



ISSN No: 0975-7384
CODEN(USA): JCPRC5

J. Chem. Pharm. Res., 2011, 3(1):488-491

Evaluation of Anthelmintic Activity of *Coccinia indica* (fruits)

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ABSTRACT

The present study was designed to explore the anthelmintic activity of different extracts of plant *Coccinia indica* (fruits) using petroleum ether, ethyl acetate methanol and water as solvents. Various concentrations (25 and 50mg/ml) of all the extracts were tested, which involved determination of time of paralysis and time of death of the worms. It was compared with Albendazole as standard reference and normal saline as control. The study indicated the potential usefulness of *Coccinia indica* against earthworm infections.

Key words: Anthelmintic activity, *Coccinia indica*, Time of Paralysis.

INTRODUCTION

Helminth infections are among the most extensive infections in humans, upsetting a vast population of the world and contribute to the augmentation of diseases related to Helminths [1]. Such types of worms are responsible for much type of diseases like undernourishment, anaemia, eosinophilia and pneumonia. They damage the host by grudging him of food, causing blood loss in stool, injury to organs, intestinal or lymphatic obstruction and by secreting the toxins [2].

Coccinia indica (family- Cucurbitaceae) is perennial scandent or prostrate plant which is commonly known as bimbu in bengali, kova in malyalam, kundru in punjabi, kundaru in urdu and bhimb in hindi. Leaves are 5-10 cm, long and broad, bright green above, paler beneath, studded and sometimes rough with papillae. Flowers are peduncles and subfiliform. The fresh tab root is thick, tuberous, long tapering, more or less tortuous with a few fibrous rootlets attached to it. Roots are flexible, soft and break with a fibrous fracture. The cork is composed of rows of cells. Fruits are fusiform-ellipsoid, slightly beaked, 2.5-5 by 1.3-2.5 cm marked when

immature with white streaks, bright scarlet when fully riped. Seeds are obovoid, rounded at the apex, slightly papillose, much compressed and yellowish grey [3].

This plant is traditionally used in various diseases like psoriasis, ringworm, itching, small pox, skin diseases, ulcer, scabies, diabetes, asthma, bronchitis, dysentery, vomiting, cough and cold [4]. Literature review indicates that anthelmintic activity of this species has not been clinically evaluated so far. The present paper reports the anthelmintic activity of fruit extract of *Coccinia Indica* against Earthworms.

EXPERIMENTAL SECTION

Plant material

The fresh fruits of *Coccinia indica* were collected from the local market of Bhopal (M.P) and authenticated by Department of Pharmacognosy, RKDF College of Pharmacy (Bhopal), where a voucher specimen has been preserved for future reference.

Extraction of plant drug

The collected fruits were washed, shade dried and converted into moderately coarse powder by mechanical grinder. The powdered material was extracted successively with petroleum ether (40-60°), ethyl acetate, methanol and water by using soxhlet apparatus. The solvent was removed under reduced pressure which yields different successive extracts in the form of semisolid mass.

Collection of worms

Indian adult Earthworms (*Pheretima posthuma*) were collected from the moist soil of Shahpura Lake, Bhopal (M.P). Selected earthworms are 4-6 cm in length and 0.1-0.2 cm in width. The earthworms were washed with normal saline to remove all the faecal matter.

Preparation of test samples

Test samples of the extract were prepared at the concentrations, 25 and 50 mg/ml in distilled water.

Anthelmintic Assay

The anthelmintic activity was performed according to the method of Ghosh *et al* [5]. on adult Indian earthworm *Pheritima posthuma* due to its anatomical and physiological resemblance with the intestinal round worm parasites of human beings. Four earthworms were placed in petri dish and two different concentrations (25 and 50 mg/ml) each of crude extract of petroleum ether, ethyl acetate, methanol and water were poured and observed for paralysis and death. The mean time for paralysis was noted when no movement of any sort could be observed, except when the worm was shaken vigorously and death was concluded when the worms lost their mortality followed with fading away of their body color [6, 7].

Statistical analysis

The result were express as Mean \pm SEM. Statistical analysis was carried out using one way ANOVA followed by student-t test. $P < 0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

Anthelmintic activity of *Coccinia indica* is confirmed by examining the time taken for paralysis (P) and death (D) for *Pheretima posthuma* worms were reported in Table 1. As shown in Table 1, methanolic extract of *Coccinia indica* exhibited anthelmintic activity in dose dependent manner taking shortest time for paralysis (P) and death (D) with 50mg/ml concentration. From the above results, it was observed that methanolic extract was more potent than the other three extracts (petroleum ether, ethyl acetate and water) even though chloroform and ethyl acetate extracts were not accomplished with anthelmintic property when compared with control and standard group. Thus, the activity revealed concentration dependence nature of the different extracts.

Table 1. *In vitro* anthelmintic activity of various extracts of *Coccinia indica*

Groups	Concentration used (mg/ml)	Time taken for paralysis (min.)	Time taken for death (min.)
Control	25	-	-
	50	-	-
Standard	25	21.75±1.652	38.75±0.478
	50	18.5±2.723	23.75±2.213
Chloroform extract	25	23.75±1.702 ^{NS}	28.75±2.175 ^{NS}
	50	22.25±2.175 ^{NS}	23.25±2.562 ^{NS}
Ethyl acetate extract	25	19.25±2.780 ^{NS}	61.75±6.237**
	50	13.5±1.848 ^{NS}	28.25±5.266 ^{NS}
Methanol extract	25	6.0±60.912**	8.25±0.478**
	50	4.5±0.645**	6.5±0.6455**
Aqueous extract	25	56.25±1.250**	74.25±1.493**
	50	46.5±1.705**	62.25±2.016**

Each value represents mean ± SEM (N=6), NS = Non-significant

CONCLUSION

It could be concluded that methanolic extract of *Coccinia indica* showed most potent anthelmintic activity. Further studies are required to identify the actual chemical constituents that are present in the crude extract of this plant which are responsible for anthelmintic activity.

Acknowledgement

The authors, are thankful Dr. A.K. Singhai, Principal, Lakshminarain College of Pharmacy, Bhopal and Mr. Rakesh Punekar, Vice-principal, RKDF College of Pharmacy, Bhopal (M.P.) for regular support for the success of this work.

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