

# Phytochemical Screening and Environmental Benefits of Tulsi Plant

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**Abstract:-** *Ocimum* Species generally known as Tulsi, is an herbaceous perennial belongs to family Lamiaceae and is considered one of the most important sources of herbal medicine. Objective of the studies was to screen phytochemical component and environmental benefits. The study reveals that various secondary metabolites such as carbohydrates, Protein, alkaloids, flavanoids, glycosides, Terpenoids and phenol are present in tulsi leaf. Alkaloids, glycosides, flavonoids are antibiotic principles of plants and these antibiotic principles are actually defense mechanism of the plant against pathogen.

Tulsi plant produces anti-inflammatory and anti-bacterial compounds which helps combat on pollution. Tulsi help in lowering the pollution levels in air and minimizes the effect of air pollution on environment altogether. Tulsi gives out nascent oxygen which absorbs harmful gases like CO, CO<sub>2</sub>, and SO<sub>2</sub> from the environment. Its wellness benefits are known both for human health and environment. In Hinduism this plant is considered holy and is venerated and worshiped in Indian household. The name of Tulsi plant has come also in Holy Quraan in the name of Reihaan.

**Keywords:-** *Lamiaceae, Secondary metabolites, Antioxidant, Environment.*

## I. INTRODUCTION

*Ocimum* species generally known as Tulsi is an herbaceous perennial belongs to family Lamiaceae and is considered as one of the most important sources of herbal medicine. (Borahand Biswas 2018)

Medicinal plants have been in use by mankind since time immortal to prevent and manage diseases and with the progress of modern pharmaceutical, the bioactive compounds derived from these plants are being used as

major components in the contemporary medicines. Among these, the secondary metabolites obtained from the genus '*Ocimum*' holds great value for agricultural as well as commercially important industries like pharmaceuticals, culinary and cosmetics due to their high performing metabolites.

Traditionally, Tulsi is used in different forms, aqueous extracts from the leaves (fresh or dried as powder) are used in herbal teas or mixed with other herbs or honey to enhance the medicinal value. Traditional uses of Tulsi aqueous extract include the treatment of different types of poisoning, stomach-ache, common colds, headaches, malaria, inflammation, and heart disease (Pattanayak et al 2010). Oils extracted from the leaves and inflorescence of Tulsi have been claimed to have numerous useful properties, including as expectorants, analgesic, anti-emetics, hypoglycemic, hepatoprotective, hypotensive, hypolipidemic and immunomodulatory agents (Singh et al 2010).

## II. MATERIALS & METHODS

### ➤ *Collection of Plant material*

Tulsi leaves were collected from different sites of Munger District (Bihar). It was washed with tap water and then sterile water.

### ➤ *Preparation of Extract*

Leaves were dried and made powder through grinder. Now 50 grams of powder was taken in thimble of soxhlet apparatus using water as a solvent, It was concentrated by evaporation and it was kept in cocktail in the refrigerator till further analysis.

## III. OBSERVATION

### ➤ *Phytochemical Analysis (Qualitative)*

**Table 1 Phytochemical Analysis (Qualitative)**

Test	Experiment	Observation	Inference
Protein Test	[1] 2 ml Biuret reagent + 2ml extract in a testtube + mixed and Heated	It turned violet – red	May be protein
	[2] 2ml extract + 4ml Millon’s reagent in a testtube + mixed heated	It turned pink colour	Protein confirmed
Carbo- Hydrate Test	[1] 1ml Fehling sol”A + 1ml Fehling Sol”B +2ml extract in test tube + mixed and heated	It turned red colour	May be sugar
	[2] 2ml Benedict reagent + 2ml extract in a testtube + mixed and heated	It turned brick redcolour	Sugar confirmed
AlkaloidTest	[1] 2ml extract + 2ml of 1% Hcl in a test tube + Heat + Mayer’s reagent	It turned white	May be alkaloid
	[2] 2ml extract + 2ml of 1% Hcl in a test tube +Heat + Wagner’s reagent	It also turned white	alkaloid confirmed
FlavanoidTest	[1] 2ml extract + Little amount of Magnesiumand conc Hcl dropwise	After few minute itturned pink colour	May be flavonoid
	[2] 0.5ml extract + 2ml of 2% NaOH Sol”	It turned yellow colour and become colourless after addition of dil. Hcl in Little amount	Flavanoidconfirmed
GlycosideTest	[1] 2ml extract + 2ml chlorofom + 2ml conc. H <sub>2</sub> SO <sub>4</sub> in a test tube + shaked gently	Reddish brown colour was appeared	May be glycosides
	[2] 2ml extract + 2ml chloroform + 2ml acetic acid in a test tube + cooled + conc. H <sub>2</sub> SO <sub>4</sub> infew drop	Colour changed from violet to greenishblue	Glycosidesconfirmed
TerpenoidTest	2ml extract + 2ml chloroform a test tube +warmed till dryness + 2ml conc. H <sub>2</sub> SO <sub>4</sub> + Heated 3 mins.	It turned grey colour	TerpenoidPresent
Phenol Test	2ml alcohol + 2 drops Ferric chloride + 1ml of extract	It turned black colour	Phenol Present

#### IV. DISCUSSION

Study of phytochemical analysis concluded that many secondary metabolites such as proteins, carbohydrates, alkaloids, flavonoids, glycosides, terpenoids, phenol etc. are present in extract of tulsi leaf. The phytochemical constituents such as a alkaloids, flavonoids, phenols and several other compound of plants serve a defense mechanism against predation by many insects and microorganism (Bonjar et al 2004) Glycosides can acts as cardio stimulants in cases of cardial failure (sood et al 2005) flavonoids are responsible for antioxidant and antiimmuno stimulatory properties. The Tulsi plants are available everywhere and they pose no danger to the living organism, the environment and the consumers and hence greatly helpful for living organism.

#### V. CONCLUSION

The results confirm the use of Tulsi plant (*O. sanctum*) as traditional medicinal properties with antimicrobial and antioxidant properties. It is more beneficial to use Tulsi as compare to allopathic medicine.

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