ISSN: 0976-7126

INTERNATIONAL JOURNAL OF PHARMACY & LIFE SCIENCES

Evaluation of anthelmintic property of alcoholic and aqueous extract of leaves of a *Elephantopus scaber* Linn.

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Abstract

Alcoholic and aqueous extract of leaves of *Elephantopus scaber* Linn. were investigated for their Anthelmintic property against Pheritima posthuma. Five concentrations (20, 40, 60, 80 and 100 mg/ml) of each extract were studied in a bioassay, which involved the determination of time of paralysis and time of death of worm. All the extract exhibited significant Anthelmintic activity. Alcoholic extract Showed the better Anthelmintic activity compare to Aqueous extract. Albendazole (20, 40, 60, 80 and 100 mg/ml) was included in the assay as standard drug.

Key-Words: *Elephantopus scaber* Linn. Anthelmintic activity, Albendazole, Earthworm, Ethanolic extracts of leaves.

Introduction

Anthelmintics drugs that either kill (vermicide) or expel (vermifuge) infesting helminths. Helminthiasis is prevalent globally (1/3 of world's population harbours them), but is more common in developing countries with poorer personal and environmental hygiene. Multiple infestations in the same individual are not infrequent. In the human body, g.i.t. is the abode of many helminths, but some also live in tissues, or their larvae migrate into tissues. They harm the host by depriving him of food, causing blood loss, injury to organs, intestinal or lymphatic obstruction and by secreting toxins. Helminthiasis is rarely fatal, but is major cause of ill health.[1]

Three major groups of helminths (or worms), the nematodes, trematodes and cestodes, infect humans.mNematodes are elongated roundworms that possess a complete digestive system, including both a mouth and anus. They cause infections of the intestine as well as the blood tissues.nThe trematodes (flukes) are leaf shaped flatworms that are generally characterised by the tissues they infect. For example, they may be categorized as liver, lung, intestinal or blood flukes.nThe cestodes, typically have a flat, segmented body and attach to the host's intestine.[2]

Elephantopus scaber Linn. (Compositae) is a small perennial herb found in tropical conditions, almost throughout the world. Leaves are mostly in basal rosette and oblongo-vate to oblong-lance like, 10-25 cm in length and often very much notched on the margins. Flowers are Purple 8-10 mm long. Flowering heads borne in clusters at the end of the branches and usually enclosed by 3 leaf-like bracts which are ovate to oblong-ovate. The flowering heads many crowded in each cluster. Fruits are achenes, ribbed. Tamil name is Aanaikalsuvati; In Indian traditional system of medicine, Siddha physician use the leaves for bronchitis, small pox, diarrhoea and braintronic. In the system of Chinese medicine this whole plant is used as a diuretic, antiviral and antibacterial agent as well as in the treatment of hepatitis, bronchitis, in cough associated with pneumonia. In Taiwan folk Medicines these plant are used in the treatment of nephritis, edema, dampness, pain in the chest, fever and cough of pneumonia scabies and wound2. In Brazil traditional medicine the whole plant is used in the form of decoction to stimulate diuresis, reduce fever and to eliminate bladder stones. In Malaysia, it is used as a preventive medicine after childbirth, to expel intestinal worms, for coughs and venereal diseases. [3,4,]

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ISSN: 0976-7126

Material and Methods

Collection and authentication of plant material

The plants *Elephantopus scaber* Linn. were collected from the Forest garden, Panchmani, (M.P.) India. The plant material was taxonomically identification by the botanist Dr. Abhilasha shrivastava, Prof. Govt. Science College, Rewa (M.P.).

Preparation of extract

The leaves of *Elephantopus scaber* Linn. were dried under shade and then powdered with a mechanical grinder. The powder was passed through sieve no. 40 and stored in an airtight container for further use. 200 gm of the coarse powder of leaves of *Elephantopus scaber* Linn. was extracted exhaustively & successively with various solvents in an increasing order of polarity viz., Petroleum ether (60-80^0), Ethanol, Distilled water with chloroform, in soxhlet apparatus. The ethanolic extract was concentrated in vaccum under reduced pressure using rotary flash evaporator. It was further concentrated and dried in dessicator.

Experimental Model

Earthworms (Pheritima posthuma) were collected from the water logged areas from the bypass road Bhopal, (M.P.) India. Both the alcoholic and aqueous extracts of leaves of *Elephantopus scaber* Linn tested were evaluated at (20, 40, 60, 80 and 100 mg/ml) and standard compound (Albendazole) was tested at (20, 40, 60, 80 and 100 mg/ml).

Pheritima posthuma was placed in nine-centimeter Petri dish in five different concentrations of ethanolic and aqueous extracts (20, 40, 60, 80 and 100 mg/ml in normal saline solution). This was done in duplicate for all the extracts. Mean time for paralysis (P, in min) was noted when no movement of any short could be observed, except when the worm was shaken vigorously: time of death of worm (D, in min) was recorded after ascertaining that worms neither moved when shaken vigorously nor when dipped involved warm water (50^0 C). Albendazole (20, 40, 60, 80 and 100 mg/ml) was included as standard compound.[5]

Statistical analysis

All the data obtained was presented as Mean ± SEM (Table no.1) and were analyzed with student-t test.

Results and Conclusion

The samples which were used to evaluate Anthelmentic activity showed variable results at different concentrations. The mean ± SEM values (statistical analysis) were calculated for each parameter. The samples of the Alcoholic extract of leaves *Elephantopus scaber* linn. showed the significant anthelmintic effect carrying the death of worms at the concentrations (20, 40, 60, 80 and 100 mg/ml), as compared to worms, which were treated with standard (albendazole) at the concentration (20, 40, 60, 80 and 100 mg/ml). In the case of extracts of *Elephantopus scaber* Linn. the alcoholic extract produced better activity compared to aqueous extract. Evaluations of anthelmintic activity of alcoholic and aqeuous extracts of leaves of *Elephantopus scaber* on earthworms were given in table no.1 and graph no.1 and 2.

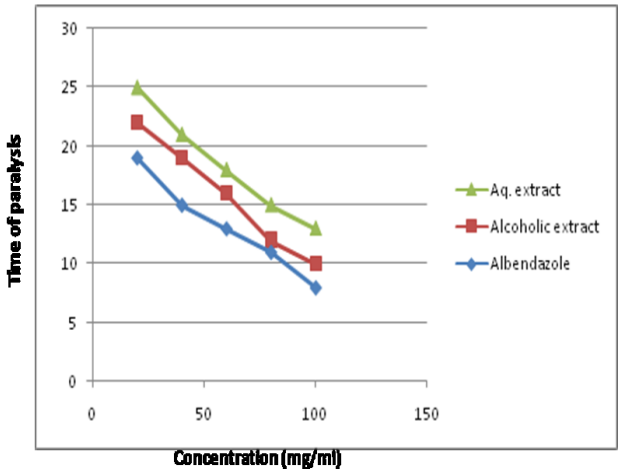
Table 1: Comparative evaluation of Anthelmintic activity of alcoholic and aqeuous extracts of leaves of *Elephantopus scaber* Linn.

Treatment	Conc. (mg/ml)	Paralysis Time (min)	Death Time (min)
Alcoholic extract of *Elephantopus scaber* Linn.	20	22.00±9.01	35.10±27.70
	40	19.00±5.12	29.50±12.47
	60	16.30±6.14	23.00±9.01
	80	12.30±4.75	18.30±7.03
	100	10.00±4.30	16.10±7.77
Aqueous extract of *Elephantopus scaber* Linn.	20	25.00±13.14	38.50±19.01
	40	21.00±11.27	32.30±20.00
	60	18.50±8.03	26.00±25.13
	80	15.00±6.44	22.00±11.37
	100	13.00±7.77	19.50±8.12
Standard Drug (Albendazole)	20	19.50±5.12	36.00±26.13
	40	14.30±5.77	30.50±15.21
	60	13.10±4.12	22.30±9.01
	80	11.30±4.50	16.10±5.86
	100	8.50±1.86	14.00±6.44

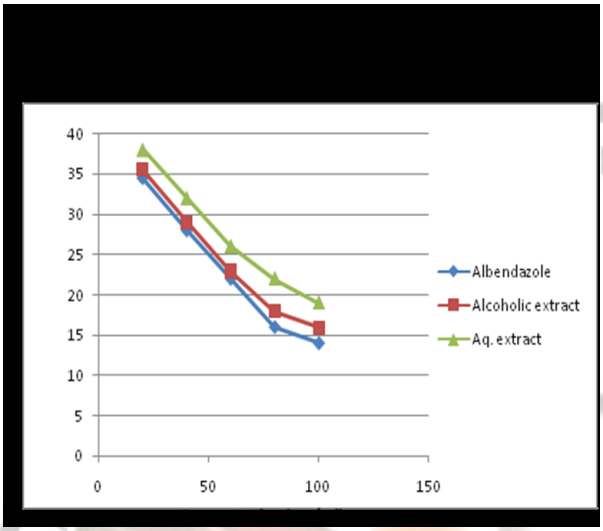
Graph 1 and 2 shows the comparative evaluation of Anthelmintic activity of Alcoholic and Aqueous extracts of leaves of *Elephantopus scaber* Linn.

Graph:1

Comparative evaluation of Paralysis of Earthworms by Alcoholic and Aq. Extracts of Elephantopus Scaber Linn



ISSN: 0976-7126



Acknowledgement

Authors are thankful to Dr. Abhilasha Shrivastava, Prof. Govt. Science College, Rewa (M.P.) for the identification of plant and also thankful to the Principal, Mittal institute of Pharmacy, Bhopal (M.P.) India, for providing the facility in the Institute.

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