of the following: vehicle (1% Tween 80 in normal saline), piperazine citrate (10 mg/ml) and extracts (10, 25, 50, 75, 100 mg/ml) in normal saline containing 1% Tween 80. Observations were made for the time taken for paralysis and/or death of individual worms. The mean paralysis time and mean leathal time for each extract was recovered. Paralysis was said to occur when the worms did not revive in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colour.

Statistical Analysis

The data was presented as mean ± SEM. The activities of the extracts were compared with the control. All the extracts showed significantly higher duration of paralysis and death. Values of $P<0.05$ were considered statistical significant[11].

RESULTS AND DISCUSSION

The present investigation reveals that the ethanolic extract of *Cordia dichotoma* was more potent followed by aqueous extract when compared to reference control Piperazine citrate. The extracts caused paralysis followed by death of the worms at all tested dose levels. The potency of the extracts was found inversely proportional to the time taken for paralysis/death of worms. The activity confirms the dose dependent nature of the extracts. (**Table 1**)

Preliminary phytochemical screening of *Cordia dichotoma* has shown the presence of flavonoids, saponins, alkaloids, glycosides, proteins, aminoacids, carbohydrates and triterpenoids.

Flavonoids and saponins were shown to produce anthelmintic activities[12]. It indicates that all these phytochemical and interaction all that chemicals might be resulted in synergistically enhanced therapeutic efficacy of anthelmintic activity[13].

In conclusion, the study has showed that, aqueous extract of fruit pulp of *Cordia dichotoma* have significant determined anthelmintic activity.

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Table 1: Anthelmintic Activity of Various extracts of fruit pulp of *Cordia dichotoma*

Groups	Concentraions(mg/ml)	Time taken for paralysis (min)	Time taken for death (min)
Aqueous extract	10	71.00 ± 0.31	104 ± 0.31
	25	22.20 ± 0.20	76.40 ± 0.24
	50	19.70 ± 0.30	30.60 ± 0.24
	75	16.20 ± 0.37	23.00 ± 0.70
	100	5.6 ± 0.24	25.20 ± 0.20
Ethanolic extract	10	141 ± 20	198.20 ± 0.37
	25	34.20 ± 0.37	131.60 ± 0.50
	50	26.60 ± 0.24	34.00 ± 0.31
	75	10.20 ± 0.37	31.20 ± 0.58
	100	5.00 ± 0.31	10.40 ± 0.50
Piperazine citrate	10	25.40 ± 0.24	65.15 ± 0.75
Control	-	-	-

Control worms were alive up to 24 H of the experiment
Results expressed as Mean ± SEM of six observations. Significant at P less than 0.05
P value was calculated by comparing with control by one way ANOVA

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