Anthelmintic Activity of Saaranai Chooranam (SC) – A Siddha Herbo-Mineral Formulation

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Abstract
Background: Helminthiasis is a worldwide and one of the common disease of all age groups. The most common infection is through contaminated vegetables, drinking water and raw or undercooked meat. These contaminated foods may contain eggs of nematodes.

Aim of my study: To evaluate the anthelmintic activity of Saaranai Chooranam (SC), a siddha herbo-mineral formulation, which having the plant material Saaranai – Trianthema portulacastrum and Indhuppu – Sodium Chloride Impura. Indhuppu also having the property of anthelmintic & commonly used in worm infestations. The extract showed significant activity than the standard drug albendazole.

Materials and Methods: Worms collection Indian earthworms Pheretima posthuma of nearly equal size (8 to 10 cm) were collected from the water-logged areas.

Procedure: Samples for in vitro study were prepared by dissolving and suspending (0.12, 0.25, 0.5, 1.25 and 2.5g) of hydro alcoholic extract in 50ml of distilled water at different concentrations ranging from 25, 50, 100, 250 and 500mg/ml.

Study Type: In Vitro: Pheretima posthuma was placed in Petri dish containing 10ml of the extract. Each Petri dish was placed with six worms and observed for paralysis and death. The results were expressed in comparison to the standard drug Albendazole (20 mg/ml).

Results: The data were statistically analysed by one-way ANOVA followed by Dennet’s test, and significant p value was considered as <0.05.

Keywords: Saaranai chooranam, Siddha medicine, Pheretima posthuma, Anthelmintic activity.

Introduction
Helminthes infections are most widely found in those human beings particularly in low poverty people and who does not maintain hygienic condition, the source of infection very common due to poor sanitation, malnutrition, crowded living condition. Since our changed life style behaviour, food habits, physical activity etc⁶. In developing and developed countries, helminthes infections are one of the most prevalent diseases.
As per WHO, more than 2 billion people suffered from this infestation. Helminthes are also known as parasitic worms or also referred as intestinal worms even though not all helminthes reside in intestines. Most diseases caused by helminthes are chronic and debilitating in nature, they probably cause more morbidity and greater economic and social deprivation among humans and animals. The parasitic gastroenteritis is caused by mixed infection with several species of stomach and intestinal worms, which results in weakness, loss of appetite, reduced weight and decreased productivity. Helminthes symptoms like retarded cognitive development, iron deficiency anemia, abdominal pains and related health problems are characteristic features of most heavy helminthes infections. Trianthema portulacastrum is a plant belongs to the family Aizoaceae, found almost throughout India as a weed in cultivated and wastelands. The plant is bitter and used as analgesic, stomachic, laxative and serves as alternative cure for bronchitis, heart disease, anemia and inflammation and one more ingredient of indhuppu also having this anthelmintic property.

**Materials and Methods**

**Collection and Authentication of plant**
The required raw drugs for preparation of Saranai Ver were purchased from a well reputed country shop in Nagercoil, Tamilnadu & Raw drugs are identified & Authenticated by the medical botanist & gunapadam experts of Govt siddha medical college & hospital, palayamkottai.

<table>
<thead>
<tr>
<th>S.no</th>
<th>Tamil Name</th>
<th>Botanical Name</th>
<th>Part Used</th>
<th>Phytochemical constituents</th>
<th>ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Saaranai</td>
<td>Trianthema portulacastrum (Aizoaceae)</td>
<td>Root</td>
<td>Ecdysterone, Trianthenol, Leptorusol, Trianthamine, Saponin, Glycosides, Flavonoid (5,2-dihydroxy-7-methoxy-6, 8 dimethyl flavone), Leptorumol (5,7 dihydroxy-6,8 dimethyl chromone)</td>
<td>Haematinic, Anthelmintic, Antioxidant, Hepatoprotective, Laxative, Analgesic, Hypolipidemic</td>
</tr>
<tr>
<td>2</td>
<td>Indhuppu</td>
<td>Sodium Chloride</td>
<td>Salt</td>
<td>-----</td>
<td>Laxative, Diuretic, Carminative, Stomachic</td>
</tr>
</tbody>
</table>

**Purification and Preparation of Saaranai Cooranam**

Saranai ver should be thoroughly washed in water and soaked in cow’s milk. Then it should be steamed in milk. Dried and groun into fine powder, sieved and add same quantity of indhuppu, after purification of indhuppu in buttermilk & store in a clean glass container.

**Preparation of test sample**

Samples for in vitro study were prepared by dissolving and suspending (0.12, 0.25, 0.5, 1.25 and 2.5g) of hydroalcoholic extract in 50ml of distilled water at different concentrations ranging from 25, 50, 100, 250 and 500 mg/ml.

**Anthelmintic Assay**

Worms collection : Indian earthworms Pheretima posthuma of nearly equal size (8 to 10 cm) were collected from the water-logged areas from herbal garden. Process: It was carried out using adult earthworm (Pheretima posthuma) owing to its anatomical and physiological resemblance with the intestinal roundworm parasites of human beings for preliminary evaluation of Anthelmintic activity. The 50ml formulations containing five different concentrations of hydro alcoholic extracts (25,50,100,250 and 500mg/ml in distilled water) were prepared. Pheretima posthuma was placed in Petri dish containing 10ml of the extract.
Each Petri dish was placed with six worms and observed for paralysis and death. The mean time for paralysis was noted when no movement of any sort could be observed, except when the worm is shaken vigorously. The time of death of worms was recorded after ascertaining that the worms neither moved when shaken vigorously nor, when dipped in normal saline followed with fading away of their body color and the results were expressed in comparison to the standard drug Albendazole (20 mg/ml).

**Result**

**Table.2 The Effect of SC on Anthelmintic Activity**

<table>
<thead>
<tr>
<th>Group</th>
<th>Solution</th>
<th>Concentration in mg/dl</th>
<th>Time taken for paralysis</th>
<th>Time taken for death</th>
<th>Time between paralysis and death</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control</td>
<td>0</td>
<td>--</td>
<td>53.15±0.2</td>
<td>11.65±0.1</td>
</tr>
<tr>
<td>2</td>
<td>Albendazole</td>
<td>20</td>
<td>41.5±0.1</td>
<td>53.15±0.2</td>
<td>11.65±0.1</td>
</tr>
<tr>
<td>3</td>
<td>SC of drug</td>
<td>25</td>
<td>52.01±0.1</td>
<td>60.02±0.3</td>
<td>8.01±0.1</td>
</tr>
<tr>
<td>4</td>
<td>SC of drug</td>
<td>50</td>
<td>47.02±0.1</td>
<td>56.18±0.5</td>
<td>9.16±0.4</td>
</tr>
<tr>
<td>5</td>
<td>SC of drug</td>
<td>100</td>
<td>36.13±0.3</td>
<td>41.03±0.2</td>
<td>4.9±0.1</td>
</tr>
<tr>
<td>6</td>
<td>SC of drug</td>
<td>250</td>
<td>20.06±0.4</td>
<td>27.01±01</td>
<td>6.95±0.3</td>
</tr>
<tr>
<td>7</td>
<td>SC of drug</td>
<td>500</td>
<td>14.98±0.1</td>
<td>21.22±0.1</td>
<td>6.24±0</td>
</tr>
</tbody>
</table>

**Figure.1** Indicates paralysing and death time

![Figure 1: Graph showing time between paralysis and death](image)

**Discussion**

From the Figures 1, Albendazole standard (20 mg/ml) showed paralysis time in 41.5±0.1 min and death time in 53.15±0.2 min and In between the paralysis and death time in 11.65±0.1.

In hot extract 25mg showed paralysis time in 52.01±0.1 min and death time in 60.02±0.3 min, In between the paralysis and death time in 8.01±0.1

50mg showed paralysis time in 47.02±0.1 min and death time in 56.18±0.5 min, In between the paralysis and death time in 9.16±0.4

100mg showed paralysis time in 36.13±0.3 min and death time in 41.03±0.2 min, In between the paralysis and death time in 4.9±0.1

250mg showed paralysis time in 20.06±0.4 min and death time in 27.01±0.1 min, In between the paralysis and death time in 6.95±0.3 and 500mg showed paralysis time in 14.98±0.1 min and death time in 21.22±0.1 min, In between the paralysis and death time in 6.24±0

**Conclusion**

From the results, it was concluded that both hot and cold hydroalcoholic extracts of SC have
significant Anthelmintic activity, but hot hydroalcoholic extract shown most significant Anthelmintic activity when compared to cold hydroalcoholic extract. From the results, SC has an Anthelmintic activity have been confirmed as it displayed activity against the worm used in the present study.

Acknowledgements
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