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## **IN VITRO ANTHELMINTIC ACTIVITY OF *HELICTERES ISORA* SEEDS**

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### **ABSTRACT**

Helminthes have been of concern to the medical field for centuries and still cause considerable problems for human beings and animals. During the past few decades, despite numerous advances made in understanding the mode of transmission and the treatment of these helminthes there are still no efficient products to control certain helminthes and the indiscriminate use of some drugs has generated several cases of resistance. *Helicteres isora* is a medium sized tree, abundantly found in hills and forests, well known for its use in traditional medicinal values. Chemical constituents of *Helicteris isora* are *Proteins, Fibers Polyphenols, Tannins, Flavonoids*. Hence present study was designed to screen and quantify selected phytochemicals. *Helicteres isora* is a species of the *Helicteres* genus, belonging to the family Sterculiaceae. The Aqueous Extract of fruits of *Helicteres isora* was screened for anthelmintic activity. Results were compared with Albendazole which is used as standard.

## INTRODUCTION

Worldwide, a total of at least 35,000 plant species are used for medicinal purposes. The most important industrial medicines nowadays are based on not more than about 90 species, while traditional remedies in developing countries are usually based on mixtures of herbs collected in the wild. In Indonesia, for example, up to three-quarters of all instances of sickness are treated with mixtures of teas – known as jamu which contain plant extracts from up to 30 different kinds of dried plant species. But plants are not just the main component of traditional medicines. According to estimates by the World Health Organization, they also form up to about 70 per cent of the basis of modern pharmaceutical products. Helminthes have been of concern to the medical field for centuries and still cause considerable problems for human beings and animals. During the past few decades, despite numerous advances made in understanding the mode of transmission and the treatment of these helminthes there are still no efficient products to control certain helminthes and the indiscriminate use of some drugs has generated several cases of resistance. Since the time immemorial, traditional system of India and the folklore

are claiming that medicinal plants as a whole or their parts are being used in all types of diseases successfully including antibacterial, antihelminthic, anti-inflammatory etc. Thus, plant derived drug serve as a prototype to develop more effective and less toxic medicine.

## MATERIALS & METHODS

### Plant Collection –

The fruits of *Helicteres isora* were collected from local vender Alephata, Tal-Junner, Dist-Pune, Maharashtra, India.

### Plant Authentication –

The plant was collected from Awasary Ghat and authenticated from Botanical survey of India, Pune.

### Extraction of Plant material –

The collected plant material was shade dried, powdered and extracted with double distilled water by maceration process. The extraction was carried out for 7 days (1 week).

The Menstrum was separated from marc by means of filtration and evaporated without heating (heating process was avoided).

**Percentage Yield –**

160gm powdered drug gives 8gm of extract

100gm gives  $\rightarrow x$

$$x = 8 \times 100 \div 160$$

$$x = 5\text{gm}$$

Percentage Yield was found to be 5%

**Collection & Authentication of Earthworms:**

Indian adult earthworms (*Pheretima posthuma*) collected from moist soil and washed with normal saline to remove all faecal matter were used for the anthelmintic study. The earthworms (*Pheretima posthuma*) of 3-5 cm in length and 0.1-0.2 cm in width were used for all the experimental protocol due to their anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. The earthworm were authenticated as *Pheretima posthuma* by Dr.A.A.Shaikh Annasaheb Waghire College of Arts, Science & Commerce, Otur, Pune.

**Phytochemical Investigation**

A detailed phytochemical investigation has been carried out. (Table 1)

**Table 1 Phytochemical Investigation**

Chemical Tests	Present/Absent	Constituents
Molish Test	+	Carbohydrate
Felhing Test	+	Reducing Sugars
Benedicts Test	+	Reducing Sugars
Barfoeds Test	+	Monosacharides
Bial's Orcinol Test	+	Sugars
Aniline acetate test	+	Sugars
Selwinoff's Test	+	Hexose sugars
Cobalt-chloride test	+	Hexose sugars
Iodine test	-	Starch
Tannic acid test for starch	-	Starch
Biuret test	-	Proteins
Millions Test	-	Proteins
Ninhydrin test	-	Amino acid
Test for tyrosine	-	Amino acid
Test for tryptophan	-	Amino acid
Test for cysteine	-	Amino acid
Salkowski reaction	-	Steroid
Libremann-Burchant reaction	-	Steroid
Legals test	+	Glycoside
Test for deoxysugars	+	Glycoside
Brontrager's test	+	Glycoside
Shinoda test	+	Flavonoids
Dragendorffs test	-	Alkaloids

## PHARMACOLOGICAL SCREENING

### ANTHELMINTIC ACTIVITY OF *HELICTERES ISORA* FRUIT EXTRACT

The collected plant material was shade dried, powdered and extracted with double distilled water by maceration process. The extraction was carried out for 7 days (1 week). The Menstrum was separated from marc by means of filtration and evaporated without heating (heating process was avoided)

The Aqueous extracts of *Helicteres iosra* were dissolved in saline solution and then

volume is adjusted to 10 ml with saline water. Extract solutions were freshly prepared before starting the experiment. Three groups, of six earthworms each were released into 10 ml of desired formulations as follows; two for varied dilution one for standard drug, one for control. Vehicles. Observations were made for the time taken to paralysis and death of individual worms. Paralysis was said to occur when the worms did not revive even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body colors.



Fig 1-*HELICTERES*  
*ISORA* (1000mg/10ml)



Fig 2- *HELICTERES*  
*ISORA* (500mg/10ml)



Fig.3-ALBENDAZOLE  
(200mg/10ml)

**Table No.2- Anthelmintic Activity Of *Helicteres isora* Fruits**

Sr. No.	Aqueous Extract				Albendazole		Normal Saline	
	500 mg/10 ml		1000 mg/10 ml.		200 mg/10 ml.		0.9 gm of NaCl/100ml DW	
TIME REQUIRED (Mins.)								
	P	D	P	D	P	D	P	D
1.	17.22	22.28	12.29	16.35	8.30	11.28	---	---
2.	18.80	21.26	13.24	16.25	7.39	12.20	---	---
3.	16.15	22.25	12.24	18.50	7.35	11.78	---	---
4.	17.96	20.80	13.57	17.49	7.31	11.45	---	---
5.	17.20	21.47	14.78	17.28	8.28	12.87	---	---
6.	16.95	20.22	12.12	16.20	8.40	12.55	---	---
Mean ±SEM	17.38±0.3 701	21.38 ±0.3302	13.04±0. 4242	17.01±0. 3738	7.83±0.2 193	12.02±0. 2560	---	---

All the values represent Mean ±SEM; No. of worms (n) = 6 in each group.

#### DESCRIPTION

Time required for paralysis of earthworm by using *H.isora* aq.extract (500 mg/10ml) was found to be 17.38±0.3701 min, and for death it was 21.38 ±0.3302 min. While for

1000mg/10ml paralysis time was 13.04±0.42 min and for death, it was 17.01±0.37 min. By using Albendazole Earthworms were paralysed in 7.83±0.2193 min and death occur in 12.02±0.2560 min.

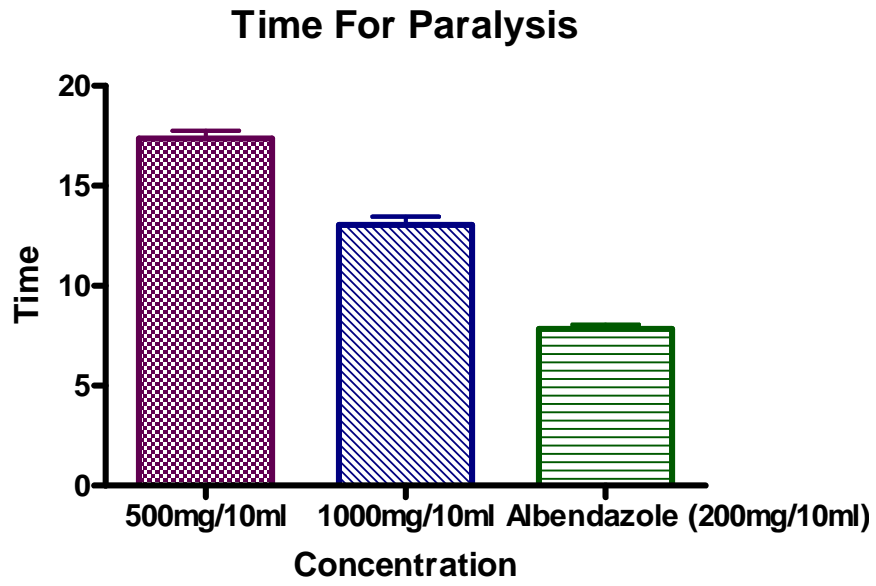


Fig No.4-Time For Paralysis

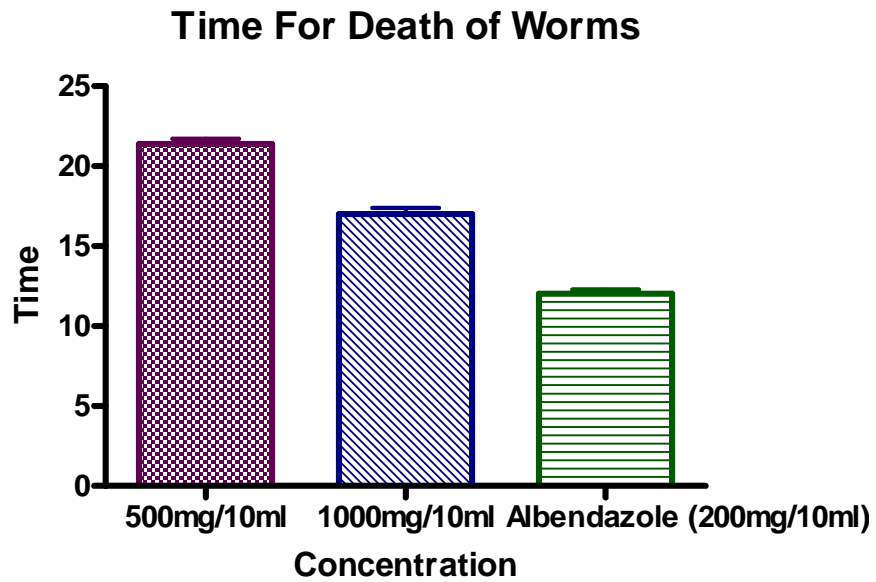


Fig No.5-Time For Death

**CONTROL****Table No.3- Control Group (Normal Saline)**

No paralysis up to 25 min	No death up to 25 min.
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**CONCLUSION**

The anthelmintic activity of Aqueous extract of *Helicteres isora* was performed and reported. The data revealed that Aqueous extract (1000mg/10ml) and Aq.extracts(500mg/10ml) of *Helicteres isora* showed significant anthelmintic activity. Results are comparable with standard drugs Albendazole (200mg/10ml) concentration best anthelmintic activity (Table 1&2).. The results shows that Aq.extracts(1000mg/10ml) took the least time to cause paralysis and death of earthworms followed by Aq.extracts(500mg/10ml). Results of preliminary phytochemical tests suggest that Aqueous extract contains Carbohydrates (gums, sugars), Glycosides, Tannins, Oxalic Acid. It can be concluded that active constituents present in Aqueous extracts responsible for anthelmintic activity.

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