Keywords: Anthelmintic activity, Clitoria ternatea, methanolic extract, ethanolic extract, positive control, negative control.

ABSTRACT

To know the anthelmintic activity of the leaves of the Clitoria ternatea, present study was conducted. For this work the leaves were extracted separately with methanol and ethanol by following maceration method. The methanolic extract (at 10mg/ml and 25mg/ml) showed anthelmintic activity, while the ethanolic extract (at 10mg/ml and 25mg/ml) was devoid of such activity. In addition, the methanolic extract of the leaves of the plant produced anthelmintic activity in a dose dependent manner. Considering the time of paralysis and death of the earthworms, the positive control (piperazine citrate) was more effective than both the concentrations of the methanolic extract. Distilled water with tween 80 (negative control) did not show any anthelmintic activity.

INTRODUCTION

Medicinal plants have served through ages, as a constant source of medicines for the treatment of a variety of diseases. The history of herbal medicine is almost as old as human civilization. The plants are known to provide a rich source of botanical anthelmintic, antibacterial and insecticide\(^1\). Clitoria ternatea is commonly known as Aparajita and belong to the family Fabaceae is cultivated throughout India. Seeds 6-10 smooth yellowish brown.

Preparation of Extracts

The powdered leaves were passed through a sieve (No.40) and then those leaves (10gm) of Clitoria ternatea were extracted by using maceration method. The powdered leaves were macerated in 60ml of methanol for 3 days at room temperature. The resulting extract was filtered through a filter paper (Whatman No.1). The residue was further extracted using the same procedure. The filtrates obtained were combined and then evaporated to dryness under reduced pressure. Instead of using ethanol, the above mentioned procedure was conducted separately for ethanol\(^2\).

Materials and Methods

Plant Material:- The leaves of the plant Clitoria ternatea were collected from Chhend, Rourkela, during December 2011. The sample was authenticated by Dr. Prativa Sahoo, Botanist, Rourkela Autonomous College, Rourkela. The shade dried leaves were powdered and stored in a dessicator until evaporation.

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Anthelmintic Activity

The anthelmintic activity was performed on adult Indian earthworm Pheretima posthuma due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings\(^3\). Indian adult earthworms, collected from moist soil and washed

Some workers have mentioned that the in vitro anthelmintic potency of the aqueous and ethanolic extracts of Clitoria ternatea leaf usising Eisenia fetida\(^4\). Moreover, some other researchers have also found an anthelmintic activity (against Pheretima posthuma ) of the aqueous extract Clitoria ternatea Linn. leaves\(^5\). Considering it as a potential anthelmintic agent, we undertook anthelmintic activity study of the methanolic and ethanolic extracts of the leaves of the Clitoria ternatea.

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Medicinal plants have served through ages, as a constant source of medicines for the treatment of a variety of diseases. The history of herbal medicine is almost as old as human civilization. The plants are known to provide a rich source of botanical anthelmintic, antibacterial and insecticide\(^1\). Clitoria ternatea is commonly known as Aparajita and belong to the family Fabaceae is cultivated throughout India. Seeds 6-10 smooth yellowish brown. Useful parts are roots, leaves and seeds. Seeds are used in abdominal cramps, promote intellect\(^2\). In traditional Ayurvedic medicine, it has been used for centuries as a memory enhancer, nootropic, antistress, anxiolytic, antidepressant, anticonvulsant, tranquilising and sedative agent. In animal tests, the methanolic extract of Clitoria ternatea demonstrated nootropic, anxiolytic, antidepressant, anticonvulsant and antistress activity. The active constituents include tannins, resin, starch, taraxerol and taraxerone\(^3\). The fresh leaves juice combined with ginger juice, effectively control the excessive sweating. It is also used to promote the intellect\(^4\). Its blue flower extracts are used as natural colorant for food, cosmetic and pharmaceutical products as it is nontoxic and has antidual and antioxidant properties. In Southeast Asia, its vivid deep blue flowers are used as a natural blue dye to colour food\(^5\). Some workers have mentioned that the in vitro anthelmintic potency of the aqueous and ethanolic extracts of Clitoria ternatea leaf usising Eisenia fetida\(^4\). Moreover, some other researchers have also found an anthelmintic activity (against Pheretima posthuma ) of the aqueous extract Clitoria ternatea Linn. leaves\(^5\). Considering it as a potential anthelmintic agent, we undertook anthelmintic activity study of the methanolic and ethanolic extracts of the leaves of the Clitoria ternatea.

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with normal saline to remove all fecal matter, were used for anthelmintic activity. Different concentrations of the dried extracts (10-25mg/ml in distilled water with tween 80) were prepared with 10ml of each concentration of ethanolic extract was delivered into a Petridish. Then six worms (same type) were placed in it. Similarly, for each concentration of methanolic extract, 6 worms were used. Time for paralysis was noted when the worm did not revive even in normal saline. Time for death of worms were also recorded when the worms lost their motility followed by fading away of their body colour (when dipped in warm water of 50°C). Piperazine citrate (15mg/ml in distilled water) was used as positive control.

RESULTS

While ethanolic extract did not show any anthelmintic activity, the methanolic extract was found to be effective against the earthworms. In addition, the methanolic extract of Clitoria ternatea produced an anthelmintic activity in a dose dependent manner. Considering time of paralysis and death of earthworms, the positive control (piperazine citrate 15mg/ml) was more potent than both the concentration of the methanolic extract. The negative control (distilled water with tween 80) did not show any activity against earthworms. (Table-1)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Group</th>
<th>Concentration (mg/ml)</th>
<th>Time of paralysis (min)</th>
<th>Time of death (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distilled water</td>
<td>I.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Piperazine citrate</td>
<td>II.</td>
<td>15</td>
<td>97</td>
<td>116</td>
</tr>
<tr>
<td>Ethanolic extract</td>
<td>III.</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>IV.</td>
<td>25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Methanolic extract</td>
<td>V.</td>
<td>10</td>
<td>129</td>
<td>239</td>
</tr>
<tr>
<td></td>
<td>VI.</td>
<td>25</td>
<td>122</td>
<td>192</td>
</tr>
</tbody>
</table>

DISCUSSION

The very few studies on the anthelmintic activity of the plant are available till now. From our study it may be concluded that the methanolic extract possesses anthelmintic activity while the etanolic extract is devoid of such activity.

CONCLUSION

From this study it may be concluded that in addition to leaves, other parts of the same plant should be explored thoroughly (using several extracts) to know the exact role of the plant as far as its different biological activities (e.g., anthelmintic activity, etc.) are concerned.

REFERENCES

2. Ayurvedic Medicinal Plant-Available from en.wikipedia
3. Available from en.wikipedia
4. Herbal cure India-Available from en.wikipedia
5. John and Jacq S Garden-Available from en.wikipedia