



EVALUATION OF ANTHELMINTIC ACTIVITY OF *HOUTTUYNIA CORDATA*

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Abstract

In this study the anthelmintic activity of *Houttuynia cordata* leaves was evaluated using *Pheretima posthuma* (earth worm) as test worms. Three different concentrations of ethanolic extract of *H. cordata* leaves were taken (10, 20, 50mg/ml) and tested for anthelmintic activity which mainly involved the determination of time of paralysis and time of death of the worms. Albendazole at varying concentrations (10, 20 and 50mg/ml) was taken as the standard reference and normal saline was used as the control. The result of the present study shows that the ethanolic extract of *Houttuynia cordata* leaves showed profound anthelmintic activity against tested worm species. It justifies its folklore use in curing helminthic infections. Further studies are needed to establish the mechanism of action responsible for the concerned activity.

Key Words. *Houttuynia cordata*, anthelmintic activity, *Pheretima posthuma*, Albendazole

Introduction

Helminth infection is a widespread infection in human and a large population of the world suffers die to this infection. Majority of helminth infection generally restricted to tropical regions and cause health hazards like anaemia, eosinophilia and pneumonia. There is an increasing demand of natural anthelmintics because gastro-intestinal helminthes becomes

resistant to currently available anthelmintic drugs.
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Houttuynia cordata (family saureaceae) commonly known as masundori, a creeping herb of 30-60 cm height with thin spreading rhizomes. The stems are green or sometimes purplish red and either smooth or pubescent on the nodes. The lower parts of the leaf stalks form a sheath round the stem. The leaves are usually heart shaped, 4-10 cm long and 2.5 -6.0 cm wide and purple underneath.



The flowers are small, crowded into a short spike around 2 cm long, with four white, petal like bracts at the base. The stamens usually degenerate and the fruits are apomictic. *Houttuynia cordata* has a wide reputation among natives of being curative for intestinal worm infections^{4,5}. This plant is being used by the tribal sod Satpuda hills as an anthelmintic. The present study was therefore aimed to investigate the anthelmintic activity of the ethanolic extract of leaves in a view to justifying the use of the plant in the traditional treatment of helminthes.

Material and Method

Plant Material

The plant *Houttuynia cordata* were collected from the rural belt of Azara, Kamrup and authenticated by Deptt. of botany, Gauhati University, Assam and a specimen (No. 017600) has been deposited for future references.

Preparation of Extracts

The plant leafs were shade dried and powdered. The powdered material was extracted with 95% ethanol and the extract was vacuum dried.

Phytochemical screening

Qualitative assay, for the presence of plant phytoconstituents such as alkaloids, glycosides, steroids, flavonoids, carbohydrates, tannins and saponins were carried out on the extract following standard procedure^{6,7}.

Animal

Indian adult earth worm (*Pheritima posthuma*) was collected from water logged areas of Azara, Kamrup.

Evaluation of Anthelmintic Activity

The anthelmintic activity was evaluated on adult Indian earth worm, *Pheritima posthuma*. Worms were divided into seven groups, each group contained five worms. Group I, were treated as control, treated with normal saline; group II-IV were treated with 10, 20 and 50 mg/ml of ethanolic extract suspended in normal saline; group V-VII were treated with reference compound, Albendazole (10, 20 and 50 mg/ml). Observations were made for the time taken to set paralysis and death of the individual worms. Mean time for paralysis was noted (in min.) when no movement of any sort could be observed, except when the worm was shaken vigorously. Time of death was recorded (in min.) neither after ascertaining the worms nor moved when shaken vigorously nor when dipped in warm water (50°C)⁸.

Results and Discussion

The result of the phytochemical screening reveals that the ethanolic extract possesses alkaloids, glycosides, steroids and tannins. It was also observed that the ethanolic extract was endowed with anthelmintic property (table 1). The tested samples were found to be lethal to the worms at the tested level of concentrations. The activity was also found to be concentration dependent for all different samples tested. Potency of the test



samples was found to be inversely proportional to the time taken for paralysis/death of the worms. The activities were comparable with the reference drug Albendazole. It is possible that tannins contained in the extracts of *Houttuynia cordata*

anthelmintic effect⁹. It is reported that anthelmintic effect of tannins can be due to binding to free proteins in the gastrointestinal tract of host animal or glycoprotein on the cuticle of the parasite and which may cause death¹⁰.

Table 1: Anthelmintic activity of ethanolic extract of *Houttuynia cordata*

Group	Treatment	Concentration (mg/ml)	Paralysis time (min.)	Death time (min.)
I	Vehicle	---	---	---
II	Ethanolic extract	10	51.11±1.45	82.21±1.32
III		20	39.34±1.85	71.09±2.15
IV		50	26.48±0.93	52.17±1.41
V	Albendazole	10	34.33±0.84	60.83±2.15
VI		20	25.10±1.65	49.44±1.72
VII		50	13.32±0.57	27.31±0.81

Results are expressed as Mean ± SEM from six observations

Therefore, it can be concluded that the ethanolic extract of leaf of *Houttuynia cordata* possesses profound anthelmintic activity against tested worm species. It justifies its folklore use in curing helminthic infections. Further studies are needed to establish the mechanism of action and isolation of phytoconstituents responsible for the concerned activity.

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