

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Invitro Anthelmintic Activity of *Clerodendrum Paniculatum* Linn Leaves

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ABSTRACT

The present study was undertaken for investigating and validating the traditional claims of *Clerodendrum paniculatum* Linn for its anthelmintic activity. Shade dried, powdered (40 mesh size) leaves of *Clerodendrum paniculatum*.Linn were macerated with Chloroform, Ethyl acetate, Methanol and Distilled water. Adult earthworms *Eudrilus eugenia* of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental purposes due to its anatomical and physiological resemblance with the intestinal roundworm parasites in human beings. The time taken for complete paralysis and death were recorded. The mean paralysis time and mean lethal time for each sample were recorded. Anthelmintic activity of methanolic extract shows significant activity comparable with standard drug, Piperazine citrate. Chloroform and ethyl acetate extracts shows little anthelmintic activity and aqueous extract does not show any activity.

Keywords: *Clerodendrum paniculatum* Linn leaves, anthelmintic activity, mean paralysis, mean lethal time

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INTRODUCTION

Helminth infections are among the most widespread infections in humans, distressing a huge population of the world. Although the majority of infections due to helminths are generally restricted to tropical regions and cause enormous hazard to health and contribute to the prevalence of undernourishment, anaemia, eosinophilia and pneumonia [1]. The gastrointestinal helminthes becomes resistant to currently available anthelmintic drugs therefore there is a foremost problem in treatment of helminthes diseases[2].The development of anthelmintic resistance and the high cost of conventional anthelmintic drugs led to the evaluation of medicinal plants as an alternative source of anthelmintics[3].

The genus *Clerodendrum* L. (Family: Lamiaceae) is very widely distributed in tropical and subtropical regions of the world. More than five hundred species of the genus are identified till now, which includes small trees, shrubs and herbs. Ethno-medical importance of various species of *Clerodendrum* genus has been reported in various indigenous systems of medicines and as folk medicines. The genus is being used as medicines specifically in Indian, Chinese, Thai, Korean, Japanese systems of medicine for the treatment of various life threatening diseases such as syphilis, typhoid, cancer, jaundice and hypertension [4].

Plant species such as *Clerodendrum indicum* and *Clerodendrum inerme* were used to treat coughs, serofulous infection, venereal infections, skin diseases and as a vernifuge,febrifuge and also to treat Beriberi disease[5,6].Roots, leaves and fresh juice of leaves of *Clerodendrum infortunatum* were used in eliminating ascarids and tumours, and also as a laxative[7].

MATERIALS AND METHODS

Experimental Methods

Anthelmintic Activity [8-10]

Chemicals Used

Piperazine citrate was obtained from Glaxo - Smith Kline, India, and all other reagents used were analytical grade.

Preparation of Plant Extracts

Shade dried, powdered (40mesh size) leaves of *Clerodendrum paniculatum*.Linn were macerated with Chloroform, Ethyl acetate, Methanol and Distilled water. All those extracts were then evaporated to complete dryness under vacuum.

Animals

Adult earthworms *Eudrilus eugenia* were obtained from University of Agriculture, Vellayani, Kerala and washed with normal saline to remove all the faecal matter, were used for the anthelmintic study. The earthworms of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental protocol due to its anatomical and physiological resemblance with the intestinal roundworm parasites in human beings.

Evaluation of Anthelmintic Activity

Piperazine citrate was diluted with normal saline to obtain 0.5, 0.75, 1.0 gm% as standards and poured into Petri dishes. All the test compounds were prepared in minimum quantity of DMSO and diluted to 15 ml with normal saline to obtain 0.5, 0.75, 1.0 gm% of all the four extracts and taken into the Petri dishes. Normal saline serves as control for standard. Six earth worms of nearly equal size were placed in each Petri dish at room temperature. The time taken for complete paralysis and death were recorded. The mean paralysis time and mean lethal time for each sample were recorded.

Observations were made for the time taken to paralysis and death of individual worm. Paralysis was said to occur when the worms were not able to move even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colors.

RESULTS AND DISCUSSION

Anthelmintic activity of various extracts.

Table 1: Evaluation of anthelmintic activity on Various Extracts

Samples	Conc. (g %)	Mean Time taken for paralysis (Min.)	Mean Time taken for complete death (Min.)
Standard drug (Piperazine citrate)	0.5	18.50±1.922	29.58±1.856
	0.75	13.58±0.792	22.57±0.634
	1.0	9.20±1.166	14.58±0.934
Control		No paralysis	No death
Aqueous extract	0.5	No paralysis	No death
	0.75	No paralysis	No death
	1.0	No paralysis	No death
Methanolic extract	0.5	9.42±0.760	24±1.447
	0.75	7.08±0.763	20±1.550
	1.0	18.50±0.945	29.58±1.887
Ethyl acetate extract	0.5	22.45±1.249	39.54±1.330
	0.75	16.33±1.195	34.26±1.550
	1.0	10±0.843	30.04±1.778
Chloroform extract	0.5	17.00±0.450	28.22±1.20
	0.75	12.44±0.580	23.16±1.18
	1.0	8.08±1.150	20.33±0.880

Figure 1

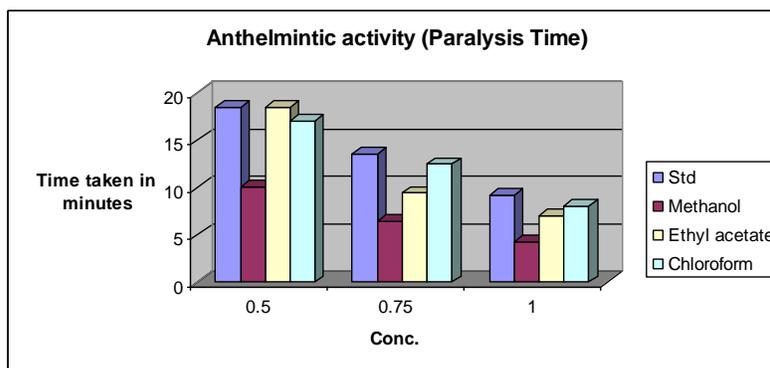
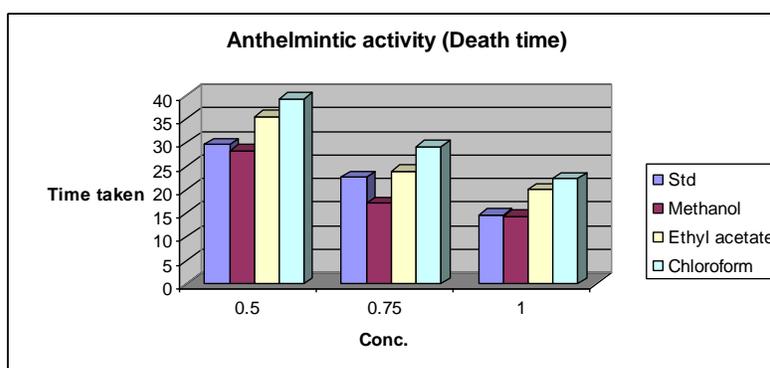


Figure 2



CONCLUSION

Anthelmintic activity study of methanolic extract at the tested concentrations(0.5-1g%) shows significant activity ($P < 0.001$) comparable with standard drug, Piperazine citrate. Chloroform and Ethyl acetate extracts shows little anthelmintic activity and aqueous extract does not show any activity.

Thus the study implicates that the leaves of *Clerodendrum paniculatum*.Linn possess significant dose dependant anthelmintic activity and therefore provides scientific base for its use in folklore remedies as an anthelmintic drug of natural origin. Hence there is need for further study to rationalize the active chemical entity.

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