

Anthelmintic activity of the flower extract of *Couroupita guianensis*

V Rajamanickam, A Rajasekaran, S Darlin quine, M Jesupillai, R Sabitha

Citation

V Rajamanickam, A Rajasekaran, S Darlin quine, M Jesupillai, R Sabitha. *Anthelmintic activity of the flower extract of Couroupita guianensis*. The Internet Journal of Alternative Medicine. 2008 Volume 8 Number 1.

Abstract

The chloroform, acetone and ethanolic flower extracts of *Couroupita guianensis* were evaluated for in vitro anthelmintic activity on adult earth worm, *Pheritima posthuma* (Indian variety). The activity was assessed by worm motility assay which involved determination of time of paralysis and death of worms. The alcoholic extract was found to be more effective than the chloroform and acetone extract and the activity was comparable with the standard drug Piperazine citrate.

INTRODUCTION

Couroupita guianensis is a tree belonging to the family Lecythidaceae. It is native to South India and Malaysia and commonly known as Nagalinga pushpam in Tamil. Various part of the tree have been reported to contain oils, keto steroids, glycosides, couropitone, indirubin, isatin and phenolic substances and also reported to possess anti microbial activity(1-5). The present study was aimed to evaluate anthelmintic activity of flowers of *Couroupita guianensis*.

MATERIALS AND METHODS

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

PREPARATION OF THE EXTRACT

The coarsely powdered flower materials were extracted exhaustively with chloroform, acetone and ethanol using Soxhlet apparatus(6). These extracts were concentrated under reduced pressure and preserved in desiccators until further use.

ANTHELMINTIC ACTIVITY

The method described by Dash et al(7-8) 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 ten groups. Each group consists of six earth

worms of same type and treated with any of the following.

Fifty milliliter of test solution containing 20, 50 and 100 mg /ml of test extracts (Chloroform, acetone and ethanol extracts of flowers of *Couroupita guianensis*) 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).

STATISTICAL ANALYSIS

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

RESULT AND DISCUSSION

Chloroform, acetone and ethanol extracts of flowers of CG showed significant anthelmintic activity (table.1) at the concentration 50 mg/ml and 100mg/ml against *Pheritima posthuma*. 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.

Figure 1

Table. 1: Anthelmintic activity of flowers of on *Pheritima posthuma*

Groups	Dose	Time of paralysis Mean \pm S.E.M (min)	Time of death Mean \pm S.E.M (min)
Piperazine citrate	10 mg/ml	2.9 \pm 0.05*	49 \pm 0.26*
Chloroform extract	20 mg/ml	9.2 \pm 0.19	96 \pm 0.73
	50 mg/ml	7.2 \pm 0.39*	76 \pm 0.63*
	100 mg/ml	4.5 \pm 0.57*	65 \pm 0.09*
Acetone extract	20 mg/ml	11.2 \pm 1.97	103 \pm 1.57
	50 mg/ml	9.2 \pm 1.07*	83 \pm 1.36*
	100 mg/ml	6.7 \pm 0.67*	75 \pm 0.25*
Ethanol extract	20 mg/ml	8.3 \pm 1.17	85 \pm 0.57
	50 mg/ml	6.3 \pm 1.36*	72 \pm 0.36*
	100 mg/ml	5.7 \pm 0.56*	65 \pm 0.72*

Student ‘t’ test, *P< 0.001 (Compared to standard) was considered significant.

Indian earth worms resembles intestinal round worm parasite of human beings(9-11).Phenolic compounds by uncoupling oxidative phosphorylation hinder the energy production in helminth parasites(12). Phytochemical analysis of flowers of CG showed the presence of phenolic substances. Therefore, we conclude that phenolic compounds may be responsible

for the anthelmintic activity of flowers of CG. Further study is in progress to isolate active constituent responsible for the activity.

References

1. The useful plants of India, Publication of information directorate, CSIR, New Delhi.
2. John T. Shimizu et al Phytochemistry,20,1981,1353.
3. Vahanwala S.J et al, Indian Drugs 37 (7), July 2000, 343-345.
4. Anjaneyulu A.S.R et al, Indian J Chem 37 B, 1998, 382-386.
5. Bergman T.J et al, Tetrahedron lett, 1977,2625-2626.
6. Harborne JB., Phytochemical methods., 3rd Edn., Chapman and Hall, London, 1988, p 91.
7. Dash GK, Mishra B, Panda A, Patro CP and Ganapathy S, Indian J. Nat. Prod. 2003, 19 (3),24.
8. Dash GK, Suresh P, Sahu SK, Kar DM, Ganapathy S and Panda SB, J. Natural Remedies, 2002, 2 (2),182.
9. Vidyarthi RD. A text book of zoology. 14 th ed. New Delhi: S.Chand and Co; 1967.
10. Thorn GW, Adams RD, Braunwald E, Esselbacher KJ, Petersdorf RG. Harrison's principles of Internal medicine. New York: McGraw Hill Co;1977.
11. Chatterjee KD. Parasitology, Protozoology and Helminthology.6 th ed. Calcutta: In Guha Ray Sree Saraswathy Press Ltd; 1967.
12. Martin RJ. Mode of action of anthelmintic drugs. Vet J 1997;154:11-34.

Author Information

V. Rajamanickam, MPharm

Dept. of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy, Krishnankoil-626 190. Tamilnadu, India.

A. Rajasekaran, M.Pharm, Ph.D.

K.M.C.H College of Pharmacy, Coimbatore. Tamilnadu, India.

S. Darlin quine, PhD

Govt.Arts College,C. Muttalur,Chidambaram. Chidambaram. Tamilnadu, India.

M. Jesupillai, M.Pharm

Dept. of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy, Krishnankoil-626 190. Tamilnadu, India.

R. Sabitha, M.Pharm

Dept. of Pharmaceutical Chemistry, Arulmigu Kalasalingam College of Pharmacy, Krishnankoil-626 190. Tamilnadu, India.