



Research Article

**EVALUATION OF ANTHELMINTIC ACTIVITY OF *MOLINERIA RECURVATA*
LEAF EXTRACTS**

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ABSTRACT

Molineria recurvata is a herb (also known as palm grass). This herb is available in the hilly areas of Tripura. The plant is well known for its different folk medicines like leaves are used in bone fracture, in wound healing and as analgesic, anthelmintic. It was observed that the people of Tripura especially the Tribes are use the juice of matured leaf in worm. The economic importance of this plant is, fibers that are collected from this plant have been used for different purposes such as making nets, and the fruit is edible. The present study was carry out to evaluate the anthelmintic activity of *Molineria recurvata* (Family: Hypoxidaceae) leaf extract (Petroleum Ether, Methanol, Aqueous) using Indian earthworm (*Pheretima posthuma*). All the extracts were found not only to paralysis (vermifuge) but also to kill the earthworms (vermicidal). But the concentration of 40mg/ml leaf extract showed the maximum effect in respect of 20 and 10 mg/ml. The isolation of active constituents those are responsible for different activities are going on in our laboratory.

Key words: Anthelmintic activity, *Molineria recurvata*, earthworms, Vermifuge, Vermicidal

INTRODUCTION

The World Health Organization estimates that a staggering two billion people harbor parasitic worm infections¹. Helminthiasis is still one among the most important human and animal diseases². During the past few decades, despite numerous advances made in understanding the mode

of transmission and treatment of these parasites, there are still no efficient products to control certain helminthes and several the indiscriminate use of some drugs are generated several cases of resistance. As an important component of complementary and alternative medicine,

traditional Ayurvedic medicinal plants may be useful to discovery and development of new chemical substance for helminthes control which are generally considered to be very important sources of bioactive substances³.

The aim of the present study is to evaluate the in vitro anthelmintic activity of *Molineria recurvata* leaf.

MATERIALS AND METHODS

Plant material collection

Molineria recurvata was collected from different parts of the state. The leaves were washed with fresh water and dried under shade at room temperature. The leaves were powdered and stored. 60g of powdered drug was extracted separately with methanol, petroleum ether by continuous hot percolation in soxlet apparatus and with water by cold maceration for 3 days respectively. All the extracts were filtered and evaporated using a rotary evaporator. Dried extracts were stored at 20°C until used.

Phytochemical screening

Dried extracts were subjected for the presence of different phytoconstituent like alkaloid, steroid, flavonoid, tannin, glycoside etc.

Selection of worms

Indian adult earthworms (*Pheretima posthuma*) were used to carry out the anthelmintic evaluation. The earthworms

were collected from the moist soil of Durjaynagar. Worms were washed with saline water to remove the faecal matter. Worms were of about 11 cm length and 0.3 to 0.4 cm wide was selected for the experiment. Ready availability, anatomical and physiological resemblance of *Pheretima posthuma* made it to be used initially for in vitro evaluation of anthelmintic activity^{4, 5, 6}.

Drugs and chemicals

Albendazole suspension [Zentel (micronized albendazole), Glaxo Smithkline Pharmaceuticals Ltd., Bangalore] and Methanol [Loba chemie pvt. Ltd, Mumbai] and petroleum ether [Merck Ltd., Mumbai] were used during the experimental protocol.

Evaluation of anthelmintic activity

Anthelmintic activity was carried out on adult Indian earthworm (*Pheretima posthuma*) of nearly equal size, six in each group. Each extract was suspended in 1% w/v CMC (Carboxy Methyl Cellulose) solution prepared in distilled water to obtain concentration of 10, 20, and 40 mg/ml. Reference standard albendazole suspension (40 mg/ml) was diluted by the same suspending agent to obtain concentration of 20 and 10 mg/ml. Worms were placed in petridishes containing 15 ml of sample solution. Time for paralysis was noted either when any movement could not be observed except when the

worms were shaken vigorously or when dipped in warm water (50°C). Death was included when the worms lost their motility followed with white secretion and fading away of their body colours⁷.

RESULTS AND DISCUSSION

The percentage yields of MLE, ALE, PLE, were 10.65% w/w, 15.98% w/w, 7.36% w/w respectively.

Table 1. Anthelmintic Activity of MLE, PLE, ALE of *Molineria recurvata* Leaves.

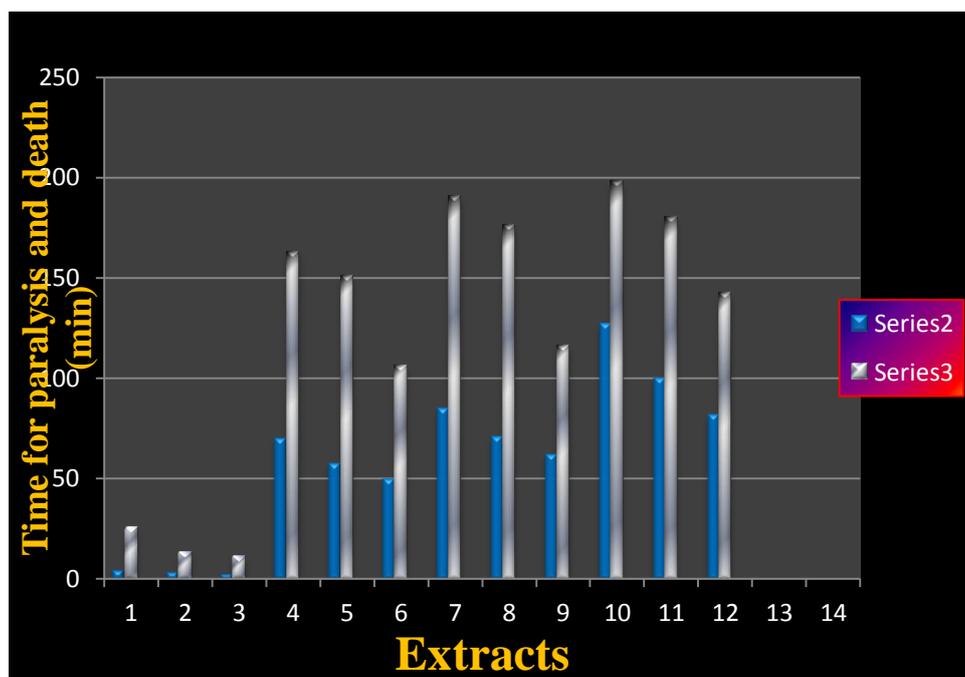
Groups	Concentration (mg/ml)	Time(min)	
		Paralysis	Death
Control	–	–	–
Standard (Albendazole)	10	4.43 ± 0.22	25.13 ± 0.28
	20	3.25 ± 0.16	12.93 ± 0.58
	40	2.33 ± 0.21	10.83 ± 0.47
MLE	10	70 ± 0.76	162.77 ± 0.79
	20	57.67 ± 0.76	150.86 ± 0.73
	40	49.92 ± 0.81	105.83 ± 0.81
PELE	10	84.85 ± 0.78	190.62 ± 0.72
	20	70.85 ± 0.73	176.05 ± 0.75
	40	61.9 ± 0.75	115.81 ± 0.80
ALE	10	126.87 ± 0.74	198.04 ± 0.83
	20	99.86 ± 0.81	179.79 ± 0.73
	40	81.78 ± 0.77	142.03 ± 0.77

Values are expressed a mean ± SEM, n=6, MLE: methanol leaf extract; PELE: petroleum ether leaf extract;

ALE: aqueous leaf extract

All the extracts showed significant anthelmintic activity at all tested doses when compared to reference standard (table 1, fig: 1) as vermifuge and vermicide MLE is more active than others. Potency of the extract was inversely proportional to time for paralysis and death of worms.

Fig 1. Graphical Representation of Anthelmintic Activity of MLE, PLE, ALE of *Molineria*



Series2: Paralysis, Series3: Death, Standard(1,2,3), MLE(4,5,6), PLE(7,8,9),ALE(10,11,12)

The primary phytochemical screening revealed the presence of alkaloids, glycosides and tannins. All the extracts showed the anthelmintic activity; probably these are responsible for anthelmintic activity. Further study is under progress to isolate the pure component fraction.

CONCLUSION

Finally, it can be concluded that all extracts of leaves shows significant anthelmintic

activity. Further study can be continued for in vivo evaluation of some species other than *Pheretima posthuma* followed by isolation and characterization of the particular chemical moiety for the activity.

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