

In Vitro Anthelmintic Activity of Crude Extracts of *Tridax procumbens* (L.) against round worms

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ABSTRACT:-

Plants are the natural remedies for the number of diseases, which are popularized for safety and efficacy. India is bestowed with large number of medicinal herbs. Amongst the large number of herbal drugs existing in India, still few have been studied so far for its anthelmintic efficacy. *Tridax procumbens*, linn is best known as a widespread weed belonging to the family Asteraceae. It is a highly valuable drug in Ayurvedic literature. It is well known for number of pharmacological activities, *anthelminticis is one of them*

Helminthiasis is one of the most noxious infection in human as well as in animals. Control with chemical drugs has not been successful due to rapid emergence of drug-resistant strains. There is a continuous search for alternative source of medicines particularly from plants. The study aimed to evaluate the anthelmintic activity of aqueous, methanol, acetone and petroleum crude extracts of *Tridax procumbens*.

The aqueous, methanol, acetone and petroleum extracts of the dried powder of *Tridax procumbens* whole plant was extracted. The extract collected were screened for preliminary phytochemical studies and also tested for Anthelmintic activity against Indian adult earthworm *Pheritima posthuma* (Annelida) and recorded the time taken for induction of paralysis and death.

Three concentrations (10,30,50 mg/ml) of all the form were evaluated in the bioassay involving determination of time of paralysis (P) and time of death (D) of the worms. Albendazole suspension (10 mg/ml) was used as reference standard. Comparative results of present study indicated that the methanol and acetone extracts of *Tridax procumbens* linn shows significantly dose depending pharmacological activity on the Indian earthworms. Extract possessed wormicidal activity and thus, may be useful as an anthelmintic.

KEYWORDS: Anthelmintic activity, *Pheritima posthuma*, *Tridax procumbens* and albendazole

INTRODUCTION

India is known for vast repository of medicinal plants. From the ancient times, miraculous medicinal plants have been used in the Indian medicinal system to treat different diseases. It range from minor remedies to more complicated procedures. Herbal medicine also claimed for the treatment of parasitic diseases in human and even in animals. 'Helminthiasis' is one of the most widespread prevalence in humans in human as well as livestock. By which suffering large number of world population. It is found about half (50%) of world population suffer from the Helminthiasis and the numbers are increasing day by day (Sirama et al., 2015). The World Health Organisation forecast that a leave 2 billion people hold on to parasitic worm infections (Kumar et al., 2010).

The acceleration of helminthiasis is due to unhygienic lifestyle and poverty. Intestinal parasitic worms are vectored through air, food, and water, which is responsible for the development of symptoms like anaemia, eosinophilia and pneumonia, secretes toxins, and interfere with the vital nutrients from the host bodies. (Chatterjee, 1967). Intestinal worms cause a variety of pathologic changes in the mucosa, some reflecting physical and chemical damage to the tissues (Anthony et al., 2007).

Medicinal herb getting fame worldwide and were used for the treatment of parasitic disease without any side effects from the ancient time (Sirama et al., 2015). Anthelmintics are drug that are used against parasitic worm infection. However increasing problems of development of resistance in helminthes against

anthelmintics have lead to the proposal of screening medicinal plants for their anthelmintic activity. The present study was aim to investigate the “Anthelmintic Activity” of plants *Tridax procumbens* (L.) Traditional alternative to anthelmintics is both environmentally acceptable and sustainable. Such plants could have more important role in future to control of the helminthes infection.

MATERIAL AND METHODS:

Work were carried out in three phases.

PHASE-I

Collection of the plant material

The leaves of *Tridax procumbens* (L.) were collected from the campus of Govt. Vidarbha Institute Of Science and Humanities ,Amravati.

PHASE-II

Crude aqueous, methanol, acetone and petroleum ether extract of powdered plant were prepared according to cold maceration technique. Briefly, 25gm of grind/ powdered plant material was soaked in sufficient quantity (100 ml) of aqueous, methanol, acetone and petroleum ether separately (i.e. Maceration technique) for continuous 7 days followed by shaking periodically and the filtered off by a piece of porous cloth and then filter paper. Following extraction, the liquids were concentrated to remove traces of solvents and the process was repeated for two times. The solvent from total extract was distilled off and concentrate was evaporated water bath to syrupy consistency and the evaporated to dryness. This extract was stored in refrigerator until use. The crude extract (as much as needed) was dissolved in distilled water on the day of the experiment to prepare stock solution and different dilutions for the purpose of evaluating anthelmintic activity

Phytochemical analysis was carried out with the help of standard methods (Evans,1997; Thimmaiah,1999;

PHASE-III

ANTHELMINTIC ACTIVITY

Procuring the worms-

Indian earth worms (*Pheretima posthuma*) were used as test worm in antthelmintic screening. The earthworms collected from Bhumiratna Organic Farm at NayaSavanga, Taluka-Chandur Railway, District-Amravati.

Preparation of test sample and Experimental design-

Various concentrations (10,30,50 mg/ml) of each extracts were prepared the bioassay. A total 10 ml for each concentrations was prepared. Albendazole was used as a standard. Groups of approximately equal size worms consisting of 2 earthworms (*Pheretima posthuma*) individually in each group were releases into each 10 ml of desired concentration of the drug and extract in the petridish.

Anthelmintic assay-

Aqueous, methanol, acetone and petroleum ether extract from the whole plant were investigated for their anthelmintic activity against *Pheretima posthuma*. Various concentrations(10,30,50 mg/ml)of each extract were tested in bioassay, which involved determination of time of paralysis and time of death of the worms. Albendazole were included as standard reference and distilled water as control. The anthelmintic assay was carried as per the method of with minor modifications. The assay was performed on adult Indian earthworms, *Pheretim aposthuma* due to its anatomical and physiological resemblance. (Sollmann,1918). Because of easy availability,*Pheretima posthuma* have been used widely for the evaluation of anthelmintic compounds in-vitro.

RESULT AND DISCUSSION:

Macromorphology: Macromorphology of the plant was done.

Anthelmintic Activity:

Methanolic extract of *Tridax procumbens*(L.) showed significant anthelmintic activity against *Pheretima posthuma*. Methanolic extract also proved to be efficient than the standard drug.

The Methanolic extract of concentration (10,30,50 mg/ml) showed the paralysis time 114.5, 72.5,64 min and death time at (125, 84,78 min.) respectively. Methanolic extract at 50 mg/ml showed efficient paralysis get (64 min.) than other treated groups whereas methanolic extract 50 mg/ml showed significant anthelmintic activity with death time of (78 min.). Standard drug (10,30,50 mg/ ml) showed paralysis time 401.5,381.5, 367 min. and death time was 418,395,389 min. respectively. This investigation revealed that methanolic extract of *Tridax Procumbens* (L.) Showed significant anthelmintic activity against *Pheretima posthuma* also proved to be efficient than the standard drug.

The



Acetone extract of concentration of (10,30,50 mg/ml) showed the paralysis time 129.5, 100 ,81 min.) and death time at 145, 124, 90 min. respectively. Acetone extract at 50 mg/ml showed efficient significant anthelmintic activity with death time of (90 min.) Standard drug (10,30,50mg/ml)showed paralysis time 401.5, 381.5,367 min. and death time was 418, 395, 389 min. respectively. These investigation revealed that acetone extract of *Tridaxprocumbens* (L.) showed significant anthelmintic activity against *Pheretima posthuma*. Acetone extract proved to be efficient than the standard drug.

The Petroleum ether extract of concentration (10,30,50 mg/ml)showed the paralysis time 164.5, 100.5, 87 min. and death time at 184.5, 120, 90 min. respectively. Petroleum ether extract at 50 mg/ml showed efficient paralysis effect (87 min.) than other treated groups whereas petroleum ether extract 50 mg/ml showed significant anthelmintic activity with death time of (90 min.). Standard drug (10, 30,50 mg/ml) showed paralysis time 401.5, 381.5, 367 min. and death time was 418, 395, 389 min. respectively. This investigation revealed that petroleum ether extract of *Tridaxprocumbens* (L.) showed significant anthelmintic activity against *Pheretima posthuma*. Petroleum ether also proved to be efficient than the standard drug.

The Aqueous extract of concentration (10,30,50, mg/ml) showed the paralysis time at min. and death time at min respectively. Aqueous extract at 50mg/ml showed efficient paralysis effect (166, 100.5, 94.5 min.) than other treated groups whereas aqueous extract 50 mg/ml showed significant anthelmintic activity with death time of (94.5 min.). Standard drug (10,30,50mg/ml) showed paralysis time 401.5, 381.5 367 min. and death time was 481, 395, 389 min. respectively. This investigation revealed that aqueous extract of

Tridax

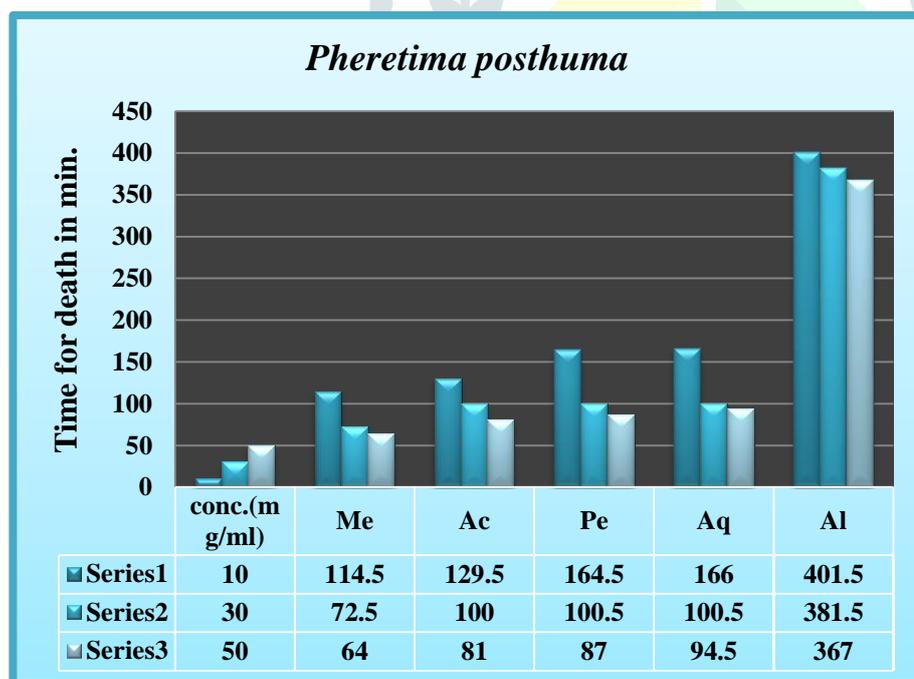
procumbens (L.) showed significant anthelmintic activity against *Pheretima posthuma*. Aqueous extract also proved to be efficient than the standard drug.

When Albendazole use as a standard drug extract of *Tridax procumbens*(L.) Plant of concentration (10,30,50mg/ml) showed paralysis at 401, 381, 367 min. and death at 418, 395, 389 min. respectively.

Plate-1-Macromorphology of the plant

Table -1: Anthelmintic Activity of *Tridax procumbens* (L.)

Test Sample (<i>Tridax</i>)	Conc (mg/ml)	<i>P. posthuma</i> Time taken for Paralysis (in min.)	<i>P. posthuma</i> Time taken for Death (in min.)
	10	114.5 ± 10.6	125 ± 8.48
Methanol	30	72.5 ± 9.19	84 ± 12.7
	50	64 ± 14.1	78.5 ± 10.6
	10	129.5 ± 12.0	145 ± 16.9
Acetone	30	100 ± 5.65	124.5 ± 6.36
	50	81 ± 5.6	90 ± 9.89
	10	164.5 ± 19.0	184.5 ± 14.8
Petroleum ether	30	100.5 ± 14.0	120 ± 15.5
	50	87 ± 5.65	109 ± 11.3
	10	166 ± 5.65	183.5 ± 9.19
Aqueous	30	100.5 ± 19.0	130.5 ± 12.0
	50	94.5 ± 13.4	122 ± 12.7
	10	401.5 ± 4.94	418 ± 8.48
Albendazole	30	381.5 ± 4.9	395 ± 5.65
	50	367 ± 8.48	389 ± 2.82

Fig-1. *Pheretima posthuma* showed the time for (Paralysis)

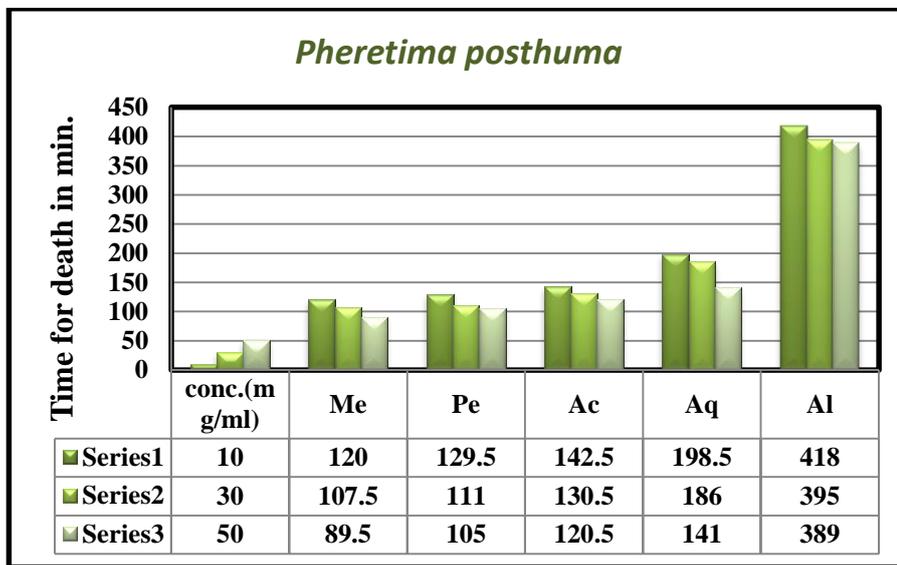


Fig. 2 :*Pheretima posthuma* showed the time for (Death)

Me: Methanol, Ac: Acetone, Pe: Petroleum Ether, Aq: Aqueous, Alb: Albendazole

CONCLUSION:

From the above result, it is clear that the methanol, acetone, petroleum ether, and aqueous extract of plant *Tridax procumbens* (L.) have significant anthelmintic activity in dose dependent manner when compared with standard anthelmintic drug. It reveals that the methanolic extract of *Tridax procumbens* plant took the less time to cause paralysis and death of the earthworm than that of acetone, petroleum ether, aqueous and albendazole standard drug. (Methanol < Acetone < Petroleum ether < Aqueous).

The investigation proved that extract of *Tridax procumbens* (L.) showed significant activity against '*Pheretima posthuma*'. This extract also proved to be efficient than standard drug.

Therefore it can be concluded that Methanolic extract of *T. Procumbens* have profound 'Anthelmintic Activity' which justifies its folkore used in curing Helminthes infections. Further, it would be interesting to isolate the possible phytoconstituents which would be responsible for 'Anthelmintic Activity' and to possible mechanism of action.

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