PHYTOCHEMICAL SCREENING OF FIMBRISTYLIS OVATA STEM

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ABSTRACT

Fimbristylis ovata is an erect, perennial grass-like plant with short rhizome. The stems are densely tufted, usually 15 - 40cm tall (occasionally to 60cm. The plant is sometimes harvested from the wild for local medicinal use. Phytochemical screening of stem of fimbristylis ovate was carried out using methonoic extract. The extract was prepared using methanol as a solvent.The extract gives positive test towards presence of carbohydrates, proteins, tannins, alkaloids, chalcones, saponins, flavonoids, phenols and other bioactive chemicals.

Keywords:- *Phytochemicals, screening, methanolic, extract, tannins*

INTRODUCTION

The Cyperaceae are a family of monocotyledonous graminoid flowering plants known as **sedges**, which superficially resemble grassesand rushes. The family is large, with some 5,500 known species described in about 90 genera [1],[2], the largest being the "true sedges" genus *Carex*[3],[4] with over 2,000 species.[5] These species are widely distributed, with the centers of diversity for the group occurring intropical Asia and tropical South America. While sedges may be found growing in almost all environments, many are associated withwetlands, or with poor soils. Ecological communities dominated by sedges are known as sedgelands.

Phytochemicals can be defined as any compound found in plants (the ancient Greek word *phyton* means plant). Phytochemicals are certain non-nutritive plant chemicals which have some disease preventive properties[6]. However, the term phytochemical is often used to describe a diverse range of biologically active compounds found in plants. Phytochemicals provide plants with colour, flavour and natural protection against pests. Numerous epidemiological studies have indicated that a diet rich in fruit and vegetables offers considerable health benefits to humans. Among these benefits are:

1. Reduction of the risk of developing many forms of cancer (lung, prostate, pancreas, bladder and breast).
2. Reduction of the risk of cardiovascular diseases.

The majority of these beneficial effects are at least in part due to the presence of phytochemicals in vegetables and fruits. In this context phytochemicals may be defined as "non-nutrient" chemicals found in plants that have biological activity against chronic diseases[7]. Many cyperaceae members have shown very good properties regarding medicinal usages. We have tried to find out the various phytochemicals present in the stem of fimbristylis ovate plant.

MATERIALS AND METHODS

Fresh stem of Fimbristylis ovata were collected from Nimbhi Village, Ta. Morshi, Dist- Amravati (Central region of India) in the month of Nov – 2016.

Processing of the sample: The stem were washed well using tap water and twice using distilled water. Then the stems were cut into small pieces and it was dried in shade for a period of 15 days, at an ambient temperature of 30˚C. The dried samples were grinded properly using a mortar and pestle and later using a grinder, to obtain the powdered form.

Preparation of extracts: Dried powdered material (20 gm) of sample was extracted with methanol in soxhlet apparatus. The temperature of heating mantle was adjusted to 63ºC for methanolic extraction. The extract was concentrated by gradually evaporating the respective solvent in the same extractor. The concentrated extract was collected in sterile bottles and refrigerated until use [8]

Phytochemical Analysis (Qualitative Analysis):

Test for carbohydrates: Molisch's reagent was added to 2 ml of both extract. A little amount of concentrated sulphuric acid was added to it and allowed to form a layer. The mixture was shaken well, and allowed to stand for few more minutes, which was then diluted by adding 5 ml of distilled water. Purple precipitate ring showed the presence of carbohydrates [9].

Test for proteins: 0.5 ml of each extract was treated with equal volume of 1% sodium hydroxide, to which a few drops of copper sulphate solution was gently added. The solution turning to purple colour, indicated the presence of proteins.

Test for tannins: Gelatin test: 3 gm of both extract was added to 6 ml of distilled solution was added to it. A bluish green colour indicated the presence of tannins.

Test for proteins and amino acids: Ninhydrin Test: To the sample extract, few drops of Ninhydrin reagent was added. After mixing it well, the solution was boiled in water for 2-3 minutes. A bluish-blackish colour indicated the presence of proteins[10].

Test for terpenoids (Salkowski test): 5 ml of each extract was mixed in 2 ml of chloroform, and concentrated H_2SO_4 (3 ml) was carefully added to form a layer. A reddish brown coloration of the inter face was formed to show positive results for the presence of terpenoids.

Test for alkaloids: 0.5 gm of each extract was stirred with 4 ml of 1% dilute hydrochloric acid. It was boiled and filtered.

Dragendorff's test: 1 ml of the filtrate was treated with few drops of Dragendorff's reagent. Orange brown precipitate indicated the presence of alkaloids[11].

Test for Chalcones: 2 ml of Ammonium hydroxide was added to 0.5 g each extract of each sample. Appearance of reddish color showed the presence of chalcones[12].

Test for saponins: Froth test for saponins was used. 1g of the each sample was weighed into a conical flask in which 10ml of sterile distilled water was added and boiled for 5 min. The mixture was filtered and 2.5ml of the filtrate was added to 10ml of sterile distilled water in a test tube. The test tube was stopped and shaken vigorously for about 30 second. It was then allowed to stand for half an hour. Honeycomb froth indicated the presence of saponins[13].

Test for Glycosides: Extracts were treated with sodium nitropruside in pyridine and sodium hydroxide. Formation of pink to blood red colour indicates the presence of cardiac glycosides.

Flavonoids Lead acetate Solution Test: Test solution when treated with few drops of 10% lead acetate solution would results in the formation of yellow precipitate.

Test for Phenols: Ferric chloride test: Extracts were treated with 3-4 drops of ferric chloride solution. Formation of bluish black or dark green colour indicates the presence of phenols.

RESULTS AND DISCUSSION

The stem of Fimbristylis ovata was rich in phytochemical activity, as shown in Table 1.

Table 1: Phytochemical screening of fimbristylis ovata stem

Sr. No.	Test Performed	Results of Methanolic Extract
1	Test for carbohydrates Fehling's Test	+
2	Test for proteins	+
3	Test for tannins Gelatin test:-	++
4	Test for Amino acids Ninhydrin Test	-
5	Test for terpenoids (Salkowski test)	+
6	Test for alkaloids Dragendorff's test	++
7	Test for Chalcones	+
8	Test for Saponins	++

9	Test for Glycosides	+
10	Test for Flavonoids Lead acetate solution test	++
11	Test for Phenols	++

Conclusion:

The methanolic extracts of the stem of fimbristylis ovata revealed the presence of carbohydrates, alkaloids, tannins, chalcones, saponins , proteins, terpenoids where as it shows the negative test towards amino acids.

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