

RESEARCH ARTICLE

***In-Vitro* Study of Anthelmintic Activity of *Eclipta prostrata* (L) y various Extracts**

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ABSTRACT:

Objective: the present study was conducted to validate in-vitro anthelmintic activity of various extract hexane, ethyl acetate, ethanol, water of eclipta prostrata (L), against pheritima posthuma by petri-dish method. **Method:** the in-vitro trial for anthelmintic activity of various extract of eclipta prostrata(L), was conducted on mature live pheritima posthuma by petri-dish method. The extracts were used at the concentration of 5mg, 10mg, and 15mg and observation were made on their viability at room temperature. **Results:** among the various extract, only ethyl acetate and ethanol have anthelmintic activity. 5mg, 10mg, 15 mg/ml of ethyl acetate have produced paralytic effect at 34minutes minutes, 29 minutes and 20 minutes and mortality was confirmed at 111 minutes, 61 minutes and 46 minutes. 5mg, 10mg, 15 mg/ml of ethanol have produced paralytic effect at 27 minutes, 23 minutes and 17 minutes and mortality was confirmed at 83 minutes, 72 minutes and 34 minutes respectively. **Conclusion:** an anthelmintic has been confirmed as the various extract shows good anthelmintic activity against pheritima posthuma. In the present investigation, the whole plant of eclipta prostrata (L), was taken up for extensive studies " preliminary phytochemical and pharmacological studies of the whole plant of eclipta prostrata (L), (asteraceae).

KEYWORDS: Eclipta prostrata (L), anthelmintic, Pheritima posthuma, Albendazole, soxhlet extraction.

INTRODUCTION:

Parasitic Roundworms (nematodes) cause substantial morbidity and mortality in livestock animals globally, and considerable productivity losses to farmers.^[1] The control of these nematodes has relied largely on the use of a limited number of anthelmintics.^[2] However, resistance to many of these anthelmintics is now widespread, and, therefore, there is a need to find new drugs to ensure sustained and effective treatment and control into the future.^[3] *Eclipta prostrata* (L), is annual erect or prostrate, branched, more or less strigose with appressed white hair, eyes, teeth; cures inflammations, hernias, bronchitis, asthma leucoderma, disease of skin, heart, itching and night blindness^[4]

It is principally used as a tonic and deobstruent in hepatic and splenic enlargement and in various chronic skin diseases.^[5] The chemical composition of *Eclipta prostrata*(L), contains coumestan derivatives such as wedelolactone (1.6%) and demethyl wedelolactone, polypeptides, polyacetylenes, thiophene derivatives, steroids, triterpenes and flavonoids.^[6] Alcoholic extract of the plant is known to show protective effective on experimental liver damage in rats and mice.^[7] Preliminary studies revealed the immunomodulatory activity of methanolic extract of *E. prostrata* (L).^[8] The plant has been reported to possess antinociceptive, anti inflammatory and bronchodilator activities due to coumarin compounds. The plant is reported to possess anti hyperglycemic activity^[9] Recent studied showed that *Eclipta prostrata* (L), is reported to be effective for the retrieval of memory. *E. prostrata*(L), was also tested for its hair growth promoting activity and also *Eclipta prostrata*(L), are used against snake bite and scorpion sting.^[10]

MATERIALS AND METHODS:

Collection of Plant Material:

The whole plant of *Eclipta prostrata* (L.) Hassk was collected from the local areas of west tambaram, chennai. The herbarium of this plant was identified and authenticated and specimen was plant anatomy research centre, Tambaram, chennai^[11]

Preparation of Extract:

Fresh whole plant of *E. prostrata* (L) was collected and air dried in shade at room temperature. The powdered plant material was extracted with hexane, ethyl acetate, ethanol by continuous hot percolation method, and water by maceration for 72 hours. The extract was dried at low temperature under reduced pressure.

Worm Collection and Authentication:

Indian adult earthworms (*Pheritima posthuma*) were collected from moist soil of the vermiculture plant, besides a pond in Tambaram. Then all collected worms were washed with normal saline to remove all the fecal matter and 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.

Preliminary Phytochemical Investigations:

Phytochemical screening of plant extracts were carried out qualitatively for the presence alkaloids, carbohydrates, glycosides, phytosterol, fixed oil, saponin, tannins, proteins, flavanoids, lignin, steroids, fats and oils, triterpenoids, phenols, gum and mucilage were screened according to the common phytochemical methods.

Pharmacological Studies:

Anthelmintic Activity:

The various extract of *Eclipta prostrata* (L)., was screened for anti helminthic activity by using adult Indian earth worms, *Pheritima posthuma*. *Pheritima posthuma* in view of its anatomical and physiological resemblance of with intestinal round worm parasite of human beings. Thirteen groups each containing three earth worms of approximately equal size was released in to 10ml of desired formulation. Each group was treated with one of the following vehicle: albendazole in CMC 40mg in normal saline as standard and the various extract 5mg, 10mg, 15 mg of whole plant of *Eclipta prostrata* (L)., in CMC in normal saline. Observations were made for the time taken for paralysis and death of individual earth worm.^[12]

Table no.1 Data Showing Preliminary Phytochemical Screening of the Extracts of Whole Plant of Eclipta Prostrata(L).

S.NO	CONSTITUETS	HEXANE	ETHYLACETATE	ETHYL ALCOHOL	WATER
1	ALKALOIDS	+	+	+	+
2	CARBOHYDRATES	-	-	-	+
3	GLYCOSIDES	-	+	+	+
4	PHYTOSTEROL	-	+	-	-
5	FIXED OIL	-	-	-	-
6	SAPONINS	+	+	+	+
7	TANNINS	-	+	-	-
8	PROTEINS	-	-	-	-
9	GUMS AND MUCILLAGE	-	-	-	-
10	FLAVONOIDS	-	+	+	-
11	LIGNIN	-	-	-	-
12	STEROIDS	+	+	-	-
13	FATS AND OILS	+	-	-	-
14	TRITERPENOIDS	+	+	-	-
15	PHENOLS	-	+	-	-

Table no -2: Observations were Made for the Time Taken for Paralysis and Death of Individual Earth Worm :

Type of vehicle	Concentration used (mg)	Time taken (min)	
		For Paralysis	For Death
Albendazole	40	38	162
	5	-	-
Hexane extract	10	-	-
	15	-	-
Ethyl acetate extract	5	34	111
	10	29	61
	15	20	46
Ethanollic extract	5	27	83
	10	23	72
	15	17	34
Water extract	5	-	-
	10	-	-
	15	-	-

RESULTS AND DISCUSSION:

After subjecting the earthworms to the various extract of *Eclipta prostrata* (L)., it is observed that the earthworms lost their motility and produced dose dependant paralysis which eventually progressed to death. Among the various extract, only ethyl acetate and ethanol have anthelmintic activity. 5mg, 10mg, 15 mg/ml of ethyl acetate have produced paralytic effect at 34minutes minutes, 29 minutes and 20 minutes and mortality was confirmed at 111 minutes, 61 minutes and 46 minutes. 5mg10mg, 15 mg/ml of ethanol have produced paralytic effect at 27 minutes, 23 minutes and 17 minutes and mortality was confirmed at 83 minutes, 72 minutes and 34 minutes respectively on the observation of haemorrhagic and necrotic spots on the worms after their

death with higher concentration. The time taken for paralysis and death eventually decreases, as the concentration of various extract of *Eclipta prostrata* (L) progressively increases. The effect of standard drug Albendazole (40mg/ml) which produced death within 162minutes.

CONCLUSION:

Traditional claim of the whole plant of *Eclipta prostrata* (L), as an anthelmintic has been confirmed as the various extract shows good anthelmintic activity against *Pheritima posthuma*. In the present investigation, the whole plant of *Eclipta prostrata* (L), was taken up for extensive studies “ Preliminary Phytochemical and Pharmacological studies of the whole plant of *Eclipta prostrata* (L), (Asteraceae).

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