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### Anthelmintic screening of various crude extracts of *Phyllanthus simplex* Retz

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#### ABSTRACT

Pet-ether, ethanol, ethyl acetate and acetone extracts of whole plant of *Phyllanthus Simplex* Retz had been evaluated separately for anthelmintic activity on adult Indian earth worms, namely *Pheretima posthuma*. The results revealed that the ethanolic extract showed excellent anthelmintic activity at a concentration level of 100mg/ml on time taken for both paralysis ( ) and death ( ) of the worms. Activities on further comparison with the standard drug piperazine citrate, the ethanolic extract showed a significant effect on the Indian earthworms, *Pheretima posthuma*.

**Key words:** Anthelmintic activity, Extracts, *Pheretima posthuma*, piperazine citrate.

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## INTRODUCTION

Helminths are endo-parasites which are recognized as a major constraint to livestock production in the tropical countries and elsewhere. They are mostly present in the human intestines either in large or small intestine and produce infections. Such types of infestation produced by worms are called as Helminthiasis [1-2]. Parasitoses have been concerned to the medical field for centuries and the helminthes are still cause considerable problems for human beings and animals. Anthelmintics are drugs which may kill (Vermicides) or expel (Vermifuge) infesting helminthes [3].

*Phyllanthus simplex* Retz. is commonly called as “ Kaya-an”, “Bhuiamali” and “Kayut-bulang”. (Fam:Euphorbiaceae Juss). It is a glabrous twining perennial herb, which has a taproot and its branches are compressed. Its flowers are solitary and its leaves are distichous. The siddha and ayurvedhic form of medications text showed that the Hindus used equal parts of the fresh leaves, flowers, fruit and cumin seeds with sugar, made into an electuary for the treatment of gonorrhoea by taking a teaspoonful for twice a day. The fresh leaves, bruised and mixed with buttermilk, make a wash to cure itches in children. The root is used in Chota Nagpur as an external application for abscesses [4-6].

The objective of the present study is to investigate the anti-inflammatory activity of ethanolic and acetone extracts of the whole plant.

## MATERIALS AND METHODS

### Plant material

Fresh plant materials of *phyllanthus simplex* Retz had been collected from Chota-Nagpur areas of Jharkhand. They were identified and authenticated by Dr.S.M.Khasim, Assistant Professor, Department of Botany, Acharya Nagarjuna University in Guntur. One of the plant specimen had been planted in KVSRR Siddhartha College of Pharmaceutical Sciences, Vijayawada and a voucher (No: PS/PCRL/No: 0041/BN) had been deposited after planted in the herbal garden.

### Preparation of Plant Extracts

About 1kg of the powder was weighed and subjected to successive soxhlet extractions with petroleum ether (60-70°C), benzene, ethanol (95%V/V) and acetone for a period of 48 hours. Then the dried marc was subjected to continuous cold maceration by using ethyl acetate and hydro-alcohol (50:50) for 3 consecutive days. Finally the obtained extracts were filtered through muslin cloth. Then they were concentrated under reduced pressure and dried in vacuum condition to get a semisolid consistency and the amount of yield was calculated. The dried extracts were subjected to various chemical tests to detect the presence of various phyto-



constituents [7] present in them. Required amount of prepared extracts were subjected to anthelmintic activity.

### EXERIMENTAL WORK

The anthelmintic work was carried out on adult Indian earth worms namely *Pheretima Posthuma* due to their anatomical and physiological resemblance with the intestinal round worm parasites living inside human beings such as *Ascaris lumbricoides*, *Filariasis flarodae*, etc [8-10].

Five groups of approximately equal size earthworms consisting of four earth worms in each group were used for the present study. Group I served as control and treated with normal saline. Group II served as standard and treated with piperazine citrate of different concentrations. Group III was treated with Pet-ether extract. Group IV was treated with ethanol extract. Group V was treated with as ethyl acetate extract. Group VI was treated with acetone extract. All the extracts were prepared with same concentrations like the standard.

All the observations were made from the time taken to paralysis and death of individual worms. Paralysis was said to those worms when the worms did not revive in normal saline. Death was concluded when the worms lost their mortality followed with fading away of their body color [11-13].

### RESULTS AND DISCUSSIONS

In our present study it was observed that the ethanolic extract was more potent than the other extracts against the Indian round worm *Pheretima posthuma*. The ethanolic extract at a dose level of 100mg/ml had significant anthelmintic activity on comparison with the standard drug, piperazine citrate. Pet-ether and ethyl acetate extracts showed moderate activity and acetone extract showed least activity (Table 1). Also increase in concentration of the extracts showed decrease in the paralysis and death time of the worms. The ethanol extract showed an excellent potency possessing  $20.78 \pm 0.52$  as the paralysis time and  $23.93 \pm 0.32$  as death time.

Piperazine citrate, being a heterocyclic ring possessing alkaloid blocks the intake of acetylcholine from the host organism. Like wise the extracts contain simplexin as a chief alkaloid which may possess the same type of pharmacological action and expells the worms by peristaltic movement [14] of intestine. The present works proved the usage of this plant extracts in treatment of helminthiasis in our nation.

**Statistic analysis:** All the statistical datas are based on the Mean  $\pm$  SD which have probability within 0.01-0.005 limits

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**Table: 1 Anthelmintic activity of various extracts of whole plant of *Phyllanthus simplex* Retz.**

Group	Treatment	Concentration (mg/ml)	Paralysis time (min)	Death time (min)
I	Control	-	-	-
II	Piperazine citrate	25	21.20 ± 0.39	26.21 ± 0.31
		50	15.24 ± 0.73	20.91 ± 0.47
		100	10.09 ± 0.28	13.69 ± 0.20
III	Petroleum ether	25	93.08 ± 0.54	99.99 ± 0.59
		50	82.59 ± 0.35	88.50 ± 0.28
		100	64.26 ± 0.30	70.08 ± 0.59
IV	Ethanol	25	60.05 ± 0.70	64.75 ± 0.28
		50	34.52 ± 0.20	39.48 ± 0.22
		100	20.78 ± 0.52	23.93 ± 0.32
V	Ethyl acetate	25	89.08 ± 0.28	100.44 ± 0.33
		50	73.52 ± 0.24	85.63 ± 0.31
		100	64.29 ± 0.18	78.24 ± 0.14
VI	Acetone	25	108.53 ± 0.22	148.29 ± 0.10
		50	102.58 ± 0.15	106.47 ± 0.26
		100	94.53 ± 0.21	99.30 ± 0.12

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