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PHYTOCHEMICAL INVESTIGATION ON *PLECTRANTHUS ROTUNDIFOLIUS LEAVES*

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ABSTRACT

Plectranthus rotundifolius is an aromatic, perennial, semi-succulent plant producing erect or decumbent stems that can be 30-100cm long from a tuberous rootstock. Its leaves are collected and dried. Authenticated the leaves. Dried leaves are extracted with alcohol and water in Soxhlet extractor. The extract subjected to various phytochemical tests. Carbohydrates, Glycosides, Flavanoids, Phenolic compounds, Steroids and Terpenoids are found to be present in *Plectranthus rotundifolius* leaves.

KEYWORDS: *Plectranthus rotundifolius* leaves, phytochemical analysis, Organoleptic characters.

INTRODUCTION

Plants are rich sources of medicinally important constituents. All parts of same plant like Root, Stem, bark, leaves, flowers. etc exhibit same or different medicinal activity depending upon their variation in distribution of active constituents.[1]

Plectranthus rotundifolius, commonly known as Chinese potato in India, is a Perennial herbaceous plant of the Mint family Lamiaceae and is native to the tropical Africa.[2] These are found to be rich in nutrients and have great medicinal properties.[3] The tubers contain several secondary metabolites that are of therapeutic and pharmaceutical importance.[4]

The leaves are used in traditional medicine for purposes such as the treatment of dysentery.[5] The plant is also used to treat blood in the urine and eye disorders. It possibly has anti-cancer properties.[6] In Asia, Chinese potato is reported to be cultivated in Sri Lanka, South India and Java They occur wild in grassland in East Africa region and even at high altitude (2200 m) in Kenya. It grows over a wide range of climatic and edaphic conditions, consequently, morphological characters also vary among populations. It has an aromatic flavour and delicious taste on cooking.[7]

Plectranthus rotundifolius has different names in different localities which include Chinese potato, Sudan potato, country potato, Fra Fra potato, etc. while in Kerala, it is known as 'Koorka'.[8] Leaves have glands or sacs which contain volatile oils.[9] It has an aromatic flavour and delicious taste on cooking.[10]

AIM

The aim of study was to collect the *Plectranthus rotundifolius* leaves and to perform systematic phytochemical analysis on the aqueous- alcoholic extract of dried leaves.

MATERIALS AND METHODS

Green leaves plucked from our campus garden and authenticated at State Medicinal plant board - Kerala by Senior scientist. Organoleptic characters are observed and noted. The leaves picture is incorporated in figure-1. The collected leaves washed in running water to remove any organic foreign particle if present. Dried in shade and pulverized in pulverizer of the laboratory. The coarse powder 07 gm subjected to soxhlet extraction using aqueous alcoholic solvent at 40^0C for six hrs. The obtained extract concentrated by simple evaporation at 40^0C. % yield = (weight of dry extract / weight of plant powder) × 100 determined. Various phytochemical tests performed on the extract as follows;

Fig no:01-*Plectranthus rotundifolius*

Fig no:02-Soxhlet Extraction

Fig no:03-Chemical Test

Test for Carbohydrates

Molisch's Test: 2-3 drops of Molisch's reagent was added to 2 mL of plant extract. Violet ring formation indicates the presence of the carbohydrates.

Fehling's Test: Mix equal volume of Fehling's solution A and B, boil for 1minute and add equal volume of extract. Heat in a boiling water bath for 5-10minutes. Brick red precipitate formation is the indication of presence of carbohydrates.

Benedict's Test: To 5ml of Benedict's reagent, 1ml of extract solution was added and boiled for two minutes and cooled. Red precipitate indicates the presence of carbohydrates.

Test for Proteins

Millon's Test: Few drops of Millon's reagent were added to 2mL of the plant extract. Appearance of white precipitate reports the presence of the proteins.

Biuret Test: To 3ml of extract solution add 4% sodium hydroxide and few drops of 1% copper sulphate solution. Violet colour indicates the presence of proteins.

Ninhydrin Test: 3ml of extract solution was heated with 3 drops of 5% ninhydrin solution ina boiling water bath for 10minutes. Purple colour indicates the presence of proteins.

Test for Glycosides

Legal Test: The extract was dissolved in pyridine and sodium nitroprusside was added to make it alkaline. Pink red to red colour indicates the presence of glycosides.

Killer–killiani Test: To 2ml of extract, glacial acetic acid, one drop of 5% ferric chloride were added. Reddish brown at the junction of two liquid layers. Bluish green colour in the upper layer shows the presence of glycosides.

Borntrager's Test: A few ml of dilute sulphuric acid was added to 3ml of extract solution. It was then heated, filtered. To the solid filtrate, added equal volume of benzene and chloroform. The chloroform layer was then treated with 1ml of ammonia. Red colour indicates the presence of anthraquinone glycosides.

Test for Saponins

Foam Test: The extract was vigorously shaken with water. Persistent foam indicates the presence of saponins.

Test for Flavonoids

Sodium hydroxide Test: To 1mL of plant extract 3mL of 2% of NaOH was added, a yellow color appears. Then add few drops of dilute H_2SO_4 solution to it. It turns colorless showing the presence of the flavonoids.

Lead acetate Test: A fraction of extract was treated few drops of 10% of lead acetate. Yellow precipitate indicates the presence of the flavonoids.

Test for Alkaloids

Dragendroff's Test: A fraction of extract was treated with Dragendroff's reagent and observed for formation of yellow coloured precipitate.

Mayer's Test: 2-3 drops of Mayer's reagent was added to 1 mL of plant extract. White creamy precipitates show the presence of the alkaloids.

Wagner's Test: A fraction of extract was treated with Wagner's reagent. Reddish brown precipitate indicates presence of alkaloids.

Hager's Test: Add few drops of Hager's reagent in to 1mL extract of plant. Yellow precipitates indicate presence of alkaloids.

Test for Tannin

Lead acetate Test: A fraction of extract was treated with few drops of lead acetate solution. White precipitate shows presence of tannins.

Test for Phenolic compounds

Ferric chloride Test: To extract solution add few ml of 5% ferric chloride solution wasadded. Formation of black colour indicates the presence of phenolic compounds.

Folin Ciocalteu Test: Add 2mL of plant extract and 1 mL of Folin Ciocalteu reagent, if blue green color appears then the extract reports the presence of phenols in it.

Test for Steroids

Libermann Burchard's Test: 1mL of plant extract, mixed with 2-3 mL acetic anhydride and conc. sulfuric acid (side by side of the test tube) were added. Violet or green coloration showsthe presence of steroids.

Salkowaski's Test: Take 2 mL of the plant extract and shake with the chloroform, then add con.sulfuric acid from the side wall of the test tube. Red color indicates the presence of steroids.

Test for Terpenoids

Copper acetate Test: To 2mL of the plant extract, 1-2 drops of copper acetate were added in the test tube. Green precipitates suggest the presence of the terpenoids.

RESULTS AND DISCUSSION

Organoleptic characterestics: Colour- Green, Odour- Aromatic,

% yield of crude extract = 5.4 /7.0×100 = 77% w/w

Table No: 01

Sl No	Chemical Tests	+/-
01	Test for Carbohydrates	+
02	Test for Proteins	-
03	Test for Glycosides	++
04	Test for Saponins	-
05	Test for Flavonoids	+++
06	Test for Alkaloids	+
07	Test for Tannin	-
08	Test for Phenolic compounds	+++
09	Test for Steroids	++
10	Test for Terpenoids	+++

CONCLUSION

The yield was good. The important phytoconstituents present in *Plectranthus rotundifolius* leaves are; Carbohydrates, Glycosides, Flavanoids, Phenolic compounds, Steroids and Terpenoids (Table no:-01). Abundant presence of Glycosides, Flavonoids, Phenolic compounds, Steroids and Terpenoids are shown.

The result showed the active constituents abundantly present may exhibit certain medicinal properties. Total quantity of the active constituents have to determine and active constituents should be isolated and should subject for screening of various medicinal properties may lead to medicinally significant led molecule.

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