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Research Article

IN VITRO ANTHELMINTIC ACTIVITY OF HERB EXTRACT OF ECLIPTA PROSTRATE L. AGAINST PHERETIMA POSTHUMA

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ABSTRACT

Eclipta prostrata L. (Asteraceae) has been used as a traditional medicinal plant to prevent lipidemia and atherosclerosis in Asia. However, its functional properties and the underlying mechanism of action have not been clearly defined the present study was undertaken to evaluate anthelmintic activity of ethanol and aqueous extract of whole plant of *Eclipta prostrata L*. against *Pheretima posthuma*. Various concentrations (25-100 mg/ml) of ethanol & aqueous extracts were evaluated in the bioassay involving determination of time of paralysis (P) and time of death (D) of the worms. Albendazole was used as standard anthelmintic drug and distilled water was used as control. The results of present study indicated that the ethanol extract significantly exhibited paralysis (P<0.01) in worms in doses (25 to 100 mg/ml) and also caused death of worms especially at concentration of 25 mg/ml, as compared to standard drug. Further studies are in process to isolate the active principle/s responsible for the activity

Key words: Anthelmintic, *Eclipta prostrata*, *Pheretima posthuma*, Albendazole.

INTRODUCTION

Eclipta prostrata L., (Fam: Asteraceae), a small, branched annual herb is native to the tropical and subtropical regions of the world. False Daisy is an annual commonly found growing in waste ground. Stems are erect or prostate, entirely velvety, often rooting at nodes. Oppositely arranged stalkless, oblong, lance-shaped, or elliptic leaves are 2.5-7.5 cm long. It has a short, flat or round, brown stem and small white daisy-like flowers on a long stalk. Eclipta grows abundantly in the tropics and is used with success in Ayurvedic medicine. Bhringaraj was used by Hindus in their Shradh, the ceremony for paying respect to a recently deceased person. This plant is one of the Hindu's "Ten Auspicious Flowers"

Eclipta prostrata L. has been used as a traditional medicinal plant to prevent lipidemia and atherosclerosis in Asia. However, its functional properties and the underlying mechanism of action have not been clearly defined. The herb is rich source of ascorbic acid and also contains alkaloids, ecliptine. The plant is a good source of thiophene derivative which are active against nematodes. The occurrence mono, di and trithiophene acetylenes together with terthenyl in this species is noteworthy. The petroleum ether extract arial part contains a trithienyl aldehyde, ecliptal, beside stigmasterol, and B-sitosterol. The roots are very rich of thiophene acetylenes. Four compounds were isolated from *E. prostrata*, of which two were identified as stigmasterol and alpha-terthenyl. Alpha-terthienyl is isolated from plant and these constituents are significant for hepatoprotective activity[1, 2]. *Eclipta prostrata*, an aromatic plant, is known in Chinese herbal medicine for the treatment of various kidney diseases. *E. prostrata* can play an important role in osteoblastic bone formation, and may possibly lead to the development of bone-forming drugs[3]. Leaf extract of *E. Prostrata* are shown Hypolipidemic activity[4]. *E. Prostrata* is containing Triterpenoid and saponins, these chemical constituents are significant for Antiproliferative activity and Leishmanicidal activity respectively[5, 6, 7]. It is useful for increase the appetite and body weight in patients of tuberculosis. It shows immunomodulatory activity is also been reported. It is also used in treatment of peptic ulcer. *In vivo* tests indicate that wedelolactone neutralizes the lethal and mitotic activities of rattlesnake venom[8].

MATERIALS AND METHODS

Plant collection and authentication

The whole plant of *Eclipta prostrata* were collected from Ramling Mudgad Dist.-Latur (Maharashtra); and authenticated by Mr. G. S. Kulkarni, H.O.D, Dept. of Dravya Guna B.V.V.S Ayurvedic College and Hospital, Bagalkot. A voucher specimen has been deposited at the herbarium of BVVS-015.

Plant extraction

The plant herb material were dried at room temperature (25-35 °C) and powdered with the help of an electric grinder. The course material was extracted successively with ethanol and the plant mark was finally macerated with distilled water. The extracts were dried at 50°C in a water bath. The percentage yields obtained of the different successive extracts were 9.50% and 12.31%, respectively.

Worm collection and authentication

Indian earthworms *Pheretima posthuma* (Annelida) were collected from the water logged areas of soil worms were obtained from freshly slaughtered fowls (Gallus galli). Worm type was identified at the Agriculture Research Station, Aland road, Gulbarga (Karnataka).

Preparation of test sample

Samples for in-vitro study were prepared by dissolving and suspending 2.5 g of each extract (Ethanol and aqueous) in 25 ml of distilled water to obtain a stock solution of 100 mg/ml. From this stock solution, different working dilutions were prepared to get concentration range of 25, 50, 75 and 100 mg/ml.

Anthelmintic assay

The anthelmintic assay was carried out as per the method of Ajayieoba et al. with minor modifications[9]. The assay was performed in *vitro* using adult earthworm (*Pheretima posthuma)* owing to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings for preliminary evaluation anthelmintic activity[10, 11, 12]. The 50 ml formulations containing four different concentrations of each ethanol and aqueous extract (25, 50, 75 and 100 mg/ml in distilled water) were prepared and six worms (same type) were placed in it. Time for paralysis was noted when no movement of any sort could be observed except the worms were shaken vigorously. Time for death of worms were recorded after ascertaining that the worms neither moved when shaken vigorously nor when dipped in warm water at 50°C[13]. Albendazole (25 mg/ml) was used as reference standard while distilled water as the control.

RESULTS AND DISCUSSION

From the Table 1, it is evident that ethanol and aqueous extracts of *Eclipta Prostrata* exhibited anthelmintic activity in dose-dependent manner giving shortest time of paralysis and death with 100 mg/ml concentration. The ethanol extract caused paralysis of 2.502 ±0.19min and time of death of 8.658 ±0.36 min., while aqueous extract revealed paralysis of 14.40±0.63min and time of death of 24.81±1.73 min against the earthworm *Pheretima posthuma*. The

Table 1: Anthelmintic activity of herb extract of the *Eclipta prostrate* L.

Test substance	Concentration (mg/ml)	Time taken for paralysis (p) and for death of worms (d) in min.	
		P	D
Vehicle	-	-	-
Albendazole	25	9.36± 0.05	14.02±0.57
Aqueous extract	25	62.17±0.84	97.25± 3.16
	50	51.88± 0.90	61.75±2.12
	75	48.70 ±1.72	56.50 ±1.50
	100	14.40 ±0.63*	24.81 ±1.73*
Ethanol extract	25	5.940± 0.25***	20.23± 0.57**
	50	4.117± 0.28***	14.65± 0.45**
	75	3.642 ±0.17***	11.67± 0.52***
	100	2.502 ±0.19***	8.658 ±0.36***

Values are expressed as MEAN±SEM, One way ANOVA followed by Dunnets 't' test, Note: n=6 in each group, *P<0.05, **P<0.01.

standard drug Albendazole at 25 mg/ml concentration showed paralysis (P) and death (D) the same at 9.36 ± 0.05and 14.02 ± 0.57 minutes, respectively. Table reveals that ethanol extract of herb of *Eclipta prostrata* showed the best anthelmintic activity. These parts required the least time for causing paralysis and death of the earthworms. The function of the anthelmintic drugs like Albendazole is to cause paralysis of worms so that they are expelled in the feaces of man and animals. The extracts not only demonstrated this property, they also caused death of the worms, especially at 25 mg/ml as compared with the Albendazole.

CONCLUSION

The study has shown that ethanol and aqueous extracts of *Eclipta prostrata* have significantly determined anthelmintic activity. But ethanol extracts of *Eclipta prostrata* shown most significant anthelmintic activity as compare to the aqueous extracts. And ethanol extract are shown the significant activity as compared to Albendazole. Further studies are in process to identify the possible Phytoconstituents responsible for anthelmintic activity.

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