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Quantitative Estimation of Phytochemical of Coleous Aromaticus (Ajwaeen)

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ABSTRACT: Plants as medicine have been used from thousands of years and continue in use. Among the plants known for medicinal value, the plants of the genus *Coleous* belonging to the family *Lamiaceae* are well known for their therapeutic potential. At the first appearance, *Coleous aromaticus* looks like a green, perennial, shrub, having heart-shaped and leathery leaves with scalloped edges. Estimation of phytochemical plant constituents like alkaloids, saponins, tannins, glycosides, proteins, amino acids, carbohydrates, steroids, phenol in the given plant (*coleous aromaticus*). *Coleous aromaticus* plant is used in asthma, bronchitis, cold, urinary infections, cough, bruised leaves applied to burns, stimulates the function of liver.

KEYWORDS: *Coleous aromaticus*, Therapeutic potential, shrub.

I. INTRODUCTION

Plants are being used as remedies for diseases from ancient times. There is a tremendous increase in the consumption of herbs as an alternate source of medicine to maintain health and improve the quality of life. The chemical components in plants have diverse biological roles and are therefore of therapeutic value. Phytochemicals, the compounds present in plants, are a valuable source of medicine and food. They are known to have various biological activities such as antioxidant, antifungal, antimicrobial, etc. The important bioactive components in plants are usually the secondary metabolites such as alkaloids, flavonoids, tannins and other phenolic compounds. Herbs are being used for the promotion of health, prevention and treatment of diseases in India from ancient times. Phytochemicals are products of plant metabolism, mainly used by the plants for their defense. Hence, attempts have been made to use them for therapeutic purposes. For example, saponins are shown to have beneficial effects on the blood cholesterol, against cancer, immune system and also have antiviral property. Cardiac glycosides play a role in the treatment of failing heart disorders and are known to show beneficial effects on cardiac arrhythmias. Although phytochemicals are said to be useful to the human body, they may have some toxic effects as well, as seen in the case of alkaloids. Alkaloids are reported to have cytotoxic activity which may be used in the treatment of cancer. Hence, it is desirable to know the phytochemical composition of the plant material before testing its efficacy for medicinal purposes.

The family *Lamiaceae* includes aromatic plants which are known to be used in conventional medicine. Various species from the genera "*Ocimum*" have been explored for their medicinal value and in connection with this the quantitative estimation of the phytochemicals has been studied to correlate the concentrations with their biological roles. Reports of various extracts of *Ocimum* species have shown similar phytochemical composition.

Ethanol extract of *O. canum* leaves has shown the presence of carbohydrates, flavonoids, terpenoids and tannins. Chloroform extract of *O. sanctum* leaves contains phenols, tannins, flavonoids, glycosides, saponins, steroids, carbohydrates, amino acids and fats. Preliminary phytochemical screening of hydroalcoholic extracts, of yet another species of *Ocimum*, *O. basilicum*, indicated the presence of flavonoids and phenolic compounds. These studies indicate that there is a variation in the phytochemical composition in extracts with different solvents. The present work aims at evaluating the phytochemical composition, by qualitative and quantitative methods of ethanol.

About phytochemical constituents:

1. Alkaloids: Alkaloids are a group of naturally occurring chemical compounds that mostly contain a basic nitrogen atom.
2. Flavonoid: Flavonoids are a class of plant and fungal secondary metabolites. It is also called bioflavonoids.



3. Tannins: tannins is a astringent polyphenolic biomolecules that binds to and ppt to protein and other organic compound like amino acids and alkaloids.
4. Steroids: A steroidal is a organic compound with four rings arranged in a specific configuration eg. Lipid and cholesterol
5. Saponins: saponins are a class of chemical compounds found in a particular abundance in various plant species
6. Glycosides: glycosides is a molecule in which a sugar bound to another functional group via a glycosidic bond
7. Protein: proteins are large biomolecules or macromolecules consisting of one or more long chain of amino acid residue .
8. Phenol: phenol also known as carbolic acid , is an aromatic organic compound with the molecular formula C_6H_5OH .

II. CLASSIFICATION OF COLEOUS AROMATICUS

Kingdom: plantae
Phylum: Tracheophyta
Class: Magnoliopsida
Order: Lamiales
Family: Lamiaceae
Genus: Coleous
Species: Coleousaromaticus
Scientific name: Coleousaromaticus

III. MATERIALS AND METHODS

Plant materials

Leaves of three plants from the family Lamiaceae - *Coleus aromaticus*, *Pogestemon* were collected from the college campus.

Preparation of crude extracts

Fresh leaves were collected, washed with distilled water, shade dried till it is crisp (approximately 15-20 days) and cut into small pieces. These dried samples were powdered and stored at 4°C until further use. Crude extracts (10% w/v) were made using 3 solvents ethanol. The extracts were filtered through fine muslin cloth and the clear filtrate was evaporated to dryness to form the crude extract and stored at 4°C for further use.

Qualitative analysis

Qualitative analysis was done to identify the presence of the following phytoconstituents; alkaloids, flavonoids, tannins and phenols, steroids and terpenoids, saponins, carbohydrates, glycosides, proteins and amino acid.

1. Tests for Alkaloids:

(a) **Dragondroff test:** plant extract+ methanol (10 ml) then filter .Take 2 ml filtrate + 1% HCL (0.5 ml conc. HCL +49.5ml distilled water) +steam 1 ml filtrate + 6 drops of dragondroff reagent. White cremish ppt observed and it represent absent of alkaloi=
Preperation of Dragondroff's reagent:-- (A) 0.5 gram of bismuth nitrate in to a empty beaker add 10 ml of concentrate HCl. (B) Pour 4 gram of potassium iodide (into another beaker). Add a little water and stire until KI is completely dissolved. Mix (A+B) two solution dark orange colour obtained

(b). **Wagner reagent test:**plant extract+ methanol (10 ml) then Filter.take 2 ml filtrate + 1% HCL (0.5 ml conc. HCL +49.5ml distilled water) +steam 1 ml filtrate add 6 drops of addition of wagner reagent to the filtrate reddish colour ppt is seen that means alkaloid is present.

Preperation of wagner reagent: Dissolve 2 gm of iodine and 6 gm of KI in 100 ml of water.

(c). **Mayers reagent test:** plant extract+ methanol (10 ml) and filter take 2ml filtrate + 1% HCL (0.5 ml conc. HCL +49.5ml distilled water)+steam 1 ml filtrate + 6 drops of addition of mayers reagent to the filtrate yellow colour is obtained that means alkaloid is present.

Preperation of mayers reagent: Dissolving mixture of mercuric chloride 1.36 gram and ki 5gram in water (100 ml) it gives cream coloured ppt.



2. Test for Flavonoid

(a) **Alkaline reagent test:** Extract was treated with 10 % NaOH solution; formation of intense yellow colour indicates presence of Flavonoid.

3. Test for tannins: 200mg plant material+10 ml distilled water and then filter .take 2 ml filtrate+2ml FeCl₃ (neutral) appearance Blue black ppt or dark green ppt indicate the presence of tannins and phenol.

4. Test for saponins: TEST:

200 mg plant extract + 5 ml distilled water. Frothing persistence indicate presence of saponins.

5. Test for cardiac glycosides: (Killer Killani test)

2ml filtrate + 1ml glacial acetic acid+FeCl₃+conc.H₂SO₄. Green blue ppt indicate the presence of glycosides.

6. Test for steroids: TEST: 200 mg plant material+10 ml chloroform +filtrate+2ml acetyl chloride+ conc. H₂SO₄ Bluish green ring indicate presence of steroids.

7. Phenolic test: TEST: 500 mg extract dissolved in 5ml of dist. Water + few drops of neutral 5% FeCl₃. Dark green colour indicate the presence of phenolic compound.

8. Test for proteins: Xanthoproteic test: To 3ml of the sample, add 1ml of concentrated nitric acid and heated for 3min. Then cooled and added 0.5 ml of NaOH. Reddish orange colour indicates the presence of are amino acids.

Result and observatoin of following plant constituent:

Phyto-constituent coleous aromaticus	Result
Alkaloids	-
Flavanoid	+
tannin	+
Steroids	+
Saponins	+
Glycosides	-
protein	-

Quantitative estimation of phytochemical constituents of Coleous aromaticus.

Quantitative estimation : Quantitative precipitation estimation or QPE is a medhdo of approximating the amount of ppt that has fallen at a location or across a region. Maps of the estimated amount of ppt to have fallen over a sertain area and time span are compiled usingseveral different data sources including manual and automatic field observation and radar and satellite data.

1. **Quantitative test for flavanoid: TEST:** 2 gram of the plant sample extracted with 20 ml of 80% aqueous methanol at room temp. The whole solution was filtrate through whatsmann filter paper number125mm.The filtrate was later transferred into a crucible and evaporate into dryness over a waterbath and weighted to a constant weight.

2. **TEST:** In this method 500 mg of crude extract was shake with 50 ml dist. water. For an hour and filtrate was then subjected to .1M FeCl₃ in .1N HCL and potassium ferrocynide 0.008 MAfter which the absorbance within in 10 min 420 nm the conc. of tannins was expressed as tannic acid equivalent in mg/g (TAEMG/G)

Uses of coleous aromaticus :

1. Coleous is used as a hypertensive for health benefit.
2. coleous can lower the intraocular pressure in glaucoma patients.
3. Coleous has anti histamine and anti asthma health benefit.
4. Coleous can promote weight loss in obesity patient.
5. Coleous has anticancer health benefit.
6. Coleous is used to cure HIV.



IV. CONCLUSION

This preliminary phytochemical profiling, both qualitative and quantitative has revealed that the phytochemical composition varies with the solvent used. Hence the phytochemical of interest, it is necessary to use the appropriate solvent for extraction and isolation. This could be the crucial step in further studies on the phytochemical, biological structure-function relationship of the study plants which are already reported to be of therapeutic importance.

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