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RESEARCH ARTICLE

PHARMACOLOGY

EVALUATION OF ANTHELMINTIC ACTIVITY OF LEAVES OF *PAEDERIA FOETIDA*

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ABSTRACT

Methanolic extract of the leaves of *Paederia foetida* were screened for its anthelmintic activity against *Pheretima posthuma* and *Tubifex tubifex* . The parameters like the time of paralysis and the time of death were determined by using the extract at the concentrations of 25,50 and 100 mg/ml. The extract exhibited significant anthelmintic activity at highest concentration of 100 mg/ml as compared with piperazine citrate (10 mg/ml) as standard reference and distilled water as control.

KEYWORDS

Anti-helmintic activity, *Paederia foetida*, *Pheretima posthuma*,*Tubifex tubifex*

INTORDUCTION

This medicinal plant *Paederia foetida* is climbing, herbaceous, more or less hairy or quite smooth, slender vine. When crushed, it has a distinct odor of carbon bisulphide. The leaves are ovate to oblong-ovate, 6 to 10 centimeters long, 3.5 to 5.5 centimeters wide, pointed at the tip, and rounded or slightly heart-shaped at the base. The flowers are stalk less, and borne in axillary, lax, peduncled inflorescences. The calyx is small and 5-toothed. The corolla is 1 to 1.3 centimeters long, somewhat and cylindric, pale purple to nearly white outside, and rather deep purple and villous. Within; the limb is somewhat spreading, with 5 undulate lobes. The fruit is somewhat rounded and about 5 millimeters in diameter. [1, 2] Our traditional system of medicine and folklore claiming that medicinal plants as a whole or their parts are being used in all types of diseases successfully including antibacterial and anthelmintic, anti-inflammatory etc. As we know very well, now a days the medicinal preparation available in the market from which most of them either not effective up to the mark or has to develop resistance resulting in reoccurrence again. Plant derived drug serve as a prototype to develop more effective and less toxic medicines.[3]

Helminthiasis is among the most important animal diseases inflicting heavy production losses. The disease is highly prevalent particularly in third world countries due to poor management Helminthiasis practices [4]. A number of medicinal plants have been used to treat parasitic infections in man and animals.[5,6,7, 8] The plants are known to provide a rich source of botanical anthelmintics.[9,10]

The anthelmintic assay was carried as per the method of Ajaiyeoba *et al.*[11] with minor modifications. The assay was performed on adult Indian earthworm, *Pheretima posthuma* and *Tubifex tubifex* due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings [12,13,14,15]. Because of easy availability, earthworms have been used widely for the initial evaluation of anthelmintic compounds *in vitro* [16,17,18,19,20]. The objective of the present research has to prove traditional anthelmintic use of the plant

MATERIALS AND METHODS

Plant material:

The leaves of *Paederia foetida Linn.*(*Rubiaceae*), was collected from Dasdighi, Bankura, West Bengal India and was identified with the Herbarium of Botanical Survey of India, Botanic Garden, Howrah with specimen regd. no. CNH/II (288)/2008/TCCH.II/330

Preparation of extract:

The leaves of the plant was dried in shade and made to fine powder using a laboratory mill. The dry powder is extracted with methanol using maceration process for 48 hours.

Phytochemical tests:

The preliminary phytochemical tests revealed the methanolic extract of the leaves shows the presence of alkaloids, sterol, and fixed oil.

Worms:

Indian earthworm *Pheretima posthuma* (Annelida) were collected from the water logged areas of soil in Bankura. *Tubifex tubifex* (Annelida) were collected from Aquarium of the local market. The average

size of *Pheretima posthuma* and *Tubifex tubifex* were 6-8 cm and 1-1.5 cm respectively. They were washed with water to remove dirt.

Chemicals:

- Piperazine Citrate (Glaxo)
- Double distilled water

Procedure:

The anthelmintic assay was carried as per the method of Ajayieoba E. O. et al. with minor modifications[5]. The experiments were done on adult Indian earthworm *Pheretima posthuma* and the aquarium worm,*Tubifex tubifex*, because they belong to same group of Annelida (Mueller, 1774). 20 ml formulations containing three different concentrations, methanolic extract (25, 50 and 100 mg/ml in double distilled water) were prepared and taken in different petridishes and six earthworms (same type) were placed in the solutions respectively. Similarly lump of *Tubifex* worms were placed in the test solutions. All the test solution and standard drug solution were prepared freshly before starting the experiments. 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. Piperazine citrate (10 mg/ml) was used as reference standard while distilled water as the control. [19,20,21] Three sets of experiments were done statistical significance.

RESULTS

Table 1
Anthelmintic activity of methanolic extract of Paederia foetida (Mean±SD)

Groups	Concentration (mg/ml)	*Pheretima Posthuma*		*Tubifex tubifex*	
		Paralyzing Time	Death Time	Paralyzing Time	Death Time
Distilled Water	–	–	–	–	–
Leaf Extract (alcoholic)	25	62.86±0.666	83.76±0.666	63.00±2.082	75.39±1.453
	50	35.33±0.881	63.33±0.881	32.33±0.666	36.33±0.881
	100	19.33±0.881	40.00±0.577	14.66±0.881	20.66±1.333
Piperazine Citrate	10	25±1.155	64±0.881	22.66±1.764	45.33±1.202

DISCUSSION

From the above study it was seen that the methanolic extract showed dose dependent anti helmintic activity as compared to a standard drug piperazine citrate. The mean paralyzing time of Pheretima posthuma with the dose of 25, 50 and 100 mg/ml were found

to be 62.86, 35.33 and 19.33 minutes respectively.In the meantime piperazine citrate at a dose of 10 mg/ml cause paralysis in the above helminth in 25 minutes.The mean death time of Pheretima posthuma with the dose of 25, 50 and 100 mg/ml were found to be 83.76, 63.33 and 40.00 minutes respectively. In the meantime piperazine citrate at a dose of 10 mg/ml cause paralysis in the above helminth in 64 minutes .

The mean paralyzing time of *Tubifex tubifex* with the dose of 25, 50 and 100 mg/ml were found to be 63.00, 32.33 and 14.66 minutes respectively.In the meantime piperazine citrate at a dose of 10 mg/ml cause paralysis in the above helminth in 22.66 minutes.The mean death time of *Tubifex tubifex* with the dose of 25, 50 and 100 mg/ml were found to be 75.39, 36.33 and 20.66 minutes respectively. In the meantime piperazine citrate at a dose of 10 mg/ml cause death in the above helminth in 45.33 minutes.

CONCLUSION

In this investigation the methanolic extract of *Paederia foetida linn* were used to evaluate anthelmintic activity by using the above models. The preliminary phytochemical tests revealed the presence of alkaloids, sterol, and fixed oil. Thin layer chromatogram indicated that alkaloids were prevalent in the ethanolic extract because the R_f value was close to the reported value(0.77). The present study of methanolic extract of *Paederia foetida Linn* proves its Anthelmintic property. Gandhali.Current study gives the evidence that it may be a fruitful medicine of tomorrow. Further research is going on to isolate the phytoconstituent for anthelmintic activity.

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