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Research Article

**PRELIMINARY PHYTOCHEMICAL ANALYSIS OF VARIOUS
EXTRACTS OF *CROSSANDRA INFUNDIBULIFORMIS*.****S. Selvakumar* and A. Prashanth.**

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Abstract:

Crossandra infundibuliformis belongs to the family of Acanthaceae. It is a plant which is important in South Indian horticulture industry. This plant is found abundantly in tropical areas such as India and Sri Lanka. It grows 2m in height and can withstand high temperature which makes it to survive in very high humidity. Due to its medicinal value, various parts of this plant are used for many types of treatment. Medicinal plant based drugs have the added advantage of being simple effective and offering a broad spectrum of activity with greater emphasis on preventive action. Several phytochemical screening studies have been carried out in different parts of the world. Hence it is of interest to investigate the phytochemical and pharmacological efficacy of the plant is paramount importance it may provide many emerging insights. Therefore, n-hexane, petroleum ether and butyl alcohol extracts of whole of *C. infundibuliformis* have been investigated. The results of the present study reveals that the presence of various secondary metabolites.

Key words: Preventive medicine, Phytochemicals, petroleum ether, Alkaloids, *C. infundibuliformis*.

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INTRODUCTION:

Plants are the source of medication for preventive, curative, protective or promotive purposes [1]. Plant derived foods help in the prevention of lifestyle associated diseases. Several groups of constituents in plants have been identified as potentially health promoting in animal studies, including cholesterol lowering factors, antioxidants, enzyme inducers and others [2]. A thousand years ago an extensive use of plants as medicines have been reported and were initially taken in the form of crude drugs and other herbal formulations. Hence it is of interest to investigate the phytochemical and pharmacological efficacy of the plant is paramount importance it may provide many emerging insights. *Crossandra infundibuliformis* belongs to the family of Acanthaceae. It is a plant which is important in South Indian horticulture industry. This plant is found abundantly in tropical areas such as India and Sri Lanka. It grows 2m in height and can withstand high temperature which makes it to survive in very high humidity. Due to its medicinal value, various parts of this plant are used for many types of treatment. The leaf extract shows significant hepatoprotective effects. It is also found that the *C. infundibuliformis* shows very good anti-corrosive properties. Its antibacterial, antioxidant activity was reported by. Very less work has been done regarding *C. infundibuliformis* phytochemical values. Hence, it is of interest to investigate the preliminary phytochemical analysis of n-hexane, petroleum ether and butyl alcohol extracts of whole plant of *C. infundibuliformis*.

MATERIALS AND METHODS:

Collection of samples

The medicinal plants used for the experiment were whole plant of *C. infundibuliformis* were collected from the local medicinal farms.

Preparation of extracts

500 grams of dried powder of whole plant of *Crossandra infundibuliformis* was packed in separate round bottom flask for sample extraction using different solvents namely ethanol, methanol, chloroform, ethyl acetate and water. The extraction was conducted with 750 ml of each solvent for a period of 24 hours. At the end of the extraction the respective solvents were concentrated under reduced pressure and the crude extracts were stored in refrigerator.

Phytochemical analysis

The extracts prepared were analyzed for the presence of alkaloids, saponins, tannins, steroids, flavonoids, anthraquinone, cardiac glycosides and reducing sugars based on the protocols available in the literature [4-8].

Test for alkaloids

The extract of the crude dry powder of each solvent was evaporated to dryness in boiling water bath. The residues were dissolved in 2 N Hydrochloric acid. The mixture was filtered and the filtrate was divided into three equal portions. One portion was treated with a few drops of Mayer's reagent; one portion was treated with equal amount of Dragendorff's reagent and the third portion was treated with equal amount of Wagner's reagent respectively. The creamish precipitate, the orange precipitate and brown precipitate indicated the presence of respective alkaloids.

Test for saponins

About 0.5 g of the plant extract was shaken with water in a test tube and then heated to boil. Frothing was observed which was taken as a preliminary evidence for the presence of the saponin.

Test for tannins

About 0.5 g of extract was added was in 10 ml of water in a test tube and filtered. A few drops of 0.1% ferric chloride was added and observed for brownish green or blue-black coloration.

Test for steroids

2 ml of acetic anhydride was added to 0.5 g of methanol extract of each sample with 2 ml sulphuric acid. The colour changed from violet to blue or green in some samples indicating the presence of steroids.

Test for flavanoids

2 ml of extract solution was treated with 1.5 ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution few drops of conc. Hydrochloric acid was added and the red colour was observed for flavanoides and orange colour for flavanoids.

Test for anthraquinones

About 0.5 g of extract was taken in a dry test tube and 5 ml of chloroform was added and shaken for 5 min. The extract was filtered and the filtrate shaken with equal volume of 10% of ammonia solution. A pink violet or red colour in the ammonical layer indicates the presence of anthraquinones.

Test for cardiac glycosides

0.2 g of extract was dissolved in 1 ml of glacial acetic acid containing 1 drop of ferric chloride solution. This was then under layered with 1ml of concentrated sulphuric acid. A brown ring obtained at the interface indicated the presence of a deoxy sugar characteristic of cardiac glycosoids.

Test for Proteins

To 2ml of protein solution 1ml of 40% NaOH solution and 1 to 2 drops of 1% CuSO₄ solution was added. A violet color indicated the presence of peptide linkage of the molecule.

Test for Amino Acids

To 2ml of sample was added to 2ml of Ninhydrin reagent and kept in water bath for 20 minutes. Appearance of purple color indicated the presence of amino acids in the sample.

Test for Tri-Terpenoids

5ml of each extract was added to 2ml of chloroform and 3ml of con. H₂SO₄ to form a monolayer of

reddish brown coloration of the interface was showed to form positive result for the terpenoids.

Test for Triple Sugars

To 2 ml of extract 2drops of Molisch's reagent was added and shaken well. 2ml of con. of con. H₂SO₄ was added on the sides of the test tube. A reddish violet ring appeared at the junction of two layers immediately indicated the presence of carbohydrates.

Test for Polyphenols

To 2ml of sample was added to 2ml of ferric chloride solution and kept in the room temperature. Appearance of violet color indicated the presence of phenolic compounds in the sample.

RESULTS AND DISCUSSION:

Table 1: Preliminary phytochemical constituents of *C.infundibuliformis*.

S. no	Phytochemicals	n-Hexane extract	Butyl alcohol extract	Petroleum ether Extract
1.	Flavanoids	++	--	++
2.	Alkaloids	++	++	++
3.	Saponins	--	++	++
4.	Tannins	++	++	--
5.	Amino acids	--	--	--
6.	Proteins	--	--	--
7.	Tri- Terpenoids	--	--	--
8.	Reducing sugars	++	++	--
9.	Cardiac glycosides	++	++	++
10.	Anthroquinones	++	--	++
11.	Steroids	--	++	--
12.	Poly phenols	--	--	--

“++” - Positive, “--” - Negative.

Table:1 shows the phytochemical analysis of n-hexane, butyl alcohol and petroleum ether extracts of whole plant of *C.infundibuliformis*. The n-hexane extract contains alkaloids, flavanoids, saponins, triple sugars, anthroquinones, cardiac glycosides and the remaining secondary metabolites were absent. The alkaloids, flavanoids, saponins, tannins, triple sugars, anthroquinones ,cardiac glycosideswere present in butyl alcohol extract of whole plant of *C.infundibuliformis*.In petroleum ether extract of the plant contains the secondary metabolites such as alkaloids, flavanoids, saponins, tannins and cardiac glycosides. Medical plants are plants containing built in active ingredients familiarized to cure disease and relieve from pain [9]. The use of traditional medicines and medicinal plants in mainly developing countries as remedial agents for the maintenance of health has been broadly observed [10]. Modern-day

pharmacopoeia however contains at least 25% drugs derived from plants and many others, which are synthetic analogues, built on prototype chemical substances isolated from plants. Involvement in medicinal plants as a re-budding health assistance has been fuelled with the rising charges of prescription drugs in the safeguarding of personalized health and well being and the bio prospecting of new plant derived drugs [11].

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