

ANTHELMINTIC ACTIVITY OF GULMOHAR AND PUDINA PLANTS

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Summary

Aqueous extracts of leaves of *Mentha spicata* Linn. and flowers of *Delonix regia* Rafin. were evaluated for anthelmintic activity on adult Indian earthworms *Pheretima Posthuma*, using piperzaine citrate as reference standard. The results indicated that leaves *Mentha spicata* Linn. was more significant than that of flowers of *Delonix regia* Rafin.

Introduction

The plant of *Mentha spicata* Linn. (Synonym *Mentha spicata* Linn.) belonging to the family Labiatae, Commonly known as Pudina in Hindi [1]. It is a glabrous perennial, 30-90 cm high, indigenous to the north of England, occurring throughout in India especially in gardens, Europe and North Africa [2]. Diosmentin and diosmin have been found in the leaves of *Mentha spicata* Linn. [3]. It is successful local remedy for fever, bronchitis and used as an anthelmintic [4].

The plant of *Delonix regia* Rafin (Synonym *Poinciana regia* Rafin.) belonging to the family caesalpiniaceae commonly known as Flamboyant Flame Tree [5]. It is a beautiful tree which is an erect, large having Flowers are red in simple or branched racemes [6]. It is well known as 'Gulmohar.' in Hindi. The plants of *Delonix regia* Rafin. is used as cathartic, antirheumatic and flatulence [7]. The flowers of *Delonix regia* Rafin have been folk used as an anthelmintic. [8]. However, so far no study has been reported on evaluation of aqueous extract of anthelmintic activity of Pudina and Gulmohar plants.

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Materials and Methods

Plant material

The leaves of *Mentha spicata* Linn. and flowers of *Delonix regia* Rafin. have been collected from the local area of Nandurbar (Maharashtra). This plant is authenticating by Dr. Santosh Tayade, Dept. of Botany, Art's, Science and Commerce College, Lonkheda, Shahada, Dist-Nandurbar (MS).

Preparation of extract

Collected leaves and flowers were dried and crushed to a coarse powder and extracted with macerated with water. Extract was dried over anhydrous sodium sulphate and solvent was removed in vacuum at 40°C by using rotary evaporator (Rotavapour Buchii, Switzerland). The aqueous extract was subjected to preliminary phytochemical testing for the presence of different chemical classes of compounds [9].

Worms Collection and Authentication

Indian earthworm *Pheritima posthuma* (Annelida) were collected from the water logged areas of soils Indian earthworms are identified at Department of Zoology, P.S.G.V.P. Mandal's, Shahada, Maharashtra.

Anthelmintic activity

The Anthelmintic assay was carried as per the method of Ajaiyeoba *et al.* with necessary modifications [10]. The assay was performed on adult Indian earthworm *Pheritima posthuma*, due to its anatomical and physiological resemblance with the intestinal round worm parasite of human being [11, 12]. Because of easy availability, earth worms have been used widely for initial evaluation of anthelmintic compounds *in vitro* [13]. 50 ml. of formulation containing different concentration of crude aqueous extract (10, 25, 50 and 100 mg/ml in distilled water) were prepared and 6 worms of same type were placed in it. 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 worms neither moved when shaken vigorously nor when dipped in warm water (50°C). Piperazine citrate (10 mg/ml) was used as reference standard while distilled water as control.

Statistical Analysis [14, 15]

The data presented as Mean \pm SEM. The activities of both the leaves extracts were compared with the control. All the extracts showed significantly higher duration of paralysis and death. Values of $P < 0.001$ were considered statistically significant.

Results and Discussion

Indigenous drug system can be a source of variety of new drugs, can provide to eliminate worms, but their claimed reputation has to be verified on scientific basis. From Table 1 and 2, both the leaves of *Mentha spicata* Linn. and flowers of *Delonix regia* Rafin. shows good anthelmintic activity. But when we compared both the results, leaves of *Mentha spicata* Linn. gives more potent anthelmintic activity than that of flowers of *Delonix regia* Rafin. Further study regarding isolation and characterization of active principles are responsible for activity and establishment of possible mechanisms of action are currently under progress.

Table No-1 Anthelmintic activity of aqueous extract of *Mentha spicata* Linn. Leaves

Test Substance	Concentration in mg/ml	Time taken for Paralysis (P) and Death (D) of worms in minute	
		<i>Pheritima posthuma</i>	
		P	D
Vehicle	-	-	-
Aqueous extract	25	61.66 ± 0.50*	134.9 ± 0.78*
Aqueous extract	50	28.48 ± 0.19**	55.36 ± 0.52**
Aqueous extract	100	10.04 ± 0.10 ***	13.28 ± 0.31 ***
Piperazine citrate	10	21.56 ± 0.34***	48.70 ± 0.78***

All values are Mean ± SEM; n=6 in each group. Values are significantly different from reference standard (Piperazine citrate) *p<0.05; **p<0.01; ***p<0.001

Table No-2 Anthelmintic activity of aqueous extract of *Delonix regia* Raffin. Flowers.

Test Substance	Concentration in mg/ml	Time taken for Paralysis (P) and Death (D) of worms in minute	
		<i>Pheritima posthuma</i>	
		P	D
Vehicle	-	-	-
Aqueous extract	25	82.70 ± 0.19*	150.1 ± 0.11*
Aqueous extract	50	43.32 ± 0.33**	56.94 ± 0.12**
Aqueous extract	100	11.92 ± 0.31 ***	18.42 ± 0.15***
Piperazine citrate	10	21.56 ± 0.34***	48.70 ± 0.78***

All values are Mean ± SEM; n=6 in each group. Values are significantly different from reference standard (Piperazine citrate) *p<0.05; **p<0.01; ***p<0.001

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References

1. Kirtikar K.R., Basu B.D. **Indian Medicinal Plants**, Vol. III, 2nd Edn., International Book Distributors, Dehradun, 1995, p. 1979-1980.
2. Anonymous, The Wealth of India- A Dictionary of Indian raw material and industrial products Vol. VI, (CSIR) New Delhi, 1950, P 344-346.
3. Joshi S.G. **Medicinal Plants**. Oxford & IBH, Publications, New Delhi, 2004, p.226-227.
4. D'souza M. **Triable Medicine**. Social centre, Ahmednagar, p. 318.
5. Anonymous, The Wealth of India- A Dictionary of Indian raw material and industrial products Vol. III, (CSIR) New Delhi, 1950, P 30.
6. Pullaih T. **Medicinal Plants in India**. Vol-I, Regency publications, New Delhi, 2002, 212-213.
7. Singh V.K., Govin J.N., Hashmi S. and Singh G. **Recent Progress in Medicinal Plants**. Vol-III, Studium Press LLC, USA, p. 238.
8. Khare C.P. **Indian Medicinal Plants-Illustrated Dictionary**. Springer International Publication, New Delhi, 2007, p. 205-206.
9. Kokate C.K: Practical Pharmacognosy, 3rd Edition, Vallabh Prakashan, New Delhi, 1984, P.107-113.
10. Ajaiyeoba E.O., Onocha P.A. and Olarenwaju O.T: *In vitro* anthelmintic properties of *Buchholzia coriacea* and *Gynandropsis gynandra* extract, **Phar. Biol.** 2001, 39 (3), 217-220.
11. Chatterjee K.D: **Parasitology, Protozoology and Helminthology**, Guha Ray Sree Saraswaty press Ltd., Calcutta, 1967, P.168-169.
12. Vigar Z: **Atlas of Medical Parasitology**, P.G. Publishing House, Singapore, 1984 P. 216.
13. Sollmann T: Anthelmintics: Their efficiency as tested on earth worms, **J. Pharmacol. Exp. Ther.** 1918, 12, 129-170.
14. Wayne, W.Daniel. "Biostatistics, A foundation for the analysis in the health sciences"7th Edn., John Wiley and sons (Asia) Pvt. Ltd, Singapore, 2004, P. 312.
15. Gold stain A., "Biostatistics" Macmillan co, New York 1967, P. 70-72.