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Evaluation of Anthelmintic activity of *Bauhinia variegata* Linn Methanolic Root Extract on Pheretima posthuma

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ABSTRACT

Methanolic extracts from roots of *Bauhinia variegata* linn were investigated for their anthelmintic activity by using three concentrations (10, 25, & 50mg/ml) as test worms. Results were expressed in terms of time of paralysis and time of death of worms and the activity was compared with albendazole as reference standard & Normal saline served as control. Dose dependent decreased paralyzing time and death time was observed. The results of present study indicated that crude methanolic root extract significantly demonstrated paralysis and also caused death of worms especially at higher concentration of (50 mg/ml), *Bauhinia variegata* showed the best anthelmintic activity. The use of the roots as anthelmintic has been established and further studies are recommended to isolate the active principles answerable for the activity.

Key words: Anthelmintic activity, Pheretima Posthuma, *Bauhinia variegata* linn

1. INTRODUCTION

Hundreds of millions if not billions of human infections by helminthes exist worldwide and increased world travel and immigration from the developing countries.[1] In the emergent world, the extreme influences of parasitic diseases are secondary and possible productivity losses. [2] Infections by gastrointestinal Helminth contaminations are now the cause of much of the chronic disease and indolence of the tropical population. Infections caused by helminth parasites in bullocks continue to characterize a significant reduction in productivity, specifically among small ruminants in the tropics and subtropics.[3] Helminth parasites of li6vestock are among the most common and economically important diseases. [4]

The mountain ebony, *Bauhinia variegata* Linn belongs to the family *Caesalpiniaceae*. It is commonly called Kanchanara in Sanskrit & distributed throughout India, ascending to an altitude of 1300 in the Himalayas. It is widely planted in the tropics and warm regions of the world**.** [5] It is traditionally used in bronchitis, leprosy, piles, dysentery, tumors and ulcer, [6] and its extracts have been found to have antibacterial and antifungal activity. [7]

The present study was there under taken to evaluate the in vitro anthelmintic activity of root extract of *Bauhinia Variegata* Linn (Methanolic extract) and different concentration against Pheretima posthuma.

2. MATERIALS AND METHODS

2.1 Plant Material collection

The roots of *Bauhinia Variegata* Linn were collected during the month of Jan 2020 from the outfield near to Gwalior (Madhya Pradesh). The material was authenticated and identified at raw material herbarium by Dr K.K. Nagaich Professor Horticulture department college of Agriculture, Gwalior M.P. The authenticated plant roots were washed with distilled water dried under shade and powdered using a blender at low speed. The powdered roots were stored in air tight container until taken for use.

2.2 Preparation of Methanolic extract

The air dried coarse powder of the roots of *Bauhinia Variegata* was extracted with methanol using soxhlet's apparatus. The powdered material (2 kg) was defatted with petroleum ether (60-80°C) in a soxhlet extraction apparatus and marc was extracted with methanol (1000 mL) over night, at room temperature with constant stirring. The extract was filtered and the filtrate was concentrated at 30°C under reduced pressure in a rotary evaporator. From the dried extract, accurately 10 mg / ml, 25 mg / ml, & 50 mg / ml suspensions of methanolic extract of *Bauhinia Variegata* in normal saline were prepared. [8]

2.3 Phytochemical screening

The methenolic extract of roots of *Bauhinia Variegata linn* were screened for the presence of various phytoconstituents such as carbohydrates, glycosides, phenolic, tannins, sterols, saponins, proteins, amino acids and fatty acids. [9]

2.4 Worms' collection and authentication

Adult Indian earthworms (Pheretima posthuma) were used for the evaluation of in vitro anthelmintic activity. They were collected from the pond nearby college. Then all collected worms were washed with normal saline to remove all the faecal matter and used for the anthelmintic study. The earthworms of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental protocol due to its anatomical and physiological resemblance with intestinal roundworms parasite of human beings. [10]

2.5 Anthelmintic Assay

Pheretima posthuma (Indian adult earth worms) of nearly equal size (6 cms ± 1) were selected randomly for the present study. [11-13] The worms were acclimatized to the laboratory conditions before experimentation. The earth worms were divided into five groups of six earth worms in each. Albendazole suspension in the concentration of 10 mg / ml served as a standard and poured into petri dishes. The test extract were prepared in the concentrations of 10 mg / ml, 25 mg / ml, & 50 mg / ml. Normal saline served as control. Six earth worms nearly equal size 6 cms ± 1 were taken for each concentration and placed in petri dishes at room temperature. [14] The time taken for complete paralysis and death were recorded. The mean paralysis time and mean lethal time for each sample was calculated. The time taken for the worms to be become motionless was noted as paralysis time and to ascertain death, each worm was frequently applied with external stimuli which stimulates or induce movements in the earthworm, if alive. [15]

Five groups of worms with six worms in each group were taken in a petridish.

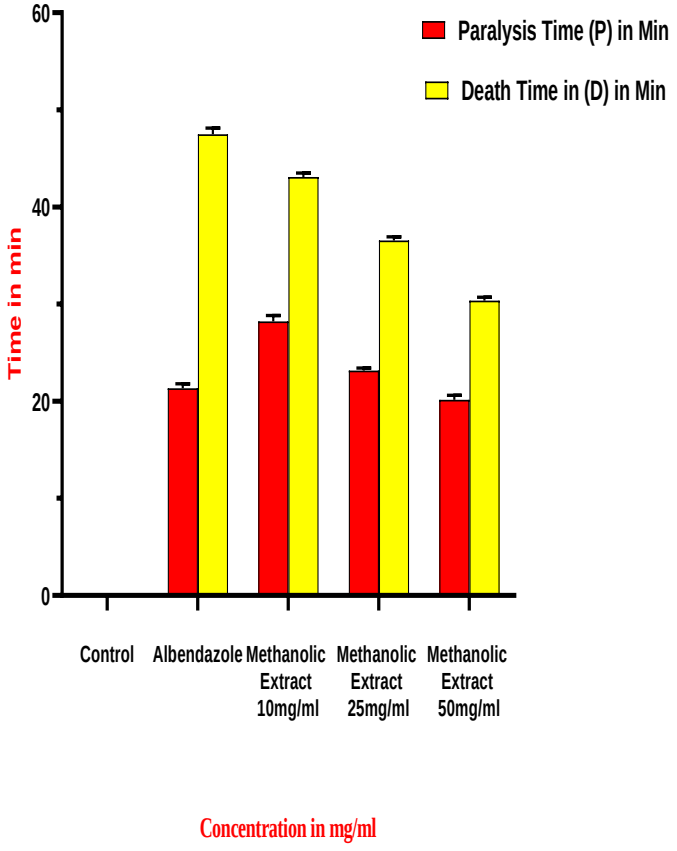
Group 1 Normal Saline which served as control.

Group2 Albendazole at the dose of 10 mg/ml as the standard.

Group3 Methanolic extract at the dose of 10 mg/ml

Group4 Methanolic extract at the dose of 25 mg/ml

Group5 Methanolic extract at the dose of 50 mg/ml



The time of paralysis was noted when no movement of any sort could be observed except when the worm were shaken vigorously not when dipped in warm water (45^0C).

4. RESULTS AND DISCUSSION

The findings of the phytochemical analysis suggest the presence of Phenolic compounds, Tannins, Flavonoids, Saponins, Alkaloids, Glycosides, Amino acids & Terpenoids and the absence of Carbohydrates, Steroids & Fats & oils. Some of these phytoconstituents may be responsible for anthelmintic activity**.**

Group	Sample	Time taken for Paralysis (P) (in min)	Time taken for Death (D) (in min)
I	Control		
II	Albendazole 10 mg/ml	21.33±0.47	47.49±0.62
III	Methanolic Extract 10 mg/ml	28.23±0.61	43.09±0.40
IV	Methanolic Extract 25 mg/ml	23.17±0.25	36.55±0.37
V	Methanolic Extract 50 mg/ml	20.16±0.46	30.36±0.31

Table: 1 Anthelmintic activity of methanolic extract of *Bauhinia Variegata* roots Test substance concentration mg/ml Time taken for Paralysis (P) and Death (D) of worms in min (Pheretima posthuma)

Table 1 reveals that the methanolic extract of *Bauhinia Variegata* root exhibit anthelmintic activity in dose dependent manner. The methanolic extract at dose 50mg/ml caused paralysis in 20min and death in 30 min against Pheretima posthuma compared to the reference standard Albendazole (10 mg/ml) showed the same at paralysis time 21min and death time 47 min.

5. CONCLUSION

It could be concluded and confirmed that methanolic extract of *Bauhinia Variegata* root exhibit anthelmintic activity in dose dependent manner.

Further, in future it is necessary to identify and isolate the possible active phytoconstituents responsible for the anthelmintic activity and study its pharmacological action.

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