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 piperazine 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 dioxmin 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 flatulalence [7]. The flowers of Delonix regia Rafin have been folk used as an anthelmintic. [8].However, so for no study has been reported on evaluation of aqueous extract of anthelmentic 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 authentifying by Dr. Santosh Tayade, Dept. of Botany, Art’s, Science and Commerce College, Lonkeda, 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 anthelmentic 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 ± 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

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

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.

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

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

Acknowledgement

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References


