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Phytochemical Analysis For Various Chemical Constituents of Ocimum sanctum

Chemistry

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ABSTRACT

The present study was aimed to investigate the phytochemical analysis for various chemical constituents of Ocimum Sanctum leaves.The crude powder extract of the leaves of the Ocimum sanctum plant was taken for the study. The Phytochemical analysis of Ocimum sanctum leaves revealed that Carbohydrates, alkaloids, flavonoids, saponine glycosides,cardiac glycosides, anthraquinone glycosides, tannins and steroids were present in Ocimum sanctum leaves .

KEYWORDS:

Phytochemical analysis, Ocimum Sanctum, Solvent extraction

INTRODUCTION:

Plant is man's friend in survival, giving him food and fuel and medicine from the days beyond drawn of civilization [1]. Plant continue to be a major source of medicine, as they have throughout human history [2]. Ocimum sanctum commonly known as Tulsi in Hindi and Holy Basil in English a popular herb was used for this study. The herb is found throughout the semitropical and tropical parts of India. Ocimum sanctum Linn. is a 30-75 cm high erect herb which is grown practically in every part of India. Leaves are 2.5 – 5 cm long and 1.6 – 3.2 cm broad, elliptical, oblong obtuse. Inflorescence is verticillate and flowers are in racemes 15-20 cm long in close whorls. Odour and taste are aromatic and sharp [3]. The use of this herb has been reported in Indian Traditional Systems of Medicine and its modern applications are receiving wide spread attention day by day. It has been observed that tulasi has antioxidant, antibiotic,

antiatherogenic, immunomodulatory, anti-inflammatory, analgesic, antiulcer, chemopreventive and antipyretic properties [4].

Ocimum sanctum is a popular home remedy for many ailments such as wound, bronchitis, liver diseases, catarrhal fever, lumbago, hiccough, ophthalmia, gastric disorders, genitourinary disorders, skin diseases, various forms of poisoning and psychosomatic stress disorders [5, 6].

Tulasi is cultivated for religious and medicinal purposes, and for its essential oil. It is widely known across the Indian subcontinent as a medicinal plant and a herbal tea, commonly used in Ayurveda, and has an important role within the Vaishnava tradition of Hinduism, in which devotees perform worship involving holy basil plants or leaves. This plant is revered as an elixir of life.

Tulasi (Sanskrit:-Surasa) has been used for thousands of years in Ayurveda for its diverse healing properties. It is mentioned in the Charaka Samhita[7] an ancient Ayurvedic text. Tulsi is considered to be an adaptogen,[8] balancing different processes in the body, and helpful for adapting to stress.[9] Marked by its strong aroma and astringent taste, it is regarded in Ayurveda as a kind of "elixir of life" and believed to promote longevity[10]

Tulasi extracts are used in ayurvedic remedies for a variety of ailments. Traditionally, tulasi is taken in many forms: as herbal tea, dried powder, fresh leaf or mixed with ghee. Essential oil extracted from Karpoora tulasi is mostly used for medicinal purposes and in herbal cosmetics.

MATERIALS AND METHODS :

A. Collection of Samples:

Ocimum sanctum plants were collected from Deulgaon Raja region. The botanical identity of the plant was confirmed by assistant prof. N.P.Kakde of Shri Vyankatesh Arts & Commerce College,Deulgaon Raja and brought to the Laboratory.The greenish leaves were washed thoroughly with tap water and shade dried at room temperature.

B. Solvent Extraction:

The leaves of Ocimum sanctum were collected, washed, dried and powder of the leaves was weighed on electronic balance taken into a conical flask and it was treated with sufficient amount of ethanol for 5-6 days.This process was repeated with water. The whole mixture was filtered and filtrate was collected, concentrated in a beaker on a hot plate till the residue was obtained. The extract was collected, labeled and stored for further experimental use[11].

Qualitative analysis for detection of carbohydrates, Alkaloids, cardiac, anthaquinone, saponin glycosides, flavonoids, tannins and steroids:

The above extract and crude dried powder of Ocimum sanctum was subjected to qualitative analysis for presence of various chemical constituents of Ocimum sanctum by performing following chemical tests [11].

Determination of Carbohydrates :

Molisch's Test:

About 200mg of extract was dissolved in 5ml water and filtered. 2ml of above sample solution was taken in a test tube and two drops of Molisch reagent was added to it.Then the solution was slowly poured into a tube containing 2ml of concentrated sulphuric acid and it was observed.

Fehling's Test:

About 1ml of Fehling's solution A and Fehling's solution B were added to 100mg of extract separately.They were heated on boiling water bath for 5min and then observed.

Determination of Alkaloids :

To the 250mg extract,10ml of dilute HCL was added,mixed and filtered.

Hager's Test :

2ml of above filtrate solution was treated with 2ml of picric acid and observed.

Determination of Flavonoids :

Lead Acetate Test:

About 100mg of extract was added with 5ml of lead acetate and observed.

Determination Saponine glycosides :
Foam Test :
200mg of extract was taken and about 15ml of distilled water was added to it and observed.

Determination of cardiac glycosides :
Legal's test :
To 50mg of extract,1ml of pyridine and 1ml of sodium nitro prusside solution were added and observed.

Keller-Kiliani Test :
50mg of extract,2ml of glacial acetic acid and 1ml FeCl3 solution were heated and cooled then it was transferred to a test tube containing 2ml conc.H2SO4 and observed.

Determination of Anthraqinone glycosides :
Borntrager's test:
To the 200g of extract,dil.H2SO4 was added, boiled, filtered and cooled.To the cooled filtrate,3ml of benzene was added .The benzene layer was separated and to it 2 ml of ammonia was added and ammonical layer was observed.

Determination of tannins :
To the 100mg of extract, a) 5ml of 5% w/v FeCl3 solution, b) 5ml acetic acid solution and c) 5ml dil.KMnO4 solution was added and observed.

Determination of steroids :
Salkowski Test :
To the 100mg of extract,2ml of CHCl3,2ml of conc.H2SO4 were added and both the layers were observed for colour.

Liberman Burchard Test
To 200mg of extract,5ml CHCl3,5ml acetic anhydride were added. To this solution two drops of H2SO4 was added from the sides of test tube and observed.

RESULTS AND DISCUSSION :
In this present study the greenish leaves of Ocimum sanctum were collected, authentified,dried, powdered and used for determination of various chemical constituents by performing qualitative chemical tests for the ethanolic extract. The present study revealed that Ocimum sanctum contains various chemical constituents such as carbohydrates, flavanoids, alkaloids, saponin glycosides,cardiac glycosides, anthraquinone glycosides,tannins and steroids. The results were given in Table-1.

Table 1: Phytochemical analysis of Ocimum San

Sr.No.	Chemical Tests	Results
1.	TEST FOR CARBOHYDRATES A. Molish's Test B. Fehling's Test	Positive Positive
2.	TEST FOR ALKALOIDS A. Hager's Test	Positive
3.	TEST FOR FLAVANOIDS A. Lead acetate Test	Positive
4.	TEST FOR SAPONINS A. Foam Test	Positive
5.	TEST FOR CARDIAC GLYCOSIDES A. Legal Test B. Keller-killiani Test	Positive Positive
6.	TEST FOR STEROIDS A. Lieberman burchard test B. Salkowski Test	Positive Negative

CONCLUSION :
The phytochemical analysis for various chemical constituents of Ocimum sanctum leaves indicated the presence of carbohydrate, flavanoids, alkaloids,glycosides,tannins and steroids. This plant contains more metabolites so there is need for further investigations by using some more advanced techniques.

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