

Anthelmintic Activity of Alcoholic and Aqueous Extract of Fruits of *Terminalia chebula* Retz.

^{1*}S. Dwivedi, ²A. Dwivedi., ³R. Kapadia and ⁴S. Kaul

¹Chordia Institute of Pharmacy, Indore, M.P.-India

²NRI Institute of Pharmaceutical Sciences, Bhopal, M.P.-India

³People Institute of Pharmacy and Research Centre, Bhopal, M.P.-India

⁴Q.C. Dept. Plethico Pvt. Ltd., Indore, M.P.-India

*Corresponding Author:

Sumeet Dwivedi Lecturer, Chordia Institute of Pharmacy

AG-184, Sch. No. 54

Vijay Nagar, Indore M.P.-India

Mob. No. 09893478497

E-mail: sumeet_dwivedi2002@yahoo.com

Issued 01 October 2008

ABSTRACT

The extracts of fruits of *Terminalia chebula* Retz. were screened to evaluate anthelmintic activity in adult earthworm *Pheritima posthuma*. The alcoholic and aqueous extract of the fruits showed significant anthelmintic activity and it was found that the alcoholic extract activity is higher than aqueous extract and the standard drug of albendazole.

Key-Words: *Terminalia chebula* Retz., Anthelmintic activity, Albendazole, Earthworm, Fruits extract.

INTRODUCTION

Terminalia chebula Retz. (Harra) Is a plant of the family combertaceae, commonly called the king of medicine and is always listed in the Ayurveda (Anonymous, 2002). The tree is abundantly grown in North India at an altitude of 1000-3000 ft. It is used to treat digestive disease, urinary disease, heart disease, parasitic infection, fevers, flatulence, constipation, etc., and is an important constituent of triphala formulation (Dwivedi, 2004 and Dwivedi S *et. al.*, 2007). The present study was undertaken to screen the anthelmintic activity of the fruits extracts of *Terminalia chebula* Retz.

MATERIAL AND METHODS

Collection of Plant Materials

The fruits of the *Terminalia chebula* Retz. were collected from the forest of Rewa District of Madhya Pradesh, India during may-june 2007 and then authenticated and confirmed by Dr. S. N. Dwivedi, Department of Botany, Janata PG College, A.P.S. University, Rewa, Madhya Pradesh, India.

Preparation of Extract

The dried fruits of *Terminalia chebula* Retz. was collected, then dried fruits were powdered to get a coarse powder. The dried powder fruits (200 gm) were taken in 1 lit. beaker and alcohol in sufficient quantity was added, then it was kept for maceration for 72 hours. The alcoholic extract obtained was filtered and concentrated on hot plate. Similarly, the aqueous extract of fruits was prepared by macerating coarse powder for 24 hours. And was filtered and concentrated. The fruits extracts were prepared by dissolving 2.5 ml of 1% gum acacia solution prepared in normal saline to give 100mg/ml, 80mg/ml, 60mg/ml, 40mg/ml and 20mg/ml concentration.

Experimental Model

Adult earthworms of the genus and species, *Phertima prosthuma*, were collected (due to their anatomical and physiological resemblance with the intestinal roundworm parasites of human beings) from moist soil and washed out of sand. Five groups of approximately equal size earthworms consisting of six earthworms in each group were used for the present study (Blackmore, 1999).

Standard Drug

Albendazole is taken as standard drug and the concentration of the standard drug was prepared in 1% gum acacia in normal saline to give 100mg/ml, 80mg/ml, 60mg/ml, 40mg/ml and 20mg/ml concentration.

Anthelmintic Investigation

Five groups of approximately equal size earthworms consisting of six earthworms in each group were used for the present study. Each group was treated with one of the following vehicle (1% gum acacia in normal saline), albendazole, alcoholic and aqueous extract (100mg/ml, 80mg/ml, 60mg/ml, 40mg/ml and 20mg/ml concentration). Observations were made for the time taken to paralysis and death of individual worms. Paralysis was said to occur when the worms do not revive even in normal saline. Death was concluded when the worms lost their motility followed with fading away of their body color (Gunasekharan et. al. 2006).

Statistical analysis

All the data obtained was presented as Mean \pm SEM (Table 1) and were analyzed with student- t test.

RESULTS AND DISCUSSION

The alcoholic and aqueous extracts of fruits of *Terminalia chebula* Retz. showed significant anthelmintic activity. The result of anthelmintic activity of alcoholic and aqueous extract of *Terminalia chebula* Retz. on earthworms (*Phertima prosthuma*) were given in Table 1. It was concluded from the study that the alcoholic extract of *Terminalia chebula* Retz. showed marked and potent anthelmintic activity than the aqueous extract and standard drug albendazole. Standard drug albendazole is showing moderate activity while aqueous extract of *Terminalia chebula* Retz. is showing comparatively less anthelmintic activity.

Table 1. Anthelmintic activity of fruit extract of *Terminalia chebula* Retz.

S/N	TREATMENT	CONC. (mg/ml)	PARALYSIS TIME (min.)	DEATH TIME (min.)
1.	Aqueous Extract	100	8.50 \pm 1.86	15.00 \pm 6.14
		80	10.00 \pm 4.30	23.00 \pm 11.27
		60	10.50 \pm 4.50	29.50 \pm 13.14
		40	13.00 \pm 7.77	32.00 \pm 14.04
		20	19.00 \pm 5.12	35.00 \pm 15.85
2.	Alcoholic Extract	100	5.30 \pm 2.66	13.00 \pm 4.12

		80	8.50±1.84	14.50±7.14
		60	9.50±3.84	25.50±11.72
		40	11.00±2.89	28.50±12.47
		20	14.00±6.44	30.50±15.21
3.	Standard Drug (Albendazole)	100	11.00±4.50	22.50±9.01
		80	11.60±4.75	47.60±27.70
		60	14.10±5.77	48.16±19.23
		40	14.30±5.86	48.83±20.00
		20	19.60±8.03	61.33±25.13

Result expressed as Mean ± SEM from six observations.

ACKNOWLEDGEMENT

Authors are thankful to Dr. S. N. Dwivedi for the identification of plants and also thankful to the Principal, Chordia Institute of Pharmacy, Indore M.P. for providing the facility in the institute.

REFERENCES

1. Anonymous, The Ayurvedic Pharmacopoeia of India, first edition, Part- I, Vol.- II, controller publication, Delhi, 2000.
2. Blakemore R, Diversity of exotic earthworms in Australia- A status report. Transactions of the Royal Zoological Society of New South Wales, 1999.
3. Dwivedi S N, Herbal remedies among the tribals of Sidhi District of Madhya Pradesh, Jour. of Econ. Tax. Bot., 20(3), 2004, 675-687.
4. Dwivedi S, Dwivedi S N, Shrivastava S, Dwivedi A, Dwivedi S and Kaul S, Relevance of medicinal herbs used in traditional system of medicine, Farmavita. Net, 2007, Aug.
5. Gunasekhararan R, Divyakant A, Senthilkumar KL, Anthelmintic activity of bark of *Neolamarckia cadamba* Roxb., Ind. J. Nat. Prod., 22(1), 2006, 11-13.