ANTHELMINTIC POTENTIAL OF ROOTS OF *COCCINIA INDICA* Wigh & Arn.,

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Summary

Parasitic diseases caused by helminthes lead to significant health hazards to animals resulting in enormous economic impact. While a number of anthelmintics are currently available, all are encountering resistance and ones with a mode of action are needed. We report herein *In vitro* anthelmintic activities of crude aqueous and alcoholic extracts of the root of *Coccinia Indica* Wigh & Arn., (Cucurbitaceae) were investigated on the earthworms-*Eudrillus Eugeniae*, roundworms - *Ascaris Lumbricoids* and tapeworms-*Taenia Solium*. The alcoholic extract showed better in vitro activity against the parasites than the standard (Albendazole) in the concentration ranging from 25 to 100 mg/ml. The present study reveals that the alcoholic extract showed significant in vitro anthelmintic activity than the aqueous extract.

Keywords: Anthelmintic activity**,** *Coccinia Indica* Wigh & Arn., Ethanolic extract.

Introduction

Gastrointestinal parasites pose a serious threat to the productivity of livestock in developing nations. Despite the fact of development of anthelmintic resistance [1-5] in parasites of high economic significance, chemotherapy is still the most widely used option for the control of helminthes. However, many farmers in the developing countries are unable to afford synthetic anthelmintics for their livestock. In this scenario, the farmers depend on time-honored, centuries-old, affordable and accessible treatments for parasites. *Coccinia Indica* Wigh & Arn., (Cucurbitaceae) commonly known as "Kovai" is valuable medicinal plant in Africa, Arbia, Asia, Pakistan, Malaysia, Australia and India. In India it is widely distributed in Tamilnadu, Andhra, Kerala, etc. Traditionally, *Coccinia Indica* Wigh & Arn has been used for its cathartic, antispasmodic, glycosuria, pityriasis and the roots are used traditionally as an anthelmintic, etc[6]. The present study rationalizes the use of *Coccinia Indica* Wigh & Arn as anthelmintics using standard parasitological procedures.

Materials and Methods

Collection of Plant material

Coccinia Indica Wigh & Arn., roots were collected from Kaveripakkam village, Tamil nadu and identified by Dr. P. Jayaraman , Botanist, plant anatomy research centre (PARC) Chennai. The roots were washed properly with water to remove the mud or dust; initially it was dried for seven days under shade. The dried root were then powdered by means of wood grinder and was sieved through sieve no.60 to get the coarse powder, which was subjected for alcoholic and aqueous extraction.

Animals

The parasites (*Eudrillus Eugeniae, Ascaris Lumbricoids* and *Taenia Solium*) were collected from Tamilnadu agricultural University, Coimbatore, India.

Drugs and chemicals

Albendazole (Pfizer Ltd., Bangalore), Ethanol (PCL, Pune), DMF (PCL, Pune), Saline water (Nurilife, Ahmedabad).

Preparation of extracts [7]

Dried and coarsely powdered roots of *Coccinia Indica* Wigh & Arn., (500 g) was subjected to continuous extraction in a Soxhlet extractor for 18-24 hrs using 100% ethanol and distilled water as solvents. The ethanol was then recovered by vacuum distillation in a rotary vacuum evaporator (Buchler Corp.). The extractive values for ethanol and aqueous extracts were representing a yield of 10.8% and 15.2% respectively.

Anthelmintic Activity [8, 9]

The extracts of roots of *Coccinia Indica* Wigh & Arn., were dissolved in minimum amount of DMF and then volume is adjusted to 20 ml with saline water. All extracts and albendazole solutions were freshly prepared before starting the experiment. Five groups, of six earthworms, tapeworms and roundworms were released into 20 ml of desired formulations as follows; vehicles (5% DMF in normal saline), Albendazole (25, 50 and 100 mg/ml), ethanolic and aqueous extracts of roots of *Coccinia Indica* Wigh & Arn., (25, 50 and 100 mg/ml each) in normal saline containing 5% DMF. Observations were made for the time taken to paralysis and death of individual worms. Time for paralysis was noted when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms were recorded after ascertaining that the worms neither moved when shaken vigorously nor when dipped in warm water (50 °C). Death was concluded when the worms lost their motility followed with fading away of their body colors. All the results were expressed as a mean ± SEM of six animals in each group.

Results and Discussion

The data revealed that ethanolic extracts of roots of the plant *Coccinia Indica* Wigh & Arn., showed significant anthelmintic activity as shown in Table 1. Results are comparable with standard drugs Albendazole. The results show that ethanolic extract(at 100 mg/ml) of roots of *Coccinia Indica* Wigh & Arn., took the least time to cause paralysis (18.00±0.36 min) and death (29.16±0.48 min) of the earthworms, paralysis (22.17±70.52 min) and death (63.67±0.33 min) of the roundworms, paralysis (56.83±0.48 min) and death (169.50±0.76 min) of the tapeworms. The standard drug, Albendazole shows paralysis (12.00±0.58, 16.83±0.48, 46.83±0.48 min) and death after (23.17±0.95, 51.83±0.48, 157.83±0.48 min) for each worm respectively.

Table 1. **Anthelmintic activity of various extracts of roots of *Coccinia Indica***

Treatment	**Dose mg/ml**	**Time of Paralysis(min)* ± SEM**			**Time of Death (min)* ± SEM**		
		Earth worm	***Round worm***	***Tape worm***	***Earth worm***	***Round worm***	***Tape worm***
Alcoholic Extract	25	23.00 ±0.58	42.00 ±0.36	74.00 ±0.58	41.00 ±0.36	97.50 ±0.53	214.00 ±0.58
	50	19.00 ±0.36	31.33 ±0.42	62.00 ±0.26	34.83 ±0.30	71.67 ±.067	197.17 ±0.48
	100	18.00 ±0.36	22.17 ±70.52	56.83 ±0.48	29.16 ±0.48	63.67 ±0.33	169.50 ±0.76
Aqueous Extract	25	29.00 ±0.58	53.17 ±0.60	85.50 ±0.53	51.33 ±0.73	111.83 ±0.58	222.00 ±0.63
	50	26.33 ±0.42	38.67 ±0.67	72.83 ±1.06	41.83 ±0.67	80.00 ±0.58	203.00 ±0.58
	100	22.16 ±0.31	33.33 ±0.67	66.50 ±0.53	37.17 ±0.40	76.00 ±0.58	174.83 ±0.83
Albendazole	25	20.52 ±0.42	38.83 ±0.31	69.00 ±0.37	35.00 ±0.58	89.00 ±0.58	202.83 ±0.31
	50	15.83 ±0.87	20.83 ±1.07	56.00 ±0.37	28.23 ±0.49	62.83 ±0.30	179.00 ±0.37
	100	12.00 ±0.58	16.83 ±0.48	46.83 ±0.48	23.17 ±0.95	51.83 ±0.48	157.83 ±0.48
Control	5% DMF in Normal Saline	--	--	--	--	--	--

*** Six observation** **SEM- Standard Error Mean**

Conclusion

Coccinia Indica Wigh & Arn., was found to possess promising anthelmintic activity. Preliminary phytochemical screening of ethanol extract showed the presence of carbohydrates, glycosids, steroids, triterpenoids, tannins, saponin, flavonoids, proteins and phenolic compounds. These results may lend support for the traditional use of the plant. Further investigation is needed for the phytoconstituents responsible for anthelmintic activity. This study would provide the preliminary scientific evidence for the folkloric, ethno-botanical and traditional use of this species for destruction of helminthes / parasites and eliminates from host body and other health benefits.

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