ANTHELMINTIC ACTIVITY OF HELICTERES ISORA LINN. FRUITS EXTRACT.

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ABSTRACT
The present research programme was aimed to investigate the anthelmintic activity of the aqueous extract of Helicteres isora fruit against adult Indian earthworm Pheritimaposthuma. Various concentrations (50 and 100 mg/ml) of aqueous extract evaluated for anthelmintic activity by recording the time required for paralysis and death of worms. Albendazole (20mg/ml) was used as standard. Result indicates aqueous extract of Helicteres isora fruit significantly (p<0.01) exhibited anthelmintic activity in dose dependent manner when compared with standard. The aqueous extract of Helicteres isora fruit have been confirmed to display anthelmintic activity. Further studies are under progress to confirm the possible chemical constituents responsible for activity.

KEY WORDS: Anthelmintic, Helicteres isora linn, Earth worms, Paralysis.

INTRODUCTION
Helicteres isora Linn. (Sterculiaceae), considered as one of the botanical source of Murva in Punjab, commonly called as Mrigshringa in Sanskrit is a large shrub or small tree, occur often gregariously, throughout India and in dry deciduous forests, up to 1500 m on the hill slopes[1] Murva is used in several Ayurvedic formulations as an ingredient for the treatment of intermittent fever, abdominal colic, laxative, urinary diseases, pruritus, diabetes mellitus, epilepsy, piles, typhoid, sterility, rigidity in lower limbs and skin diseases. Helicteres isora Linn. (Sterculiaceae), a large shrub or small tree up to 5 meters in height grows throughout India, in forests as under growth. Root and Bark of Helicteres isora Linn have potential antihyperlipidemic activity.[2] The fruit of Helicteres isora Linn has isorinic acid, rosmarinic
acid glycoside and rosmarinic acid. The antihyperglycemic activity of the fruit of *Helicteres isora* Linn was proved. The literature survey reveals the presence of flavones, triterpenoids, cucurbitacin4, phytosterols, saponins, sugars and phlobatannins.\(^{[3]}\) The root and stem barks are considered to be expectorant, demulcent, astringent and anti-galactagogue and are useful in colic, scabies, empyema, gastropathy, diabetes, diarrhea and dysentery.\(^{[4]}\) The fruits are astringent, acrid, refrigerant, demulcent, constipating, stomachic, vermifuge, vulnerary, haemostatic and urinary astringent. They are useful in vitiated conditions of pitta ophthalmitis, colic, flatulence, diarrhea, dysentery, verminosis, wounds, ulcers, hemorrhages, episitaxis and diabetes.\(^{[5]}\) The plant genus consists of 45 species distributed in warmer regions of hemispheres; four species are reported to occur in India. They are a rich source of medicinal compounds with a wide range of properties, which is also known as Avartani in Ayurveda. Tribals of Wyanad, Malappuram and Palghat districts of Kerala, India, used *H. isora* plant extracts for its anticancer properties.\(^{[6]}\) Traditionally, the root juice and bark of *Helicteres. Isora* Linn were used against emphysema and diabetes.\(^{[7]}\) It is also used as expectorant, astringent, antigalactagogue, to reduce gripping and a cure for snakebite.\(^{[8]}\) *Helicteres isora* Linn fruits are used as astringent, stomachic, vermifuge, vulnerary and useful in bowel gripes.\(^{[9]}\) Cell cycle inhibitory activity of *Helicteres isora* Linn against FT210 cell line was reported by.

**MATERIAL AND METHODS**

**Plant material**

The fruits of *Helicteres Isora* Linn were collected from local area of Daund Dist. Pune, Maharashtra. The herbarium of this plant was identified & authenticated at M.J.S.M. College Shrigonda by Mr. Gore, department of Botany.

**Preparation of extract**

Dried fruits of *Helicteres Isora Linn* were collected. The powder fruit material was extracted with aqueous by maceration for 72 hrs. The extract was dried at low temperature under reduced pressure.

**Worm collection and authentication**

Indian adult earthworm (*Pheritimaposthuma*) was collected from moist soil of the vermiculture plant, Daund, Dist. Pune, and authenticated at M.J.S.M. College Shrigonda by Mr. Gore, department of Botany.
Anthelmintic activity
The anthelmintic activity was performed according to the method of Ghosh et al. on adult Indian earthworm *Pheritimaposthuma* as it has anatomical and physiological resemblance with the intestinal roundworm parasites of human beings. *Pheritimaposthuma* worms are easily available and used as a suitable model for screening anthelmintic drugs. In the 50ml of formulation containing different concentration of aqueous extract (50, 100mg/ml in saline water) and standard (20mg/ml) were prepared and approximately equal size five earthworms were released in each group. Observations were made for the time taken to paralysis or 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 lose their motility followed with fading away of their body color. Albendazole (20mg/ml) was used as standard while normal saline as control.[10]

Statistical Analysis
The statistical analysis of result was carried using One way ANOVA followed by Dennett’s test with P<0.01 indicating the results were significant.

RESULT
The *Helicteres isora* Linn Fruits are performing Anthelmintic activity on earthworm are successfull.

Preparation of extract of fruit of *Helicteres isora* Linn by maceration has yielded.

Table 1:

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Solvent</th>
<th>Colour &amp; Consistency</th>
<th>Percentage Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Water</td>
<td>Brown and Waxy</td>
<td>80.00 %</td>
</tr>
</tbody>
</table>

Effect of Aqueous extracts of fruit of *Helicteres isora* Linn On worms.
Experimental data showed that, the aqueous extract of *Helicteres isora fruit* has anthelmintic activity in dose dependent manner. The shortest time required for paralysis and death was observed with concentration of 100mg/ml. higher concentration of aqueous extract showed maximum effect.

The statistical analysis of result was carried using One way ANOVA followed by Dennett’s test with P<0.01 indicating the results were significant.
Table 2: Anthelmintic activity of Aqueous, fruit extract of *Helicteres isora* Linn.

<table>
<thead>
<tr>
<th>Test substance</th>
<th>Concentration (mg/ml)</th>
<th>Time taken for paralysis(min.)</th>
<th>Time taken for Death(min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Albendazole</td>
<td>20</td>
<td>13.44±0.14</td>
<td>18.48±0.13</td>
</tr>
<tr>
<td>Aqueous extract</td>
<td>50</td>
<td>15.54±0.17</td>
<td>25.43±0.112</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>10.11±0.008</td>
<td>20.11±0.13</td>
</tr>
</tbody>
</table>

Values are expressed as MEAN±SEM, One way ANOVA followed by Dunnett’s test n=5 in each group **P<0.01

ANTHELMINTIC ACTION

“Fig. 1” Standard Albendazole (20mg/100ml)

“Fig. 2” Control Dist Water
DISCUSSION

Adaptation of locally available herb or herbal product in the treatment of human aliment of great advantages as far as cost availability of treatment concern. Hence the present study planned to investigates utility of locally and abundantly available plant that is *Helicteres isora* Linn. In treatment of helminthes infection.

Albendazol by increasing chloride ion conductance of worms muscle membrane produced hyperpolarization and reduced excitability that which led to muscle relaxation and flaccid paralysis the aqueous extract of *Helicteres isora* Linn. Not only showed paralysis but also caused death of worms.\[^{[11]}\]
The result indicates when concentration increases anthelmintic activity increases, and shortest time required for paralysis and death was observed when standard Albendazole solution is compared with aqueous extract of *Helicteres isora* Linn.

Our study is not conclusive about the attribution of the activity to a particular photochemical constituent, therefore further studies are needed to isolate, characterize and screen so as to establish lead molecule.[12]

**CONCLUSION**

The present study has shown that, the aqueous extract of *Helicteres isora fruit* Linn Plant have been confirmed to display anthelmintic activity. Further studies are in progress to identify the possible chemical constituent responsible for anthelmintic potential.

**REFERENCES**