



Anti-Helminthic Activity of *Tradescantia spathacea* by Using Soxhlation Process

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ABSTRACT

The Ethanolic extract of *Tradescantia spathacea* leaves was investigated for anti-helminthic activity using earthworms (*Pheretima posthuma*). Various concentrations (10-20 mg/ml) of plant extract were tested in the bioassay. The reference standard drug used is Albendazole (10 mg/ml) and Tween 80 as control. Establishment of paralysis time and death time of the worms were recorded. Extract exhibited significant anti-helminthic activity at the concentration of 20 mg/ml. The result shows that ethanolic extract possesses anti-helminthic activity. Therefore, the anti-helminthic activity of the ethanolic extract of *Tradescantia spathacea* has been reported for the first time.

Keywords: *Tradescantia spathacea*; Ethanolic extract; Albendazole; *Pheretima posthuma*

INTRODUCTION

Infections with helminth are among the most widespread infections in humans and other domestic animals affecting a large number of world community. Most of these infections due to worms are generally confined mainly to the tropical regions and occurs mainly due to unhygienic lifestyle and deficiency also resulting in the development of symptoms like anaemia, malaria, tuberculosis. Parasitic diseases cause unmerciful morbidity affecting principally population in endemic areas. The foremost problem in the therapy of helminthic disease is development of resistance by gastrointestinal helminthes to presently available anti-helminthic drugs. Therefore, the delicate anti-helminthics from plant resources must be developed [1].

Tradescantia spathacea, green stem shrub grows to the light. Height is about 2-3 meters, width varies from 15 to 25 cm, light requirement is Low to High, Temperature is 20°C to 30°C, Hardness tolerance is very soft to very hard, Rheo discolor, *Tradescantia discolor*, *Rheo spathacea* are the synonyms of *Tradescantia spathacea*. *Tradescantia spathacea* belongs to the family commelinaceae. *Tradescantia spathacea* is mainly found in India, America, south Asia. *Tradescantia spathacea* is used to treat cold, whooping cough, sore throat, *neisseria gonorrhoeae* and it also

acts as an anti-inflammatory agents. The decoction of *Tradescantia spathacea* is taken orally in the treatment of cancer (Figure 1) [2].



Figure 1. *Tradescantia spathacea*

MATERIALS AND METHODS

Collection of Plant Leaves

Tradescantia spathacea leaves were collected from Vaageswari College of Pharmacy, Thimmapur, Karimnagar. Qualified Taxonomist have identified this specimen. In order to remove the foreign matter, the collected leaves were subjected for cleaning and to remove excess moisture from leaves, the leaves were kept for shade drying to prevent from contamination. Dried leaves were grounded in the mixer in order to get the fine powder [3].

Choice of worms

For Anti-helminthic Activity, *Pheretima posthuma* an Indian adult earthworm was selected, because it has anatomical and physiological resemblance with that of human intestinal worms.

Management of Albendazole

1% v/v of Tween 80, which acts as a suspending agent is used to prepare Albendazole (10 mg/ml) suspension.

Preparation of Tween 80 (1% v/v)

By dissolving the 1 ml of Tween 80 in 100 ml distilled water or 0.9% NaCl. The suspending agent is prepared [4].

Preference of worms

In the present study, Indian Adult Earth worm *Pheretima posthuma* was chosen due to its physiological similarities with that worms in human beings.

Preparation of extracts

The powder is kept for soxhlation by taking ethanol as a solvent. The extraction is done by taking required quantity of powder and thimble is prepared extraction is carried at a temperature of boiling point of ethanol and extraction is carried out for 6 hours. After the finishing the process of the extraction solvent is filtered and kept for drying in order to get the extract.

Pharmacognostic and physicochemical evaluation

Physicochemical and pharmacognostic evaluation of the plant were already performed and the results have been thoroughly studied [5].

Phytochemical evaluation

Identification test were done in order to find out the secondary metabolites. *Tradescantia spathacea* leaf extracts contain different phytoconstituents such as alkaloids, glycosides, phenols, tannins, flavonoids, saponins, quinines, coumarins.

Administration of extract

Tween 80 is selected as suspending agent to dissolve the ethanolic extract as the extract is mostly insoluble in water. Tween 80 acts as a control different concentrations of ethanolic Extract were prepared so that worms should be fresh float in the suspension (400 mg in 20 ml for 20 mg concentration and 200 mg in 20 ml for 10 mg concentration). Albendazole is taken in this study, which acts as standard. Worms are placed in petri-dish containing different concentration of ethanolic extract, control and standard [6].

Anti-helminthic Activity

Hypothetical worms: For Anti-helminthic Activity, Indian adult Earth worms *Pheretima posthuma* were selected. Worms were collected for the activity was fields cleaned to remove the dirt and greasiness. Earthworms 2-5 cm in length and 0.2-0.5 cm in width were selected for the study, to get better results all should be in the same size.

EXPERIMENTAL DESIGN

Indian adult earthworms *Pheretima posthuma* were selected for Anti-helminthic Activity due to its physical and physiological resemblance with that of intestinal round worm present in human beings. In Petri plates containing two different concentrations (10 mg/ml and 20 mg/ml) of Ethanolic extracts of leaves of *Tradescantia spathacea*, *Pheretima posthuma* were placed paralysis time and death time were placed paralysis time were noted when earthworm shows no movement except when it is shaken vigorously or placed in hot water at temperature of 50°C. Expiry time of worms were recorded after checking that worms have neither moved when it is shaken nor when external stimuli is given. Reference compound Albendazole (10 mg/ml) treated samples is used for comparing test results (Results will be shown in Table 1 and Figures 2-6).

Table 1. Anti-helminthic Activity Result

Treatment	Paralysis time (mins)	Death time (mins)
Test - 20 mg/ml	80 ± 5	120 ± 10
Test - 10 mg/ml	110 ± 10	150 ± 10
Standard (Albendazole-10 mg/ml)	50 ± 10	70 ± 5
Control (1%-Tween 80)	140 ± 10	-

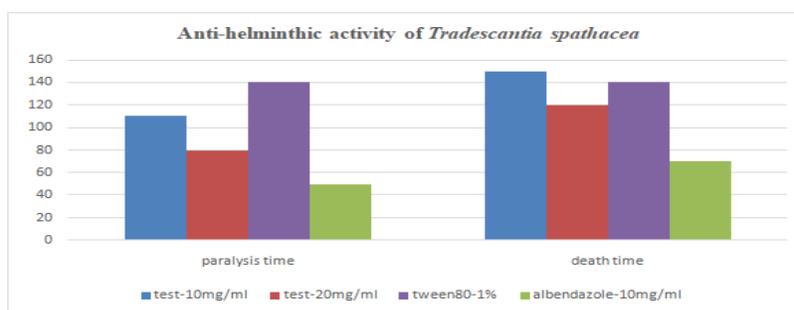


Figure 2. Anti-helminthic Activity Result Graph



Figure 3. (Standard) Albendazole



Figure 4. (control) Tween 80

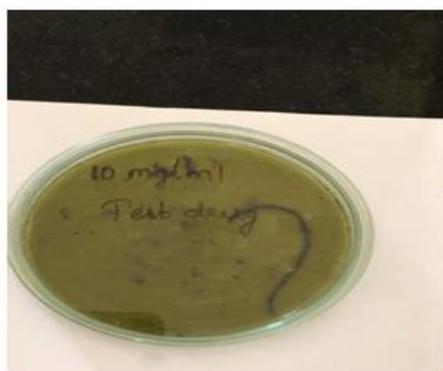


Figure 5. (10 mg/ml) Test Drug

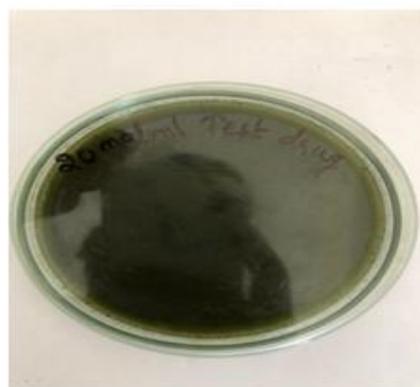


Figure 6. (20 mg/ml) Test Drug

RESULTS

Anti-helminthic Activity of leaves extract of *Tradescantia spathacea*

From the results it is observed that *Tradescantia spathacea* shown potent Anti-helminthic Activity while the *Pheretima posthuma* has taken long time for death (190 min-110 min) of worms. The earthworm selected for the Anti-helminthic Activity was most responsible to the different solvent extracts viz., ethanol [7].

Leaves extract of as *Tradescantia spathacea* was exposing the Anti-helminthic Activity result revealed dose-dependent paralysis ranging from loss of motility to loss of response to external stimuli, which eventually progressed to death at 10 and 20 mg/ml concentrations, Paralysis was observed respectively at 120 min and 70 min and death at 160 and 120 min in ethanol extracts. The earthworms were more sensitive to the extracts of ethanol at 20 mg/ml concentrations as compared to the reference drug Albendazole (10 mg/ml) [8, 9].

DISCUSSION

Some of the regularly used herbs have scientifically proved a strong Anti-helminthic Activity by using suitable experimental models. The mainly results of Albendazole on the worm is to cause flaccid paralysis that results in removal of the worm by peristaltic albendazole by increasing chloride ion conductance of worm muscle membrane produces hyperpolarisation and decrease excitability that leads to muscle relaxation and flaccid paralysis the extract demonstrated paralysis as well as death of worms another possible anti-helminthic effect of tannins is that they can bind to free protein in the gastro-intestinal tract of host animal or glycol protein on the parasite and cause death.

CONCLUSION

The Present study enabled us to conclude the potential use of ethanolic extract of *Tradescantia spathacea* as anti-helminthic agent against *Pheretima posthuma*. Another responsible phytoconstituents, should be isolated furtherly, which is responsible for Anti-helminthic Activity which is attempted in the laboratory.

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