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Anthelmintic activity of leaves of *Ficus racemosa*

[1] K Divakar, *[2] U Srinivasa, [3] J Prabhavathi, [4] A Naga Madhuri, [5] Y Bhargavi, [6] Y Vara Anjali, [7] G Manikanta Swamy
[1, 3-7] Adita Institute of Pharmaceutical Sciences and Research, Surampalem, Andhra Pradesh, India
[2] Srinivas College of Pharmacy, Mangalore, Karnataka, India

Abstract
Aqueous and methanolic extracts of leaves of *Ficus racemosa* Linn. (Moraceae) were evaluated separately for anthelmintic activity using Piperazine citrate as reference standard. The results indicated that aqueous extract was more potent than the methanolic extract.

Keywords: *ficus racemosa* linn., aqueous and methanolic

Introduction
Ficus racemosa Linn. (Moraceae) is a popular medicinal plant in India, which has long been used in Ayurveda, the ancient system of Indian medicine, for various diseases/disorders including diabetes, liver disorders, diarrhea, inflammatory conditions, hemorrhoids, respiratory, and urinary diseases. In the traditional system of medicine various plant parts such as bark, root, leaves, fruits and latex are used in dysentry, diarrohoea, diabeties, stomachache, piles and as carminative and astringent and also as antioxidant and anticancer agent [1].
The preliminary phytochemical examination [2, 3] of *Ficus racemosa* leaves showed the presence of carbohydrates, tannins, saponins and flavonoids. However, no systematic study on anthelmintic activity has been not reported in the literature. In this context the present study is focused to evaluate the anthelmintic activity of *Ficus racemosa*.

Material and Methods
Leaves of *Ficus racemosa* were collected from local region of Viravada near to Pithapuram of East Godavari district, Andhra Pradesh, in winter season and dried under shade. The Taxonomist Dr. P. Shiva kumar, Department of Botany, Government Science College, Surampalem, and Andhra Pradesh identified the plant. A voucher specimen AIPS. 021 are preserved in our research laboratory for future reference.

Preparation of the Extract
The collected leaves were shade dried, coarsely powered and the powder was exhaustively extracted with aqueous and methanol using soxhlet apparatus. The solvent was then removed under reduced pressure using rotary flash evaporator. It was further concentrated and dried in the desiccator for further studies. The dried extracts were suspended in 1% tween 80 in normal saline (vehicle) and used for anthelmintic activities.

Anthelmintic Activity
The anthelmintic activity was evaluated on adult Indian earthworms (Pheretima Posthuma obtained from Horticulture department Davanagere). The method of Mathew *et al* and Dash *et al* [4, 5, 6] was followed for anthelmintic screening nine groups; each consisting of six earthworms of approximately equal size (8 ± 1 cm) was released in to 50ml of desired formulation at room temperature.
Each group was treated with one of the following: Control (1% Tween 80 in normal saline), Piperazine citrate (20 mg/ml) and extracts (20, 40, 60 and 80 mg/ml) in normal saline containing 1% Tween 80. Observations were made for the time taken to paralyse and/or death of individual worms up to four hours of test period. The mean paralysis time and mean lethal time for each extract was recorded. Paralysis was said to occur when the worms did not revive even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colour. (Table-1)

Statistical analysis [7, 8]
The data was presented as mean ± SEM. The activity of all the extracts were compared with the control. All the extracts showed significantly higher duration of paralysis and death. Values of $P < 0.001$ were considered statistically significant.

Table 1: Anthelmintic Activity of Leaves of *Ficus racemosa*

Treatment	Time taken for Paralysis	Time taken for death
	(Minutes)	(Minutes)
Control	----	----
Piperizine Citrate	13	72
20 mg/ml		
Ethanolic Extract		
20 mg/ml	22	44

40 mg/ml	19	37
60 mg/ml	16	32
80 mg/ml	14	19
Chloroform Extract		
20 mg/ml	45	55
40 mg/ml	26	40
60 mg/ml	24	35
80 mg/ml	14	20

Results expressed as Mean ± SEM from six observations. Significant at $P < 0.001$. P value was calculated by comparing with control by one-way ANOVA.

Results and Discussion

Indigenous drug systems can be a source of variety of new drugs, which can provide to eliminate worms, but their claimed reputation has to be verified on scientific basis. The results in the (Table-I) depict the time taken for paralysis and death of worms after treating with test extracts. It was observed that the aqueous extract of *Ficus racemosa* leaf is more potent than the methanol extract and their activity was comparable with the standard drug Piperazine citrate. It causes paralysis followed by death of the worms at all tested dose levels. Potency of the extracts was inversely proportional to the time taken for paralysis/death of the worms.

It is quite apparent from the studies that the ethanolic extract possesses significant anthelmintic activity. It would be interesting to isolate the constituents responsible for the anthelmintic activity.

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