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Evaluation of anthelmintic activity of *Ixora coccinea*

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Abstract

Ixora coccinea Linn. (Rubiaceae) is a bushy, rounded shrub found in subtropical region of Florida. The objective of this work is to evaluate and compare anthelmintic activity of different extracts of *Ixora coccinea* roots. Earthworms were used for anthelmintic activity. Albendazole was used as standard. Time required for paralysis and death of animals were noted for each sample. Chloroform extract show good activity than petroleum ether extract, ethyl acetate extract and methanol extract.

Key-Words: *Pheretima posthuma*, *Ixora coccinea*, Anthelmintic activity.

Introduction

Helminth infections are among the most common infections in man, affecting a large proportion of the world's population. In developing countries they pose a large threat to public health, and contribute to the prevalence of malnutrition, anaemia, eosinophilia, and pneumonia. Although the majority of infections due to worms are generally limited to tropical regions, they can occur to travelers who have visited those areas, and some of them can be developed in temperate climates. Parasitic diseases causing severe morbidity include lymphatic filariasis (a cause of elephantiasis), onchocerciasis (river blindness), and schistosomiasis. These infections can affect most populations in endemic areas with major economic and social consequences¹. The limited availability and affordability of pharmaceutical medicines mean that the world's population depends to a great extent on traditional medical remedies, and some 20,000 species of higher plants are used medicinally throughout the world.

Ixora coccinea Linn. (Rubiaceae) is a bushy, rounded shrub found in subtropical region of Florida. Plant is grown as ornamental plant in India. It is commonly known as Rangon (Bengali), flame of wood (English), Bandhaka (Sanskrit)²⁻³. Flowers contain tannins, lupeol, fatty acids, β -sitosterols, cycloartenol esters and flavonoids⁴⁻⁸. Flowers show cytotoxic, hepatoprotective, antimicrobial activity.

From literature review reveals that no work carried on the root of *Ixora coccinea* for anthelmintic activity.

Objective of study is to evaluate anthelmintic activity of various extracts of root of *Ixora coccinea*.

Material and Methods

Authentication of plant material

The plant specimen was collected from Gangapur dam locality, Nashik (M.S.) identified as *Ixora coccinea* Linn Family Rubiaceae, Voucher no. ARS1, Ref. No. BSI/WC/ Tech./2005/866 dated 22.12.2005 by P. S. N. Rao, Joint Director, Botanical Survey of India, Pune (M.S.).

The plant materials were dried in vacuum oven to 40 °C at 160

Preparation of Plant extracts

Coarsely powdered material successively extracted with petroleum ether (60-80°) and methanol. From dried methanol extract fractionated as chloroform soluble fraction and ethyl acetate soluble fraction. Prepared accurately 40 mg/ml and 80 mg/ml suspensions of petroleum ether, chloroform soluble fraction, ethyl acetate soluble fraction and methanol extract of roots of *Ixora coccinea* in 1% gum acacia solution (1% gum acacia solution prepared in normal saline solution).

Standard used for the activity

Albendazole suspension (Micronized albendazole suspension in the concentration of 20 mg/ml and 40 mg/ml manufactured by Intas Pharma.).

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Animals

Earthworms (*Pheretima posthuma*) of about 5-7 cm long were used for anthelmintic activity, collected from vermiculture plant, Amrutvahini, Sangamner

Method

Earthworms were used for anthelmintic activity, and grouped in to control, standard, PE, CE, ETE and ME, six animals in each group having length 8 ± 1 cm. Albendazole was used as standard, where 1% gum acacia solution in normal saline solution as control. Poured 10 ml of each suspension in separate petri dish. Left six animals in each petridish. Time required for paralysis and death of animals were noted for each sample. Death of the worm was ascertained by transferring it into a beaker containing hot water at 50°C , which stimulated and induced movements if the worm was alive^{9,10}.

Results and Conclusion

The earthworm *Pheretima posthuma* is one of the most important soil invertebrate in promoting soil fertility. Its feeding and burrowing activities break down organic matter and release nutrients and improve aeration, drainage, and aggregation of soil. Anatomy and physiology of *Pheretima posthumawa* is similar to helminths¹¹. Therefore, it was used in order to investigate the activity of *Ixora coccinea*. The results in Table no.1 indicate that the extracts obtained from the roots of *Ixora coccinea* are active against the earthworm. Chloroform soluble fraction and fraction shows good anthelmintic activity than Ethyl acetate soluble, Methanolic and petroleum ether extract. These extract can be used for further isolation of compounds for their anthelmintic activity. This is future plan of our research work.

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Table 1: Anthelmintic activity of extracts of *Ixora coccinea* roots

Test component	Conc. (mg/ml)	Time of paralysis (min)	Time of death (min)
Petroleum ether Extract	40	35.14 \pm 4.26	64.23 \pm 2.32
	80	15.56 \pm 2.32	42.23 \pm 2.31
Chloroform Extract	40	32.52 \pm 3.57	58.23 \pm 1.26
	80	9.21 \pm 2.67	23.67 \pm 2.69
Ethyl acetate Extract	40	23.45 \pm 2.31	56.23 \pm 5.67
	80	11.545 \pm 5.72	28.57 \pm 3.20
Methanol Extract	40	22.23 \pm 6.23	46.57 \pm 2.23
	80	12.06 \pm 2.98	27.32 \pm 2.62
Albendazole suspension	20	11.16 \pm 1.12	16.12 \pm 1.67
	40	08.21 \pm 0.37	12.12 \pm 0.66
Control(Saline Solution)	-	--	--

Results expressed as Mean + SEM from 6 observations