

Evaluation of *In Vitro* Anthelmintic Activity of *Elaeocarpus Ganitrus*

Mukesh Nenavath*, Srikanth Megavat, Supraja Sama, Divyasri Mukku, Ramanjaneyulu K, Himabindhu J.

Department of Pharmacognosy, Vishnu Institute of Pharmaceutical Education and Research, Narsapur, Medak -502313, Telangana, India.

ABSTRACT

Objective: The present study aimed at evaluation of Anthelmintic activity of leaf extract of *Elaeocarpus Ganitrus* by using in vitro assay. **Method:** Extraction was carried out with Methanol extract by using Soxhlet apparatus. The activity was performed at four different concentrations (25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml) respectively. The study was conducted against Indian adult earthworm *Pheretima posthuma*. In this study Albendazole is used as standard drug. **Result:** The time of paralysis and time of death were studied on Indian adult earthworms *Pheretima posthuma* and the activity was compared with Albendazole as reference standard. **Conclusion:** The methanolic leaf extract of *Elaeocarpus Ganitrus* shows significant effect at highest concentration such as 100 mg/ml on Indian adult earthworm (*Pheretima posthuma*). However further comprehensive chemical and pharmacological investigation should be carried out to isolate the active compounds and appropriate elucidation.

Keywords: Anthelmintic activity, albendazole, *Elaeocarpus Ganitrus* *pheretima posthuma*

Received 2 March 2018

Received in revised form 11 April 2018

Accepted 16 April 2018

*Address for Correspondence:

Mukesh N,

Department of Pharmacognosy, Vishnu Institute of Pharmaceutical Education and Research, Narsapur, Medak -502313, Telangana, India.

E-mail: mukeshrathod346@gmail.com

INTRODUCTION

Anthelmintics are a group of antiparasitic drugs that expel parasitic worms (helminths). They may also be called vermifuges (those that stun) or vermicides (those that kill). Anthelmintics are used to treat helminthiasis and also infected animals. Helminthiasis is among the most important animal health problems, which inflicts heavy production losses. The disease is highly prevalent particularly in developing countries[1]. Commercial anthelmintics have been used for some decades throughout the world to minimize the losses caused by helminth infections. However, the threats of anthelmintic resistance, risk of residue, availability and high cost especially to farmers of low income in developing countries have led to the need of other alternative control methods [2]. Present treatment regimens for these diseases have limitations as the currently used anthelmintic drugs are mainly microfilaricidal, with little effect on the adult worms; hence new drugs are

urgently required. In this regard, natural products have made and continue to make important contributions to this therapeutic area. The drugs currently used for helminthes infections include combinations of DEC (diethylcarbamazine) and Albendazole, Ivermectin and Albendazole or the use of DEC fortified salt [3]. So the objective of the present anthelmintic activity study reveals a new methodology with housefly worms in laboratory conditions that resemble pinworms in human infections. More than half of the population in the world suffers from worm infestations of one or the other. Helminthes also affect domestic animals and livestock causing considerable economic loss [4]. Most of the existing anthelmintics produce side effects such as abdominal pain, loss of appetite, nausea, vomiting, headache and diarrhea [5].

Elaeocarpus Ganitrus (syn: *Elaeocarpus phaericus*; *Elaeocarpaceae*) is a large evergreen broad-leaved tree which grows in the area from the Gangetic Plain to the

foothills of the Himalayas. *Elaeocarpus Ganitrus* is commonly known as Rudraksha tree in India. Rudraksha is used in Ayurveda for mental diseases, epilepsy, asthma, hypertension, arthritis and liver diseases [6].

PLANT COLLECTION AND AUTHENTICATION

The leaves of the plant *Elaeocarpus Ganitrus* were collected in the month of November in Narsapur, Medak District, Telangana, India. The plant was authenticated by M.Malla Reddy (M.Sc, M.Phil in Botany), Retired lecturer in Botany, Vikarabad, Telangana.

MATERIAL USED

In the present study of Albendazole, Carboxy Methyl Cellulose (CMC), Water, Saline were used during investigation of Anthelmintic activity. All the material were used in laboratory grade.

WORM COLLECTION

The Indian adult earthworm *Pheretima posthuma* were collected from water logged areas. Teal and physiological resemblance with the intestinal round worm parasites of human beings [7-9].

PREPARATION OF PLANT EXTRACT

The leaves of *Elaeocarpus Ganitrus* were shade dried and crushed into powder and sieved to get a coarse powder. The powder was subjected to soxhletion using methanol for 72 hours. The solvent was evaporated using rotary evaporator then the extract was used for the evaluation of anthelmintic activity.

PREPARATION OF CONCENTRATIONS

The methanolic extract of *Elaeocarpus Ganitrus* was made into four different concentrations such as 25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml by dissolving in normal saline. Albendazole was used as reference drug by using 0.5% w/v Carboxy Methyl Cellulose (CMC) as a suspending agent.

ANTHELMINTIC ASSAY

The Anthelmintic activity was carried according to standard method [10]. The activity was evaluated in adult earthworm. Test samples of plant extract were prepared at the various concentrations such as 25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml by dissolving in normal saline. Adult earthworms were placed in petridish containing extracts. Albendazole was used as standard drug. Observations were made for the time taken for paralysis was noted when movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms was recorded after ascertaining that worms neither moved when shaken vigorously.

RESULTS AND DISCUSSION

The methanolic extract of *Elaeocarpus Ganitrus* produced a potent Anthelmintic activity against *pheretima posthuma* when compared with standard drug such as Albendazole. This activity was concentration dependent. As the concentration increases the extract produce maximal effect. The highest concentration took less time to paralyze as well as death of earthworm.

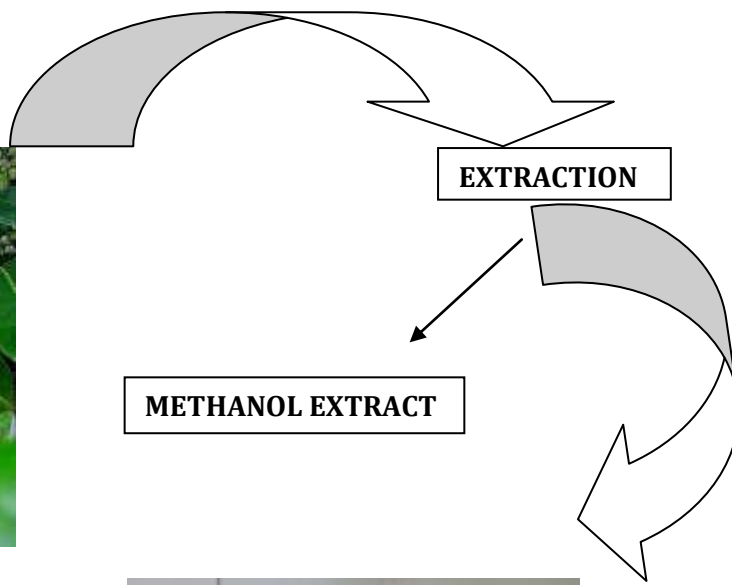
Table 1: Anthelmintic activity of methanolic extract of *Eleocarpus Ganitrus* and standard Albendazole

Extracts	Concentrations(mg/ml)	<i>Pheretima posthuma</i>	
		Paralysis(min)	Death(min)
Methananolic extract	25 mg/ml	30±1.34	40±0.18
	50 mg/ml	25±0.94	34±0.62
	75mg/ml	22±0.90	30±0.57
	100 mg/ml	19±0.61	26±0.99
Albendazole	25 mg/ml	30±0.43	41±1.38
	50 mg/ml	25±0.60	37±0.59
	75mg/ml	21±0.81	35±1.38
	100 mg/ml	20±1.4	33±0.92



Figure 1: Anthelmintic activity of methanolic extract of *Eleocarpus Ganitrus* at concentration of 25 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml

PICTORIAL ABSTRACT



IN VITRO ANTHELMINTIC ACTIVITY against Indian Adult Earthworms (*PHERETIMA POSTHUMA*)



CONCLUSION

From the results, the methanolic extract of *Elaeocarpus Ganitrus* has paralytic effect on Indian earthworm *Pheretima posthuma*. The product of *Eleocarpus Ganitrus* is used as an

Anthelmintic agent. Further, the active constituents responsible for Anthelmintic activity can be explored.

ACKNOWLEDGEMENT

The authors sincerely thankful to our chairman Shri. K. V. Vishnu Raju Garu and our college Vishnu Institute of Pharmaceutical Education and Research Principal Dr. Ramesh Alluri and staff members for towards our project.

REFERENCES

1. D. N. Dhar, R. L. Sharma, G.C.Bansal. Gastrointestinal nematodes in sheep in Kashmir. *Veterinary parasitology*, 11 (1982),pp.271-277.
2. R.L. Baker, L. Reynolds, K.A. Lahlou, J.E. Rege, T. Bekele, M. Mukassa, B. Rey. Prospects of breeding for resistance to endoparasites in small ruminants in Africa. *Proceedings of the Second Conference of Small Ruminant Research Network, Arusha, Tanzania (1992)*.
3. N. Mathew, S. Misra-Bhattacharya, V. Perumal, and K. Muthuswamy, "Antifilarial lead molecules isolated from *Trachyspermum ammi*," *Molecules*, vol. 13, no. 9, pp. 2156–2168, 2008.
4. S. T. V. Raghavamma* and N. RamaRaoChalapathi Institute of Pharmaceutical Sciences, Chalapathi Nagar, Lam, Guntur-522 034, India.
5. Devi K, Indumathy S, Rathinambal V, Uma S, Kavimani S, Balu V. Anthelmintic activity of *astachurna*. *International Journal of Health Research* 2009;2(1):101-103.
6. Dasgupta A, Agarwal SS and Basu DK, Anticonvulsant activity of the mixed fatty acids of *Elaeocarpus Ganitrus* Roxb. (*Rudraksh*). *Indian J. Physiol. Pharmacol.* (1984) 28: 245-246
7. T Ghosh, TK Maity, Bose A, Dash GK. *Indian Journal of Natural Product* 2009;16-19.
8. Tripathi KD. *Essentials of Medical Pharmacology*, 6th edition New Delhi, Jaypee publication; 2008:808.
9. Vigar Z. *Atlas of Medical parasitology*. 2ndEdn. PG publishing House, Singapore, 1984; 216-217.
10. T. Ghosh, TK Maity, Bose A, Dash GK. *Indian Journal of Natural Product* 2009;16-19.