In-Vitro Antihelminthic Activity Phytochemical and Paper Chromatographic Methanolic Extract of Whole Plant of Celosia Cristata

P Sravankumar
Dept. of Pharmacology, Scient Institute of Pharmacy, Hyderabad, India.
sravanipc@gmail.com

Abstract - Since ancient times, mankind all over the world mainly depended upon the plant kingdom to meet their all needs in medicines, for alleviating illness. The present study had been carried out to evaluate "invitro antihelminthic activity, phytochemical screening of regional medicinal plants used in state festival of telangana"(Bathukamma)" scientifically named celosia cristata'(amaranthaceae). The present study revealed that result of methanolic extract of celosia cristata (MECC) contains phytochemicals constituents like flavonoids, glycosides, carbohydrates, phenols, tannins, alkaloids etc. Compounds by phytochemical investigation with respect to chemical tests and paper chromatographic techniques. The aqueous extract of flowers showed paralysis and death of earth worms more than standard drug piperazine citrate at both the lowest concentration of 25mg/ml and highest concentration of 100mg/ml, it might be due to presence of remarkable proved antihelminthics, glycosides, flavonoids and sterols present in the extract.

Keywords - Antihelminthic, Celosia cristata, piperazine citrate

1. INTRODUCTION

Herbal medicines have recently attracted much attention as alternative medicines useful for treating or prevent in life style related disorders and relatively very little knowledge is available about their mode of action. helminthes is a general term meaning worm. the helminthes are invertebrates characterized by elongated, flat or round bodies. in medically oriented schemes the flatworms or platyhelminths (platy from the greek root meaning "flat") include flukes and tapeworms. roundworms are nematodes (nemato from the greek root meaning “thread”). the traditional systems of medicine like ayurveda, siddha, and unani have a major role in the treatment of liver ailments.

In the recent years, importance is being given to ayurvedic polyherbal formulations due to their effective therapeutic action and lack of side effects. the wide range of therapeutic potentialities of celosia cristata are mainly due to the presence of various bioactive molecules in flowers, roots, stems, leaves and herbs plant are all ornamental and colourful. recent study was shows flower tops have been used many pharmacological activities, “in-vitro antihelminthic activity, phytochemical screening of regional medicinal plants used in - state festival of Telangana (bathukamma) their anthelmintics potential was studied in the present investigation.

2. PLANT MATERIAL COLLECTION AND AUTHENTIFICATION

The Fresh whole plant of celosia cristata were collected from herbal garden of Ibrahimpatnam near village, Hyderabad in month of November and December-2018. This plant material was identified at Dept. of Botany, V. Chelladurai Res: 476F- First South St. Research Officer- Botany Thiyagaraja Nagar CCRAS. Govt. of India Tirunelveli- 627 011 (Retired). Around 1 kg of fresh whole plan were collected and washed with fresh water. The whole plant parts were then dried under shade and homogenized to get a coarse powder. This powder was stored in an air tight container and used for further solvent extraction. Then the shade dried flower were homogenized to get coarse powder and was stored in an air tight containers.

2.1 Extraction

Dried Whole part of plant celosia cristata powdered (255 gm) materials were of Macerated by 500 ml of methanol. The solution was occasionally stirred at 25 ± 2 °C for 7 days and then filtered using sterilized cotton and Buchner funnel. The filtrate was concentrated to evaporate solvent using rotary evaporator.
At 40 °C and 50 R.p.m. Finally, 12.60 g (yield 6.84%) of dried extract was obtained and this crude extract was used.

2.2 Preliminary Phytochemical Evaluation

The solvent extracts obtained from whole plant parts of Methanol extract of celosia cristata (MECC) were subjected to qualitative phytochemical investigation for identification of various constituents such as saponins, tannins, flavonoids, phenol, anthraquinones cyanogenic glycosides, cardiac glycosides and alkaloids etc using standard procedures.

2.3 Paper Chromatography

Chromatography method was slite changed paper Asending Chromatography of extracts was done by using standard procedures and is mainly used for the detection of the nature of phytoconstituents present. Solvent systems used in Paper Chromatography Different solvent system [Hexane: Acetic acid (9:1)] solvent system I, In solvent system II Hexane: Ethyl acetate: Acetic acid (5:4:1), In solvent system III [Hexane: Ethyl acetate: Acetic acid (4:4:2)]. In solvent system used. After pre-saturation with mobile phase for 20 min for development were used. After the run paper are dried Paper Chromatography place the developing jar containing the iodine were used to detect staining process the bands on the Paper Chromatography. The movement of the active compound was expressed by its retention factor (Rf), values were calculated for different sample.

3. EXPERIMENTAL MODEL

“Pharmacological Screening For In-Vitro Anthelmintic Activity Investigation of Solvent Extract of Flower of Celosia Cristata on Indian Earth Warms (Pheretima Posthuma)”. The Anthelmintic activity was performed according to the method of on adult Indian earthworm Pheretima posthuma as it has anatomical and physiological resemblances with the intestinal roundworm parasite of human beings. Five groups of approximately equal sized Indian earthworms consisting of three earthworms in each group were released into 50 ml of desired formulation.

Table 1: Five groups of Indian earthworms

<table>
<thead>
<tr>
<th>Group</th>
<th>Description</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Normal Control</td>
<td>Normal saline</td>
</tr>
<tr>
<td>II</td>
<td>Standard treated</td>
<td>Piperazine citrate (10mg/ml)</td>
</tr>
<tr>
<td>III</td>
<td>MECC Dose-1</td>
<td>(25 mg/ml) concentrations of MECC</td>
</tr>
<tr>
<td>IV</td>
<td>MECC Dose-2</td>
<td>(50 mg/ml) concentrations of MECC</td>
</tr>
<tr>
<td>V</td>
<td>MECC Dose-3</td>
<td>(100 mg/ml) concentrations of MECC</td>
</tr>
</tbody>
</table>

3. RESULTS AND DISCUSSION

The results of preliminary phytochemical analysis of methanol extract celosia cristata whole plant parts of showed the presence of various phytochemical constituents like Carbohydrates, alkaloids, phenols, tannins, Phytosterols, glycosides, flavonoids, Tannies, Amino acids, Triterpenoids.

Anthelmintic activity of methanol Extract of celosia cristata Whole part of plant confirmed by examining the time taken for paralysis (P) and death (D) for Pheretima posthuma worms were reported. The assay was performed on adult Indian earthworm, Pheretima posthuma due to its anatomical and physiological resemblance with the intestinal roundworm parasite of human beings. Because of easy availability. Piperazine citrate by increasing chloride ion conductance of worm muscle membrane produces hyperpolarisation and reduced excitability that leads to muscle relaxation and flaccid paralysis concentrated MECC exhibited Anthelmintic activity in dose dependent manner taking shortest time for paralysis (P) and death (D) with 100 mg/ml concentration. Hence MECC in its different concentration Shows Anthelmintic activity.

It show shortest time of paralysis (P=25.10±1.30min) and Death (D=48.04±1.50min) in 100mg/ml concentration, while the time of paralysis and death will increase in 50mg/ml concentration (P=44.14±2.40min, D=62±0.05min) and in 25mg/ml concentration (P=53±0.50 min & D=71.11±1.25min) respectively as compare to Piperazine citrate (10mg/ml) used as standard reference (P= 38.6±0.52min & D=49.07±1.44min) and distilled water as control. The predominant effect of Piperazine citrate on worm is to cause a flaccid paralysis those results in expulsion of the worm by peristalsis. Thus MECC & showed significant Anthelmintic activity as compare to standard reference and control.

The Paper chromatography studies A large number of solvent systems were tried to achieve a good resolution. Finally, the solvents hexane: ethyl acetate: acetic acid was used. Paper chromatographic studies of the hexane extract of Selected mixed herbal powder Solvent system I (Hexane: Acetic acid (9:1), 2 spots detected Rf value 0.29,0.35 were visible. In solvent system II (Hexane: Ethyl acetate: Acetic acid (5:4:1), 3 spot detected Rf value 0.10,0.56,0.62.

In solvent system III (Hexane: Ethyl acetate: Acetic acid (4:4:2) 2 spot detected Rf value 0.68, 0.85.
Figure 1: Preliminary phytochemical screening of the MECC

Table 2: Rf values of Paper Chromatography with respect to MECC whole part of plant selected using different Mobile Phase solvent systems

<table>
<thead>
<tr>
<th>S.n o</th>
<th>Solvent system</th>
<th>No of spots (mecc)</th>
<th>Rf values (mecc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hexane: Acetic acid (9:1)</td>
<td>2</td>
<td>0.29, 0.35</td>
</tr>
<tr>
<td>2.</td>
<td>Hexane: Ethyl acetate: Acetic acid (5:4:1)</td>
<td>3</td>
<td>0.10, 0.56, 0.62</td>
</tr>
<tr>
<td>3.</td>
<td>Hexane: Ethyl acetate: Acetic acid (4:4:2)</td>
<td>2</td>
<td>0.68, 0.85</td>
</tr>
</tbody>
</table>

Figure 2: Effect of Methanol extract of *celosia cristata* Whole part of plant on Indian Earth Worms (*Pheritima posthuma*).

Figure 3: Pharmacological screening for *in-vitro* Antihelminthic activity investigation of solvent extract of whole plant parts of *celosia cristata* on indian earth worms (*phereitimaposthuma*).

3. CONCLUSION

The present study revealed that a result of MECC contains preliminary phytochemical analysis of methanol extract *celosia cristata* whole plant parts of showed the presence of various phytochemical constituents like Carbohydrates, alkaloids, phenols, tannins, Phytosterols, glycosides, flavonoids, Tannines, Amino acids, Triterpenoids.

The respect to chemical tests and Paper chromatographic techniques presence may be of glycosides, flavonoids and sterols. So, from the above findings, it was concluded that MECC posses significant wormicidal activity property. It has been carried out to isolate, purify, and characterize the active constituents responsible for the activity of these plants and also to evaluate the exact mechanism of action.
REFERENCES


11. Sravan kumar,P , 2018. Phytochemical and pharmacological overview of celosia cristata and future perspective as potential phyotherapeutic agent, European journal of biomedical and pharmaceutical sciences, volume 5, issue 1, 829-834,


