

## IN-VITRO ANTHELMINTIC ACTIVITY OF ROOTS OF ACALYPHA INDICA Linn.

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**ABSTRACT:** The aim of present study was to evaluate anthelmintic potential of crude alcoholic extract of root of *Acalypha indica* using *Pheretima posthuma* as test worm. Three concentrations (10, 25 and 50 mg/ml) of alcoholic extract and its various fractions were tested in the bioassay, which involved determination of time paralysis (P) and the time of death (D) of the worms. Albendazole (10 mg/ml) was included as standard reference and distilled water as control. The results present study indicated that crude alcoholic extract significantly demonstrated paralysis and also caused death of worms especially at higher concentration of (50 mg/ml) used as compared reference Albendazole. *Acalypha indica* showed the best anthelmintic activity. The use of the roots anthelmintic has been confirmed and further studies are suggested to isolate the active principles responsible for the activity.

**Keywords:** *Acalypha indica*, Albendazole, Anthelmintic, *Pheretima posthuma*, Alcoholic extract.

### INTRODUCTION

Helminthic infections are now being recognized as cause of much chronic ill health and sluggishness amongst the tropical people. Diseases caused by helminth parasites in livestock continue to be a major productivity constraint, especially in small ruminants in the tropics and sub tropics [1]. In the developing world, the greatest impact of parasitic diseases indirect and potential productivity losses [2]. Infections by gastrointestinal helminth parasites of livestock are among the most common and economically important diseases [3].

The plant *Acalypha indica* Linn. is commonly known as *Indian acalypha* and it belongs to the family Euphorbiaceae, found in all parts of the tropics. This herbs found in fields and wastes places throughout the

hotter parts of the world. The common names of *Acalypha indica* are Brennkraut (German), alcalifa (Brazil) and Ricinela (Spanish). It is a common annual herb, found mostly in the backyards of hoses and waste places throughout the plains of india. The plant traditionally used as an expectorant against asthma and pneumonia and also as an emetic, emenagogue and anthelmintic [4]. *Acalypha indica* contains acalyphine which is used in the treatment of sore gums[5]. The plant is reported to have a post-coital antifertility effect [5],

anti venom properties[6], wound healing effects[7], antioxidant activities[8], anti-inflammatory effects[9], acaricidal effects[10], diuretic effects [11] and antibacterial activities[12]. The present study was there under taken to evaluate the *in vitro* anthelmintic activity of crude extract of *Acalypha Indica* (alcoholic extract) and different concentration against *Pheretima posthuma*.

### METRIALS AND METHODS

#### Plant Material collection:

The roots of *Acalypha indica* was collected in the month of march 2008 from Thallapaka, Rajampet regions, Kadapa (dist.), Andhrapradesh, India. The plant

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was authenticated (authentication No: 3085) by Dr.C.Madhava Chetty, Head of Department of botany, S.V.University, Tirupathi. Albendazole was obtained by as gift sample from MEDPLUS pharmacy Rajampet, Andhrapradesh. The plant scientific profile was mentioned in the table No.1

#### Preparation of alcoholic extract:

The plant material (roots) was collected and shade dried for several days. The roots were powdered with the help of electric grinder. After defating the root powder (250 gm) by using petroleum ether (40 -60<sup>0</sup>c), it was air dried and extracted exhaustively with 70% alcohol in the process of distillation. The test sample was prepared at the concentration i.e.10, 25, 50 mg/ml in distilled water containing 15% of Tween 80. Suspension of distilled water and 15% of tween 80 is used as control.

#### Worms collection and authentication

Indian earthworm *Pheretima posthuma* (Annelida) were obtained from water logged area of soil and identified at department of applied zoology. S.V University, Tirupathi, Andhrapradesh, India.

#### ANTHELMINTIC ASSAY

The anthelmintic assay was carried as per the method of Ajaiyeoba et al., with necessary modifications. The assay was performed on Indian adult earth worm, *Pheretima posthuma* due to its anatomical and physiological resemblance with the intestinal round worm parasite of human being [13],[14],[15],[16]. Because of easy availability earth worms have been widely used for the initial evaluation of anthelmintic compounds *In vitro* [17],[18],[19],[20],[21].

50 ml of formulation containing different concentrations of crude extract and test standard (10, 25, 50 mg/kg) were prepared by triturating the samples with 15% tween80 and the resultant mixture were stirred using a mechanical stirrer for 30 min.

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

Group 1- Distilled water which served as control.

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

Group3- Received alcoholic extract at the dose of 10 mg/ml

Group4- Received alcoholic extract at the dose of 25 mg/ml

Group5- Received alcoholic 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<sup>0</sup>c).

#### RESULTS AND DISCUSSION:

The phytochemical screening of crude alcoholic extract contains acalyphine, cynogenic glycosides, inositol methylether, resin, triacetomamine and volatile oils [22]. The alcoholic extract of *Acalypha indica* root exhibit anthelmintic activity dose dependent manner. The alcoholic 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 20min and death time 46 min.

The alcoholic extract of the plant not only demonstrated paralysis, but also caused death in shorter time as compared to reference drug Albendazole. The anthelmintic potency of the prepared samples and marketed available standard drug (Albendazole) results were showed in the figure No: 1.

#### CONCLUSION

In conclusion the alcoholic extract showed significant anthelmintic activity when compared to reference drug Albendazole. Further, it would be interesting to isolate the possible phyto-constituents which may be responsible for the activity and the mechanism(s) of action.

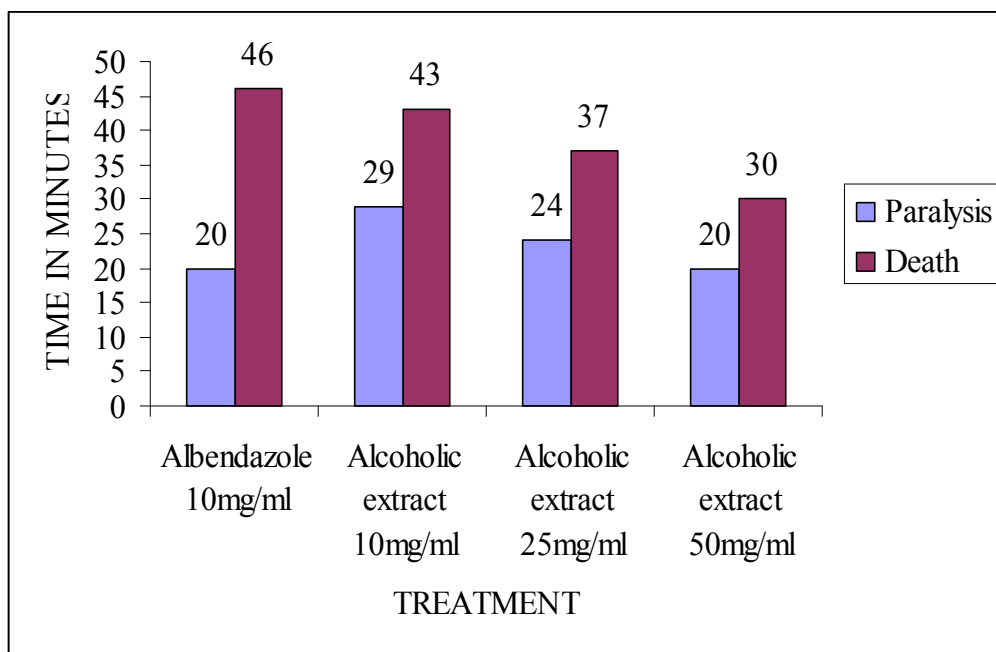
**Table No: 1 Scientific classification of *Acalypha indica* Linn.**

Scientific classification	
Kingdom	: Plante
Phylum	: Magndiphyta
Class	: Magnoliopsida
Order	: Euphorbiades
Family	: Euphorbiaceae
Genus	: <i>Acalypha</i>
Species:	: <i>Indica</i> Linn.
Common names : Brennkraut, Indian acalypha	
Botanical name : <i>Acalypha indica</i>	

**Table No: 2 Anthelmintic activity of alcoholic extract of *Acalypha indica* roots Test substance concentration mg/ml Time taken for Paralysis (P) and Death (D) of worms in min (*Pheretima posthuma*)**

Group	Sample	Concentration (in mg/ml)	Time taken for paralysis(P) (in min)	Time taken for death(D) (in min)
01.	Control	0	0	0
02.	Albendazole	10mg/ml	20.33±0.37	46.49±0.62
03.	Alcoholic extract	10mg/ml	29.23±0.61	43.09±0.40
04.	Alcoholic extract	25mg/ml	24.17±0.25	37.55±0.37
05.	Alcoholic extract	50mg/ml	20.06±0.46	30.26±0.21

**Figure: 1 Anthelmintic Activity of *Acalypha indica* Linn against earthworms (*Pheretima posthuma*)**



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