

Anthelmintic Activity Of Leaves Of Erythrina Indica Lam

M Jesupillai, M Palanivelu

Citation

M Jesupillai, M Palanivelu. *Anthelmintic Activity Of Leaves Of Erythrina Indica Lam*. The Internet Journal of Alternative Medicine. 2008 Volume 7 Number 1.

Abstract

Ethanol, chloroform and ethyl acetate extracts of leaves of Erythrina indica (EI) were studied for its anthelmintic property against Pheritima Posthuma. The activity was assessed by the determination of time of paralysis and time of death of earth worms. Piperazine citrate (10mg/kg) was included as standard. All the three extracts exhibited good anthelmintic activity.

INTRODUCTION

Erythrina indica Lam is a middle sized tree belongs to the family Papilionaceae. The Bark, Leaves and Juice are being used in the traditional system of medicine for the treatment of various ailments such as liver trouble, convulsion, arthritis, etc.¹² The present study was aimed to carryout anthelmintic activity of Ethanol, Chloroform and Ethyl acetate extracts leaves of Erythrina indica against Pheritima Posthuma.

MATERIALS AND METHODS

The leaves were collected from Madurai District, Tamilnadu, India and authenticated by Dr. Stephen, Dept. of Botany, The American College, Madurai, Tamilnadu, India. A voucher specimen (EI 1) have been kept in our laboratory for future reference.

PREPARATION OF THE EXTRACT

The coarsely powdered leave materials were extracted exhaustively with Ethanol (95%), Chloroform and Ethyl acetate by using Soxhlet apparatus₃. These extracts were concentrated under reduced pressure and preserved in desiccators until further use.

ANTHELMINTIC ACTIVITY

The method described by Dash et al₅ was employed for evaluating anthelmintic activity. Pheritima posthuma (obtained from horticulture department, Madurai, Tamilnadu, India) of approximately equal size (15 Cm) was divided in to seven groups. Each group consists of six earth worms of same type and treated with any of the following.

Fifty milliliter of test solution containing 50 and 100 mg /ml of test extracts (Ethanol, Chloroform and Ethyl acetate

extract of leaves of Erythrina indica) and Piperazine citrate (10mg/kg).

The Mean time of paralysis and death was recorded in minutes. The paralysis time was recorded when no movement of any sort could be observed except when the worms were shaken vigorously. Time for death of worms were recorded when worms were neither moved while shaken vigorously nor when dipped in warm water (50°C).

Figure 1

Table 1: Anthelmintic effect of leaves of Lam on Pheritima posthuma

Groups	Dose	Time of paralysis (min)	Time of death (min)
Piperazine citrate	10 mg/ml	1.6±0.07*	41±0.16*
Ethanol extract	50 mg/ml	6.1±0.19	69±0.23
	100 mg/ml	3.6±0.47*	57±0.05*
Chloroform extract	50 mg/ml	8.6±1.67	79±1.26
	100 mg/ml	5.7±0.57*	63±0.15*
Ethyl acetate extract	50 mg/ml	13.3±0.67	86±1.05
	100 mg/ml	9.6±0.002*	76±0.09*

Mean ± S.E.M, Student 't' test, *P< 0.001 (Compared to standard) was considered significant.

STATISTICAL ANALYSIS

All the values were represented as Mean ± S.E.M using student 't' test. P< 0.001 (Compared to standard) was considered significant.

RESULT AND DISCUSSION

Ethanol, chloroform and ethyl acetate extracts of leaves of

EI showed significant anthelmintic activity (table.1) at the concentration 50 mg/ml and 100mg/ml against *Pheritima poshthuma*. Activity was found to be increased with dose (shortest time of paralysis and death was observed at 100 mg/ml) and the activity was comparable to the well known anthelmintic agent Piperazine citrate.

Indian earth worms resembles intestinal round worm parasite of human beings.^{6,7,8} Anthelmintic activity of Piperazine citrate mediated through hyper polarization that leads to muscle relaxation and flaccid paralysis.⁹ Tannins produced anthelmintic activity by binding to free protein in the gastrointestinal tract of the host animal,¹⁰ or glycoprotein on the cuticle of the parasite.¹¹ Phenolic compounds (tannins are poly phenolic compounds,¹²) by uncoupling oxidative phosphorylation hinder the energy production in helminth parasites.¹³ Phytochemical analysis of leaves of *Erythrina indica* revealed the presence of tannins as one of the constituent. Anthelmintic property of *Erythrina indica* may due to either or both of above mechanism. The present study conclude the folk claim use of *Erythrina indica* as anthelmintic and required further study to determine the mechanism involved and constituent responsible for anthelmintic property.

CORRESPONDENCE TO

M.Jesupillai, S/O K.Muthuchellam, Kakkoor-623711, Mudukulathur (tk), Ramanathapuram (dt), Tamilnadu, India.

E-mail: Javaharpillai@rediffmail.com

References

1. Nadkarni KM, Nadkarni AK, Indian Materia Medica, Mumbai Popular Prakashan, Vol.I, 1992. p.508.
2. Kiritikar KR, Basu BD, Indian medicinal plants, Lalit Mohan Basu, Dehradun, 2nd Edn, Vol.I, 1991,p.1091.
3. Harborne JB., Phytochemical methods., 3rd Edn., Chapman and Hall, London, 1988, p 91.
4. Dash GK, Mishra B, Panda A, Patro CP and Ganapathy S, Indian J. Nat. Prod. 2003, 19 (3),24.
5. Dash GK, Suresh P, Sahu SK, Kar DM, Ganapathy S and Panda SB, J. Natural Remedies, 2002, 2 (2),182.
6. Vidyarthi RD. A text book of zoology. 14 th ed. New Delhi: S.Chand and Co; 1967.
7. Thorn GW, Adams RD, Braunwald E, Esselbacher KJ, Petersdorf RG. Harrison's's principles of Internal medicine. New York: McGraw Hill Co;1977.
8. Chatterjee KD. Parasitology, Protozoology and Helminthology.6 th ed. Calcutta: In Guha Ray Sree Saraswathy Press Ltd; 1967.
9. Martin RJ. □ – Amino butric acid and Piperazine activated single channel current from *Ascaris suum* body muscle. Br J Pharmacol 1985;84: 445-461.
10. Athnasiaduo S, Kyriazakis I, Jackson F, Coop RL. Direct anthelmintic effect of condensed tannins towards different gastrointestinal nematodes of sheep. In vitro and in vivo studies. Vet parasitol 2001;99:205-219.
11. Thompson DP, Geary TG. The structure and function of helminth surfaces. In: Marr JJ Editor. Biochemistry and Molecular Biology of Parasites. 1st ed. New York: Academic Press; 1995. p. 203-232.
12. Bate- Smith EC. The phenolic constituents of plants and their taxonomic significance, dicotyledons. J Linn Soc Bot 1962;58:95-103.
13. Martin RJ. Mode of action of anthelmintic drugs. Vet J 1997;154:11-34.

Author Information

M. Jesupillai, M.Pharm

Dept. of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy

M. Palanivelu, M.Pharm

Ph.D., Dept. of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy