PRELIMINARY PHYTOCHEMICAL SCREENING AND ACUTE ORAL TOXICITY STUDY OF THE FLOWER OF PHILOGACANTHUS THYRSIFLORUS NEES IN ALBINO MICE

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INTRODUCTION

Philogacanthus thyrsiflorus Nees is found in the sub tropical Himalayas, upper Gangetic plain, Bihar, North Bengal and Assam¹. Philogacanthus thyrsiflorus Nees is a medicinal herb which belongs to Acanthaceae family. It is known as Vasaka in Hindi. An evergreen shrub upto 2.4 m high, branchlets quadrangular, leaves are 13-35 cm long, ob lanceolate, elliptic oblong, acute or acuminate, entire. Flowers are in terminal elongated, thyroid panicles, upto 30 cm long. Capsule is 3.8 cm long, linear clavate. In early spring the plant becomes showy with its dense cylindrical spikes of brick red velvety flower. Calyx lobe is 6.8 mm, bristly haired. Bracts are 6 to 12 mm long. Seeds are disc like. Flowering occurs in the month of February to April². Whole plant is used like Adhatoda vasica in Whooping cough and Menorrhagia. Fruits and leaves are burnt and it is prescribed for fever. The leaves are reported to contain diterpenoid Phlogantholide A. A decoction of leaves is also beneficial in liver and spleen diseases¹. Jaintia tribe of Meghalaya uses fruit and leaf ash of Philogacanthus thyrsiflorus Nees and use it to treat fever¹. Ethanolic extract of Philogacanthus thyrsiflorus Nees has analgesic activity on experimental mice⁴. Philogacanthus thyrsiflorus Nees has antimicrobial activity also⁵. The generation of free radicals has been implicated in the causation of several diseases of known and unknown etiologies such as Rheumatoid Arthritis, Cancer etc., and compounds that can scavenge free radicals have great potential in ameliorating these disease processes. Philogacanthus thyrsiflorus Nees has prominent free radical scavenging property so it may prove as a very good medicinal herb⁶. MATERIALS AND METHOD

Collection of the plant material

The flowers of Philogacanthus thyrsiflorus Nees were collected from the local market in the month of March, 2011 and herbarium was prepared. The herbarium was identified for authenticity by the experts of Department of Botany, Gauhati University, Guwahati, Assam, India. The flowers were washed thoroughly and shade dried.
**Test for Alkaloids**

1. **Hager’s test**
   1 ml of filtrate was taken and 3 ml of Hager’s reagent (Saturated solution of Picric acid) was mixed in it and observed for the formation of a yellow precipitate.
   2. 1 g of powdered sample was boiled with water and 10 ml HCl was dissolved in it. A very small quantity was mixed with picric acid. Coloured precipitate or turbidity indicated the presence of Alkaloids.

**Test for Flavonoids**

1. 1 ml filtrate was mixed with few fragments of Magnesium ribbon and Concentrated HCl was added dropwise. Pink scarlet colour indicated the presence of flavonoids.
2. 1 g of the powdered sample was boiled with 10 ml of distilled water for 5 minutes and filtered while hot. Few drops of 20% NaOH solution was added to 1 ml of the cool filtrate. A change to yellow colour which on addition of acid changes to colourless solution depicted the presence of flavonoids.

**Test for Phenol**

2 ml of filtrate was taken then freshly prepared 1% Ferric chloride and 1 ml of Potassium ferrocyanide was added to it. Formation of bluish green colour indicated the presence of phenol.

**Test for Steroids and Terpenoids**

1. **Salkowski test**
   1 ml of filtrate was mixed with chloroform and filtered. 1 ml of filtrate dissolved in 1 ml of chloroform and filtered. To the filtrate 1 ml of acetic acid was added and then few drops of concentrated Sulphuric acid was run down the side of the test tube. The appearance of pink or pinkish brown ring/colour indicated the presence of terpenoids. The appearance of blue colour indicated the presence of steroids.

**Test for Carbohydrates**

**Benedict’s test**

1 ml of filtrate was mixed with few drops of Benedict’s reagent and boiled in water bath. The appearance of reddish brown precipitate indicated the presence of sugar.

**Acute Oral Toxicity Study**

Acute oral toxicity studies were performed as per OECD 423 guidelines. Albino mice of both sexes of body weight 22-25 gm were taken for this experiment. All the animals were randomly divided into five groups one control group and four treated group containing five animals in each group. Group 1, 2, 3, 4 were orally administered 100, 500, 800, 1000 mg/kg body weight aqueous extract following the method of Lorke et al.,198337. The control group received vehicle alone. The animals were observed for first 72 hours and then 7 days for any sign of behavioral change, mortality and body weight.

**RESULTS**

**Preliminary Phytochemical Analysis**

The results of the phytochemical tests of the flower of *P.thrysiflorus* Nees are shown in Table 1.

**Acute Oral Toxicity Study**

In the acute toxicity test of the aqueous extract of *Phlogacanthus thyrsiflorus* Nees, there was no mortality and no sign of behavioural change or toxicity observed after the oral administration of the aqueous extract upto 1000 mg/kg body weight in mice. There was no significant differences in the body weight of the control and treated animals.

**DISCUSSION**

The present study carried out in the plant sample reveals the presence of many bioactive compounds. The qualitative analysis is shown in Table 1. The curative properties of medicinal plants are perhaps due to the presence of flavonoids, phenols, steroids, terpenoids etc. Thus the preliminary screening tests may be useful in the detection of many bioactive components which may subsequently lead to the drug discovery and development. Medicinal herbs has comparatively less side effects than the chemical ones. *Phlogacanthus thyrsiflorus* Nees was reported to have anti oxidant and free radical scavenging property which predicts that this plant may be used as a remedy for many diseases. As mentioned above this plant has many medicinal property but it is essential that the plant should be non toxic. The aqueous extract does not show any mortality upto 1000 mg/kg body weight. For any plant related studies in animals it is essential that the plant should not have any toxic effect so acute toxicity study is very important to determine the safety level of the plant.

**CONCLUSION**

In the present study we have found that many bioactive components are present in the flowers of *Phlogacanthus thyrsiflorus* Nees mainly tannins, flavonoids, phenol, steroid, terpenoids. The curative properties of this plant may depend mainly on these phytochemicals mentioned above. Further studies are in progress in our laboratory to isolate the active components. Acute Oral Toxicity studies helps in the determination of LD 50. It is very important to determine the safety of the plant material to be used in the animals.

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**REFERENCES**


| TABLE 1: PHYTOCHEMICAL SCREENING OF THE FLOWER OF PHLOGACANTHUS THYRSIFLORUS NEES |
|----------------------------------|-------------|
| PHYTOCHEMICALS                  | RESULTS     |
| 1. Tannin                       | ++          |
| 2. Saponin                      | +           |
| 3. Alkaloid                     | -           |
| 4. Flavonoid                    | ++          |
| 5. Phenol                       | ++          |
| 6. Steroid                      | ++          |
| 7. Terpenoid                    | ++          |
| 8. Carbohydrate                 | -           |

++ = Presence ,+ = Trace, - = Absence

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