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Phytochemical Analysis, Qualitative Analysis Secondary Metabolites of *Cymbopogan citratus* (Lemon Grass)

Annu Bhardwaj*

Author's Affiliation
Assistant Professor, Department of Botany
Sophia Girl's College, Ajmer,
Rajasthan 305001, India

***Corresponding Author:**
Annu Bhardwaj
Assistant Professor, Department of Botany
Sophia Girl's College, Ajmer,
Rajasthan 305001, India

E-mail:
annubhardwaj1622@gmail.com

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Abstract

Medicinal plants play very important role in human life from ancient time. A phytochemical study of medicinal plants helps in identifying primary and secondary metabolites present in plants. Aim of my study helps to analyse phytochemical nature of lemon grass (Cymbopogan citratus).Screening of phytochemicals is one of the perfect way in the detection of bioactive components present in any medicinal plant. It is one of the main discovery in medical sciences Screening of the plants were performed using qualitative methods and helps in the detection secondary metabolites such as tannins, flavonoids, phenolics, saponins, steroids, cardiac glycosides and alkaloids.. The presence of these phytochemicals and secondary metabolites in plants increase their medicinal value.

INTRODUCTION

From ancient times, human beings have been exploring the nature mainly medicinal plants in search of new medicine. Medicinal plants are used by human beings basic health needs. India is the birth place of various systems of indigenous medicines such as Siddha, Ayurveda and Unani. Traditional systems of medicines are prepared from a plant parts. These efficiency of medicinal plants which depends upon the occurrence of primary and secondary metabolites. Medicinal herbs are therapeutic agents indispensable in the primary health care system in maintaining exceptional well-being and health condition.

Cymbopogan citratus known as Indian lemon grass is an important species of Poaceae family commonly found in Southeast Asia, which its origin can be tracked from India. It is a tall, clumped perennial grass growing to a height of 1 m. It is widely known as lemongrass or citronella but due to its distribution, it has several names Cymbopogon originated from the Greek word "kymbe - pogon" meaning boat-beard (due to its flower spike configuration) and citratus (Latin) means lemon-scented leaves.

The leaf blade is linear, tapered at both ends and can grow to a length of 50 cm and width of 1.5 cm18. The plant is used as a folk medicine in many countries since it exhibit antioxidant properties which in turn inhibits the propagation of free radical reactions and protects the human body from disease. The

isolated and identified substances from the leaves are mainly aldehydes, alkaloids, saponin, terpenes, alcohols, ketone, flavonoids and these components have various medicinal properties.

Figure 1: Plant of *Cymbopogan citrates*

PHYTOCHEMICAL ESTIMATION OF LEMON GRASS (QUALITATIVE ESTIMATION)

Material and method-Fresh and healthy leaves *Cymbopogan citratus* of were collected from local areas of Ajmer city. Thereafter the leaves were washed, air-dried at room temperature (28°C) for 4 weeks, after which it was ground to a uniform powder with help of rotator shaker. The dry powder was extracted by reflexed in 100 ml methanol for 24 h with the help of Soxhlet apparatus and then filtered with Whatman filter paper, No. 1 is used to collect the plant extract. The filtrate extract which we obtained from the above process stored at 20°C in a labelled sterile bottles. The obtained plant extract is used for Qualitative estimation of phytochemicals

(a) Test for alkaloids
Wagner's test: About 10 ml of plant extract was taken and few drops of Wagner's reagent was added and the formation of a reddish brown precipitate indicates the presence of alkaloids

(b) Test for Flavanoids
Shinoda Test: 10 ml of extract was added to pinch of magnesium turnings and 1-2 drops of concentrated hydrochloric acid was added. Formation of pink color indicates the presence of Flavanoids.
Lead acetate test: 10 ml of extract was taken and few drops of 10% lead acetate solution were added. Appearance of yellow colour precipitate indicates the presence of flavonoids.

(c) Test for Phenols and Tannins
Lead acetate test: 10 ml of extract was taken and 0.5 ml of 1% lead acetate solution was added and the formation of precipitate indicates the presence of tannins and phenolic compounds.
Ferric chloride test: Five mg of extract was taken and 0.5 ml of 5% ferric chloride was added. The development of dark bluish black color indicates the presence of tannins
.

Sodium hydroxide test: Five ml of extract was dissolved in 0.5 ml of 20% sulphuric acid solution. Followed by addition of few drops of aqueous sodium hydroxide solution, it turns blue which indicates the presence of phenols.

(d) Test for steroids and sterols
Salkowski's test: Five ml of extract was dissolved in 2 ml of chloroform and equal volume of concentrated sulphuric acid was added along the sides of the test tube. The upper layer turns red and lower layer turns yellow with green fluorescence, indicating the presence of the steroids.

(e) Test for Carbohydrates
Fehling's test: Five ml of Fehling's solution was added to 0.5 ml of extract and boiled in a water bath. The formation of yellow or red precipitate indicates the presence of reducing power.
Benedict's test: Five ml of Benedict's solution was added to 0.5 ml of extract and boiled in water bath. The appearance of red or yellow or green precipitate indicates the presence of reducing sugars.

(f) Test for Saponins
Foam test: 0.5 mg of extract was diluted with 20 ml distilled water and shaken well in a graduated cylinder for 15 min. The formation of foam to a length of 1cm indicated the presence of saponins and steroids.

(g) Test for Glycosides
Glycoside test: 0.l mg of extract was dissolved in 1 ml of water and then aqueous NaOH solution was added. Formation of yellow color indicates the presence of glycosides.

(h) Test for Protein & amino acids
Biuret test: To 0.5 mg of extract equal volume of 40% NaOH solution and two drops of 1% copper sulphate solution was added. The appearance of violet colour indicates the presence of protein.
Ninhydrin test: About 0.5 mg of extract was taken and 2 drops of freshly prepared 0.2% ninhydrin reagent was added and heated. The appearance of pink or purple colour indicates the presence of proteins, peptides or amino acids.

Table 1: Phytochemical Evaluation of *Cymbopogan citrates*

S. No	Phytochemical	Results
1	Tannins	+
2	Glycosides	+
3	Alkaloids	+
4	Flavanoids	+
5	Terpenoids	+
6	Steroids	+
7	Saponins	+
8	Phenol	+
10	Carbohydrate	+
11.	Protein and Amino acids	+

CONCLUSION

The study of Phytochemical of *Cymbopogan citratus* conclude that *Cymbopogan citratus* is one of the most important plant having therauptic uses. The phytochemical study reveals that plant contain many phytochemicals such as alkaloids, flavonoids etc. Qualitative estimation of this plant shows that plant contain many bioactive compounds which make this plant a very important and phytochemical study offer the platform of using *Cymbopogan citratus* as a herbal alternative for various diseases.

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