

# Preparation And Standardization of Tulsi Leaf Tablet (Ocimum Sanctum Linn.)

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**Abstract—** *Tulsi is a Sanskrit word which means "matchless one". Each part of the plant i.e stem, leaves, root, flower, seed or whole plant is known for medicinal properties, therefor ocimum sanctum is regarded as "QUEEN OF HERB". Several medicinal properties have been attributed to the Tulsi plant not only in Ayurveda and Siddha but also in Greek, Roman and Unani systems of medicine. Herbs used within Ayurveda, Tulsi (Ocimum sanctum Linn) is most excellent, has been proved for its beneficial effect. Ayurveda is a science of life from the ancient time, Ayurvedic formulations are safe and effective but adulteration of lower cost material in it reduces the quality of the drug, hence the standardization of herbal drugs is necessary. Tulsi tablets are an Ayurvedic formulation used for cold and cough. Standardization of Tulsi tablet was performed for determination of its standard parameters as per monograph to maintain the safety, uniformity and quality production of the product.*

**Index Terms—** *Ocimum Sanctum, Tulsi tablet, standardisation.*

## I. INTRODUCTION

Ocimum sanctum in English Holy Basil, Tulsi (in Urdu) belongs to plant family Lamiaceae. It has made important contribution to the field of science from ancient times as also to modern research due to its large number of medicinal properties. [9] 30-60 cm High much branched, annual herb, found throughout the country. Tulsi plant is sacred by the Hindus. Whole parts of Tulsi plant are most important for the human

health. [20] "The greatest think about the herbal drug is that its treatment always yields side benefits, not side effects". The medicinal property of Ocimum species have been maintained in the most ancient time and fundamental medical literature of Hindus namely Charak Samhita and Susruta Samhita (about 1000 BC). Standardization is the process by which one or more active ingredients of an herb are identified, and all batches of the herb produced by a single manufacturer contain the same amount of active ingredient. [21] Tulsi has two varieties —Black (Krishna Tulsi) and Green (Rama Tulsi). [3]

It is available in India, Sri Lanka, Himalaya, Bangladesh, South West Asia, Burma, China, Thailan, Malaysia. In addition, it is also available at dry sandy areas in Hainan, Sichuan, Taiwan, Cambodia, Indonesia, Laos, Myanmar, Philippines, Vietnam; Africa, South West Asia, Australia.[11] Tulsi leaves are widely used in several ancient systems of medicine including Ayurveda, Greek, Roman, Siddha, and Unani. Tulsi leaves are widely used in the preparation of Ayurvedic medicine for treatment of many diseases and disorders. Plant has vast number of therapeutic applications such as in cardiopathy, hemopathy, leukoderma, asthma, Tulsi bronchitis, catarrhal fever, otalgia, hepatopathy, vomiting, lumbago, hiccups, ophthalmia, gastropathy, genitourinary disorders,ringworm, verminosis and skin diseases. Tulsi is well known for treatment of bronchitis, bronchial asthma, malaria, diarrhea, dysentery, skin diseases, arthritis, painful eye diseases, chronic fever, and insect bite. It is also used for preventing stomach disorders. OS plant parts and its chemical constituents

showed various pharmacological activities. Plant possess strong anti-inflammatory, analgesic, antipyretic, antidiabetic, hepatoprotective, hypolipidemic, antistress and immunomodulatory activities and is a plethora of biological and pharmacological activities.[2]

- Genus Ocimum has various species like:

Ocimum sanctum L. (Tulsi)

O. grtissium (Ram Tulsi)

O. canum (Dulal Tulsi)

O. basclicum (Ban Tulsi)

O. kilimandschricum

O. Americanum

- TAXONOMY:

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Lamiales

Family: Lamiaceae

Genus: Ocimum

Species: Sanctum

Binomial name: Ocimum Sanctum L.

- VERNACULAR NAMES:

LANGUAGE	VERNACULAR NAMES
Hindi	Kalatulasi, Tulasi
Kannada	Vishnu tulasi, Kari tulasi, Sri tulasi, Tulashi-gida
English	Holy Basil
Malayalam	Tulasi, Trttavu karuttarttavu, Niella tirtua, tulasi, Shiva tulasi
Telugu	Tulasi, Gaggera-chettu
Tamil	Tulaci.karuttulaci
Bengali	Tulasi, Krishna Tulasi
Gujarati	Tulasi, Talasi
Punjab	Bantulsi, Tulsi
Marathi	Tulasa, Tulasi
Konkani	Tulsi

- MORPHOLOGY

Root: Thin, wiry, branched, hairy, soft, blackish-brown externally and pale viol internally.

Stem: Erect, herbaceous, woody, branched, hairy, sub quadrangular, externally purplish brown to black,

internally cream coloured; fracture, fibrous in bark and sort in xylem

Leaf: 2.5-5 cm long, 1.6-3.2 cm wide, elliptic oblong, acute, entire or serrate, about 1.5-3 cm long hairy; odour- aromatic; tast- characteristic.

Flower: purplish, pedicels longer than calyx, calyx ovoid or campanulate, corolla about 4 mm long, odour- aromatic, test- pungent.

Fruit: a group of four nutlets, each with one seed, enclosed in an enlarged, membranous veined calyx, nutlets sub-globose or broadly elliptic, slightly compressed, nearly smooth; pale brown or reddish.

Seed: Rounded to oval; brown, mucilaginous when soaked in water 0.1 cm long, no odour; test- pungent, slightly mucilaginous. [20]

## II. MATERIAL & METHOD

Collection, identification and authentication of raw materials;-

Tulsi plant collected from the local region, and plant Authenticated from the botany department. The collected plant was shade-dried. The leaves were separated, washed with sterile water, dried in shade and then the samples were powered in mechanical grinder. The powder was stored in a clean closed container until further use. Four different manufacturers of Tulsi were purchased from local Ayurvedic medicinal shop from the Latur, they are Sample:

A: Himalaya Tulasi tablets, B: Patanjali Tulasi tablets, C: Shree- Shree Tulasi tablets.\



### III. METHOD OF PREPARATION OF TULSI TABLETS [21]

Leaves of tulsi were dried and ground into the mixer, and a fine powder was formed. This powder was used for the preparation of granule. All the required ingredients were taken in a mortar pestle and mixed well with the help of starch paste. The formed damp mass was passed through sieve no. 12. The obtained granules were kept for drying at 65°C in the oven.

Sr.	Ingredient	Quantity	Uses
1	Tulsi powder	250 mg	Drug
2	Potassium sorbate	1.2mg	Preservative
3	Starch paste	5%	Excipient
4	Talc	5mg	Flow property

Table: The Formula of Tulsi table

#### Procedure for the preparation of tablet

Prepared Tulsi granules were mixed with magnesium stearate and talc thoroughly and finally compressed by using 8mm punch and ten stations rotator tablet punching machine.

#### EVALUATION OF TABLET

##### Organoleptic evaluation

The general appearance of a tablet, its identity and general elegance is essential for consumer acceptance, for control of lot-to-lot uniformity and tablet-to-tablet uniformity. The control of general appearance involves the measurement of size, shape, color, presence or absence of odour, taste etc.[23]

##### B) Qualitative phytochemical analysis [22]

###### Test for alkaloids:

2ml of 1% HCL was mixed with crude extract and heated gently. After heating, Mayer's and Wagner's reagents were added to the mixture. If precipitate was observed in the reaction mixture which indicated the presence of alkaloids

###### Test for glycoside:

Salkowski's test: 2ml of chloroform was mixed with crude extract. Then 2ml of concentrated H<sub>2</sub>SO<sub>4</sub> was added carefully and shaken gently. A reddish brown colour indicated the presence of glycoside.

###### Test for flavonoids:

Shinoda test: Crude extract was mixed with small amount of magnesium and concentrated HCl was added drop wise. Appearance of pink scarlet colour after few minutes indicated the presence of flavonoids.

###### Test for saponins:

1ml of crude extract was mixed with 5ml of distilled water in a test tube and it was shaken vigorously. The formation of stable foam was taken as an indication for the presence of saponins.

###### Test for tannin:

1 ml of distilled water and 2-3 drops of ferric chloride solution was added to 0.5 ml of crude extract. A black coloration indicated the presence of tannin.

###### Test for carbohydrate:

Iodine test: 2ml of iodine solution was mixed with 0.5 to 1 ml of crude extract. A dark blue or purple coloration indicated the presence of the carbohydrate.

###### Test for phenol:

2 ml of alcohol and 2-3 drops of ferric chloride solution was added to 1 ml of crude extract, blue green or black coloration indicated the presence of phenols.

#### Qualitative Test For Tablet [23]

##### Hardness:-

Hardness generally increases with normal storage of tablets and depends on the shape, chemical properties, binding agent and pressure applied during compression. It is non official quality control method. Hardness generally measures the tablet crushing strength. Various method used for test crushing strength- Pfizer tester, Monsanto tester.

##### Weight Variation test (U.S.P.)

Uniformity of weight is an in process test parameter which ensures consistency of dosage units during compression. Take 20 tablets and weighed

individually. Calculate average weight and compare the individual tablet weight to the average. The following formula is used-

$$\text{Weight Variation} = (Iw - Aw)/Aw \times 100\%$$

where, Iw = Individual weight of tablet; Aw = Average weight of tablet.

#### Content Uniformity Test:

The content uniformity test is used to ensure that every tablet contains the amount of drug substance. Randomly select 30 tablets. 10 of these assayed individually. The Tablet pass the test if 9 of the 10 tablets must contain not less than 85% and not more than 115% of the labeled drug content and the 10 th tablet may not contain less than 75% and more than 125% of the labeled content.

### RESULT & DISCUSSION

Standardization was performed and laboratory prepared tulsi tablets compared with three different manufacturers of tulsi tablet. Tulsi tablet was prepared by using the same formula of marketed formulation and standardized according to standard parameters.

Organoleptic properties of different manufacturer's tulsi tablets were different

e. sample A had a whitish brown colour, sample B had a yellowish brown colour, sample C had a brown colour and sample D had a green colour. Taste for all the samples was found to be sweet and characteristic. To maintain the uniformity of tablet following parameters were done like Weight Variation test and Hardness. The Percentage deviation for weight variation test of given sample A, B, C, and D are 7%, 7.5%, 6%, 6.5% respectively. Hardness of samples A, B, C, D recorded as 5, 8, 7, 6 kg/cm<sup>2</sup> respectively.

Sample	Colour	Odour	Taste
A	Whitish brown	Aromatic	Characteristic
B	Yellowish brown	Aromatic	Characteristic
C	Brown	Aromatic	Characteristic
D	Green	Aromatic	Characteristic

Table: Organoleptic evaluation of Tulsi Tablet

Sr. no	Chemical	A	B	C	D
1.	Alkaloids	+	+	+	+
2.	Glycosides	+	+	+	+
3.	Flavonoids	+	+	+	+
4.	Tannins	+	+	+	+
5.	Saponins	+	+	+	+
6.	Carbohydrates	+	+	+	+

Table: Phytochemical Investigation

Sr.no	Parameters	A	B	C	D
1.	Weight Variation test (%)	7%	7.5%	6%	6.5%
2.	Hardness (Kg/Cm <sup>2</sup> )	5	8	7	6

Table: Qualitative test for table

### CONCLUSION

Tulsi is one of the most important medicinal plant described for its pharmacological actions. It is widely used in treatment of various (Jwara) fever, (tamaka swasa) bronchial asthma, (kasa) cough, (hikka) hiccough. The Tulsi tablet is an Ayurvedic preparation for cold and cough was formulated in the laboratory and standardized against the marketed formulation of Tulsi tablet. The subject of herbal drug standardization is massively wide and deep. There are various factors necessary for standardization of herbal drugs. Standardization was performed for organoleptic properties, physicochemical properties as per standard parameters. The standard parameters were recognized and also the results showed that ingredients used for formulation were found to be of good quality. Hence standardization involve the quality control of various factors affecting the therapeutic activity of plant right from selection of plant species to formulation of herbal drugs so as to minimize batch to batch variation and meet standard of quality, safety and efficacy.

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