



Anti-Helminthic Activity of *Bauhinia X blackeana* Linn Leaves

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ABSTRACT

Present work is concentrated on the Anti-helminthic activity of *Bauhinia X blackeana* leaves. The leaves pooled from Vaageswari College of Pharmacy, Timmapur, Karimnagar, The pooled leaves are cleaned for the foreign matter to remove the stem and other plant related which are not the leaves made moisture free and set to pulverization and passed through the mesh No 40 and then the extraction method chosen were soxhlation and the choice of solvent is methanol. The secondary metabolites present in the plant are known by the identification tests and they are alkaloids, terpenoids, carbohydrates, phenols, tannins, glycosides, flavonoids, proteins, steroids, and amino acids. The extract is studied for the anti-helminthic activity on Indian earthworm *Pheretima posthuma*. The extract showed the dose dependent immobility and mortality of worms. Methanol extract 20 mg/ml was more effective in causing mortality of the worms as well as promoting immobility.

Keywords: *Bauhinia X blackeana*; Anti-helminthic; Soxhlation; *Pheretima posthuma*; Albendazole

INTRODUCTION

The worms are the infectious disease and those are treated by the Anti-helminthic drugs. The worms are round worms (nematodes) flat worms, flukes (trematodes) and tapeworms (cestodes). This infectious disease is not only in the human beings but also affected to the animals. Dogs are more susceptible to this infection and the pharmaceutical companies of animals are taking care of discovering new drugs this worms looks as a small problem but they are causing other problems like constipation, appendicitis, obesity are some of the problems which are attacked with the worms in the intestine [1].

Anti-parasitic drugs are also called as anti-helminthic drugs which are used to remove the worm from the body, the infection with helminths are called helminthiasis. The mechanism of the albendazole drug binds selectively to β -tubulin of nematodes, cestodes and fluke, and inhibits microtubule formation [2].

There are only few medicines to treat the infectious disease caused by helminthiasis as there are only few pharmaceutical companies to manufacture these drugs. They are not concentrating on the veterinary medicine as all the medicine which is discovered should be tested on animals [3].

Plants have key role in our daily life and on our health. *Bauhinia* plants of family Caesalpiniaceae (Fabales) contains about 15 species that obtain in India. They are in different forms as bushes, trees and climbers. *Bauhinia X blackeana* (Hong Kong orchid tree) this tree grows up to 20 feet tall with light brown bark and the tree looks like umbrella. It has rich rose-purple fragrant blooms with pink stamens; as it is the hybrid plant it does not have the

seeds and it is sterile. It is grown in all climatic and in all types of soils and the flowers bloom in the winter season and the tree is full of pink color flowers, there are few more species in this *Bauhinia* like *Bauhinia tomentosa* which are yellow color flowers and another variety *Bauhinia acuminata* which are white colour flowers which are frequently observed on the road side [4].

As it is the hybrid of *B. purpurea* and *B. variegata*. It is mostly found on the seashore of Hong Kong Island in Pok Fu Lam, close to the vestiges of a house in 1880 by Sir Henry Blake, a British Governor of Hong Kong from 1898 to 1903 and an eager botanist [5].

REQUIREMENTS FOR THE METHOD

Attainment of the Leaves

The present study is done in September 2017; the leaves are collected in the same month from the local place i.e. karimnagar. The specimen was identified and authenticated by BSI/DRC/2017-2018/TECH/779. The pooled leaves are cleaned for the foreign matter to remove the stem and other plant related which are not the leaves made moisture free and set to pulverization and passed through the mesh No 40 and stored in well closed container until further the powder is used for the extraction purpose.

Extract Preparation

About 50-60 gm of powder was made into thimble with the help of the filter paper which was closed at one end and keep some cotton at the bottom and then add your powder slowly with help of the glass rod and then keep again cotton on the top and close it properly with the thread or staple and extracted in the soxhlet apparatus as Methanol as the solvent at the suitable temperature that means the methanol has the boiling point of 64.7°C, so we have to keep the temperature between 55-60°C and the round bottom flask with the methanol should be added with a porcelain piece in order to avoid the bumping of the solvent. The extraction continued for continuous 6 to 8 hours with continuous supply of water through inlet and passing out the water through outlet. After the completion of the extraction time the round bottom flask with solvent is removed and poured into the china dish and kept for evaporation of the solvent and then stored in the desicator to remove the excess moisture [6].

Identification Tests for the Extract

The dried extract was prepared into aqueous and alcoholic extract with the help of water and alcohol and further identification done for the phytochemical constituents like carbohydrates, phenolic compounds, glycosides, alkaloids, tannins, flavanoids, proteins, amino acids, steroid, and terpenoids the results are recorded. the plant is also studied for physicochemical and pharmacognostic study.

Standard Drugs and Reagents

The required drugs are solvents for the current anti-helminthic activity are Albendazole (Nutraplus india limited), Tween 80 (Merck specialities private limited), Methanol (Avantor performance materials india limited) solvents and chemicals used in experiment.

Preference of Worms

Adult Indian earth worm *Pheretima posthuma* was chosen for present method as it has close features with the worms in human beings.

Requirements

Petriplates, measuring cylinder, electronic balance.

Anti-helminthic Activity

Experimental worms: Indian adult earthworms (*Pheretima posthuma*) were preferred in the present study. The worms are collected from the nearest farms where the moisture content is more than the worms are cleaned with fresh distilled water. The Earthworms should be about 4-6 cm in length and 0.2-0.3 cm in width where all should be in the same size for the better output was used for study [7].

Preparation of Tween 80(1% v/v) : The suspending agent is prepared by dissolving the 1 ml of Tween 80 in 100 ml distilled water or 0.9%NaCl [7].

Administration of Albendazole: Albendazole (10 mg/ml) was prepared by using 1% v/v of Tween 80 as a suspending agent as administered as per method of extract.

Managing of Extract

The extract is made into different concentrations 10 mg/ml and 20 mg/ml with the help of 1% v/v Tween 80 which acts as the suspending agent. In order to free movement of the worm the suspension is prepared in more quantity, 20 ml for each concentration was prepared (200 mg in 20 ml for 10 mg concentration, 400 mg in 20 ml for 20 mg concentration). The standard drug used is Albendazole which is also prepared for 20 ml. Each extract is taken with two worms of same size and placed in the petridish which contains the suspension of extract [8].

EXPLORATORY DESIGN

The activity was done with help of the earth worms as they are closely resemble to the worms of human beings. *Pheretima posthuma* was kept in the methanolic extract of the plant which was placed in the petridishes with two different concentrations (10 mg/ml and 20 mg/ml). Two worms are placed in each petriplate and observed for immobility and mortality. Time for immobility was noted when there is no movement in the worm, except when the worm is placed in hot water with 60°C or with external stimuli with forceps or worm was shaken vigorously, if there any movement in the worm keep it back into the petriplate, the time of mortality of worm (min) was noted when the worm has no movement with stimuli or with the hot water. The obtained results were compared with standard drug Albendazole (10 mg/ml) treated earth worms [9].

OUTCOME OF THE ACTIVITY

From the activity the outcome is that the plant chosen for the antihelminthic activity is *Bauhinia X blackeana* showed the best results and they are dose dependent. The results are presented in the following table. The time of the paralysis and death of the worm showed that they are paralyzed at 97 min, 65 min and mortality at 125 min, 83 min for 10 and 20 mg/ml and the obtained values compared with the reference drug (Albendazole) shows paralysis within 36 min and time of mortality 57 min. from the above comparison the methanolic extract at 20 mg/ml shows the more activity than 10 mg/ml as it is near to the standard drug. The control should be observed for more than 3 hrs than we can come to an idea that it was safe in the control and solvent is not having any solvent effect on the worm which leads to paralysis and death of the earthworm. The results are showed in the Table 1 and in the Figures 1-4.

RESULTS AND DISCUSSION

Based on the results of the activity it shows that the 20 mg/ml shows more activity than 10 mg/ml and it is said that it is dose dependent when compared with the standard drug 10 mg/ml in causing immobility and mortality of worms and the control has no effect and the earth worm is alive for longer period.

Table 1. Immobility and mortality time of the Albendazole and methanolic extracts of *Bauhinia X blackeana* leaves

Category	Extract	Concentration (w/v) mg/ml	<i>Pheretima posthuma</i>	
			Immobility time(mins)	Mortality time (mins)
1	(Control)Tween 80	1%	176 ± 3	
2	Albendazole	10	36	57
3	Methanol extract	10	97 ± 2	125 ± 6
		20	65 ± 4	83 ± 3



Figure 1. Tween80 (control)

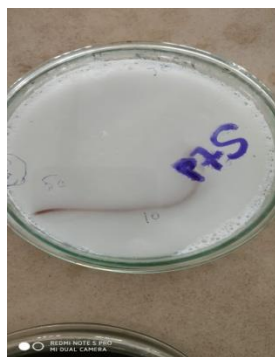


Figure 2. Albendazole (standard)



Figure 3. Methanolic extract (10 mg/ml)

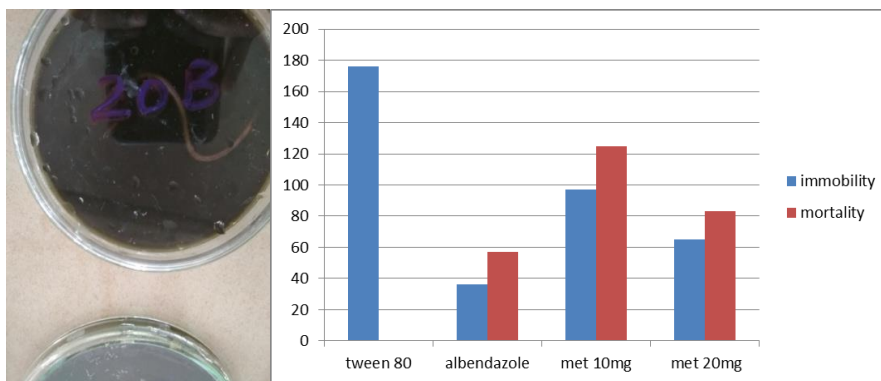


Figure 4. Methanolic extract (20 mg/ml)

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