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REVIEW ON FORMULATION AND EVALUATION OF HERBAL TABLET CONTAINING OSCIMUM SANCTUM (TULSI)

[1]Nutan Vijay Rathod ,[2] Shruti A.Wankhade.

[1]Student Vardhaman College Of Pharmacy, Koli, Karanja (Lad) Washim

[2]Assistant Professor :- M pharm in Pharmaceutical Chemistry Vardhaman College Of Pharmacy Koli, Karanja (Lad), Maharashtra, India.

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 formedicinal 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.. Many medicinal properties have been attributed to Ocimum sanctum L.

The leaves, flowers, stems, roots, seeds, etc. of the plant are known to have therapeutic potential and are used by traditional medicine practitioners, as expectorant, analgesic, anticancer, antiasthmatic, antiemetic ,diaphoretic, antidiabetic, antifertility. The major importance of the study lies in the cost- effective treatment of contaminated well water samples in various rural households. This can be achieved by using a natural herbal essence of Ocimum sanctum. The treatment is simple, environment-friendly and accessible for all and the constituent present in herbs have no side effects to human compared to chemical treatment. These findings will support the traditional knowledge of local users and it will be a scientific, validation for the use of these plants for antibacterial activity.

Keywords: Ocimum Sanctum, Tulsi Tablet ,standardisation.

Corresponding author:

Nutan Vijay Rathod,

Student Vardhaman College Of Pharmacy,

Koli, Karanja (Lad) Washim

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INTRODUCTION:

1.1 *Herbal Drugs :*

Herbal drugs referred as plants material or herbalism, involves the use of whole plants or parts of plants, to treat injuries or illnesses. Herbal drugs are used to prevent and treat diseases and ailments or to support health and healing. These are drugs or preparation made from a plant or plants and used for any of such purposes. Herbal drugs are the oldest form of health care known to mankind. There are many herbal products offered that assert to treat the symptoms of a broad range of problems, from depression to cold and flu.

Herbal products have reached extensive adequacy as beneficial agents like antimicrobial, antidiabetic, antifertility, antiageing, antiarthritic, sedative, antidepressant, antianxiety, Anti-HIV, vasodilatory, hepatoprotective, treatment of cirrhosis , asthma, acne, drugs have been discontinued due to their toxicity, while others have been modified or combined with additional herbs to counterbalance side effects.

1.2 *Advantages of Herbal Drug.*

1. Low/Minimum cost.
2. Potency and Efficiency.
3. More Protection.
4. Fewer side -effects.
5. Easy Available.

1.3 *Dis -Advantages of Herbal Drug.*

1.Not able to cure rapid sickness and accidents.
2.Risk withself-dosing
3.Complexity in standardization.
4.Herbal Drug take too much time to act & the entire process is very slow.

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] 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.

Genus Ocimum Has Various Species Like

1. Ocimum sanctum L. (Tulsi)
2. O.grtissium (Ram Tulsi)
3. O. canum (Dulal Tulsi)
4. O.bascilicum (Ban Tulsi)
5. O. kilimandschricum.

TAXONOMY

1. Kingdom: Plantae
2. Division: Magnoliophyta.
3. Class: Magnoliopsida.
4. Order: Lamiales
5. Family: Lamiaceae.
6. Genus: Ocimum
7. Species: Sanctum
8. 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-characteristics.

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]

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.

LITERATURE REVIEW

1. **Mahesh V. Bawage[1], Sohel Jafar Shaikh[2], Shyamlila B. Bavage[3], Nandkishor B.Bavage[4]** Several medicinal properties have been attributed to the Tulsiplant 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 fromthe 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.

2. NguyenHoang Anh,Sun Jo Kim,Nguyen PhuocLong,Jung Eun Min,Young Cheol Yoon, Eun Goo Lee.

Clinical applications of tulsi with an expectation of clinical benefits are receiving significant attention. This systematic review aims to provide a comprehensive discussion in terms of the clinical effects of tulsi in all reported areas. Following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) guideline, randomized controlled trials on the effects of tulsi were investigated. Accordingly, 109 eligible papers were fully extracted in terms of study design, population characteristics, evaluation systems, adverse effects, and main outcomes.

3. Monika Bansal, Sachin K Singh, Monica Gulati.

Tablets, the small medicated candies that dissolve slowly in the mouth have always been a favoured delivery system, particularly for drugs meant for relieving sore throats and cold symptoms. This predilection can be attributed mainly to their ability to keep the naso-pharyngeal mucosa moist, enhance the swallowing reflex and provide longer contact time of the drug with the naso-pharyngeal mucosa. A number of innovative technologies have been developed to improve the conventional forms of tablets i.e. hard candies and compressed tablets.

4. Vijay Yadav, Piyush Yadav, Shradha Sahu, Mukesh Yadav, Shyam narayan gupta.

Tulsi (Ocimum Sanctum) is a flowering plant whose rhizome, root or tulsi, is widely used as a spice and a folk medicine. Tulsi is loaded with antioxidants, compounds that prevent stress and damage to your body's DNA. They may help your body fight off chronic diseases like high blood pressure, heart disease, and diseases of the lungs, plus promote healthy aging .Doctors recommend consuming a maximum of 3–4 grams of ginger extract per day. If you're pregnant, don't consume more than 1 gram of ginger extract per day. tulsi is not recommended for children under the age of
2. The first written record of tulsi comes from the Analects of Confucius, written in China during the Warring Statesperiod (475–221 BC).

5. Mohammad Sharrif Moghaddasi.

Tulsi is used worldwide as a cooking spice, condiment and herbal remedy. Tulsi is used extensively in Ayurveda, the traditional medicine of India to block excessive clotting (that is, heart disease), reduce cholesterol and fight arthritis. In Arabian medicine, tulsi is considered an aphrodisiac. The Eclectic physicians of the 19th century relied on tulsi to induce sweating, improve the appetite and curb nausea, and as a topical counterirritant. Nowadays, tulsi is extensively cultivated from Asia to Africa and the Caribbean, and is used worldwide as a nausea remedy, as an anti-spasmodic and to promote warming in case of chills as presented in this report. tulsi is also extensively consumed as a flavoring agent; it is estimated that in India, the average daily consumption is 8 to 10 g of fresh tulsi root. Moreover, the German Commission E has approved the use of tulsi root as a treatment for dyspepsia and prophylactic against motion sickness.

6. Stephen O. Majekodunmi.

Tablets are one of the widely used solid dosage forms. They contain medicament and are meant to be in mouth or pharynx. tablets have been in use since 20th century and are still in commercial

production. tablets provide a palatable means of dosage form administration and possess excellent advantages; though they suffer certain disadvantages too. tablets are adopted for both local and systemic administrations and a wide range of active ingredients can be incorporated in them

7. Kamlendra Kumar Mishra, Kutubuddin Tasneem, Vikas Jain, S.C. Mahajan.

Throat infections are most common disease in today's world. However, it is not taken too seriously by people. Long term throat infection can lead to severe throat problems like Pharyngitis and also cancer. Lozenges are solid preparations that contain one or more medicaments, usually in a flavored, sweetened base, that are intended to dissolve or disintegrate slowly in the mouth. They are used for medications designed to be released slowly to yield a constant level of drug in the oral cavity or to bathe the throat tissues in a solution of the drug. Since soft lozenges can be made at home using simple ingredients, this formulation is very help in treating throat infection easily using household techniques.

8. D. M. Kannur , S. S. Salunkhe, P. S. Godbole and S. P. Patil

Traditional medicine and herbal formulations have been used by mankind for the cure and treatment of various diseases and disorders. Since time immemorable natural sources have been used as medicines by the humans. As per Indian System of medicine, Ayurveda, Siddha, Unani plants are formulated in various types of dosage forms like churna, gutika, asavas, aristasavlehas, etc. Various formulations with either Ayurvedic **reference or as a household remedy or as a folklore medicine are commonly used.**

RESEARCH GAP :

Limited research on standardized formulation

Although Ocimum sanctum has been widely studied for its medicinal benefits, very few studies focus on the standardized formulation of Tulsi into a tablet dosage form using pharmaceutical principles. Most research is only on phytochemistry and traditional uses, not tablet development.

Lack of comparative evaluation with marketed products

There is no scientific comparison between laboratory-prepared Tulsi tablets and commercially available brands (Himalaya, Patanjali, Shree Shree, etc.) in terms of quality parameters such as weight variation, hardness, disintegration and organoleptic properties.

Variations in quality and absence of standardization

Existing marketed Tulsi tablets show differences in color, hardness, and weight uniformity, indicating inconsistent manufacturing processes and the need for standardization and regulatory guidelines.

Limited research on optimization of excipients

There is insufficient research on selecting and optimizing excipients such as starch binder, magnesium stearate, talc, etc., which are essential for improving stability, flow properties, and therapeutic effectiveness of herbal tablets.

No established correlation between phytochemical profile and tablet performance

There is still inadequate scientific evidence linking phytochemical concentration with evaluation parameters and therapeutic action of Tulsi tablets, which is important for ensuring safety, efficacy, and reproducibility in herbal formulations.

Future Scope

A) Development of Tulsi tablets with optimized excipients for enhanced stability and patient compliance.

B) Clinical evaluation to validate therapeutic effectiveness and safety in human subjects.

C) Expansion of research to other dosage forms such as capsules, syrups, or sustained-release tablets.

D) Commercial scale-up based on validated formulation and quality control parameters.

E) Scope for integration of Tulsi tablets into global herbal markets through standardization and regulatory approval.

DRUG PROFILE:

Fig. Ocimum Sanctum

Fig. Dry Tulsi Powder

1.5 DRUG PROFILE.

Tulsi is an important symbol of the Hindu religious tradition. Although the word Tulsi" gives the implication of the incomparable one, its other name, Vishnupriya means the one that pleases Lord Vishnu. Found in most of the Indian homes and worshipped, its legend has permeated Indian ethos down the ages. Known in English as Holy Basil and botanically called Ocimum sanctum, Tulsi belongs to plant family Lamiaceae. It is an erect, herbaceous, more-branched, softy hairy, biennial or triennial plant, 30-75 cm high. The leaves are alliptic- oblong, acute or obtuse, entire or serrate, pubescent on both sides, minutely gland dotted; the flowers are publish or crimson, in racemes, close whorled; the nut-lets are sub- globose or broadly ellipsoid, slightly compressed, nearly smooth, pale-brown or reddish with small, black markings.

Three Varirties of Tulsi are

- Rama or Light Tulsi (Ocimum Sanctum)
- Shyama or Dark Tulsi (Ocimum Sanctum)
- Vana Tulsi (Ocimum Gratissimum)

2.1 ***Uses:***

- **Heart Disease:** Basil has a beneficial effect on heart disease and the resulting weakness. Lowers blood cholesterol levels (Jyoti et al., 2004). Pediatric Diseases Common pediatric problems such as cough, runny nose, fever, diarrhea, and vomiting respond favorably to basil leaf juice. When chickenpox pustules delay the onset, basil leaves with saffron accelerate them (Devi et al, 1999).
- **Stress and Headache:** Basil leaves are considered "adaptogens" or anti- stress agents. Recent studies have shown the leaves provide important protection against stress. Even healthy people can chew 12 basil leaves twice daily to prevent stress. It helps cleanse the blood and prevent some common factors. Basil is a good medicine for headaches. In this disease, you can administer a decoction of leaves. Pound leaves mixed with sandalwood paste can also be applied to the forehead to relieve heat and headaches and
- **Eye Disorders:** Basil juice is an effective remedy for sore eyes and night- blindness, which is generally caused by deficiency of vitamin A. Two drops of black basil juice are put into the eyes daily at bedtime.
- **Mouth Infections:** The leaves are quite effective for the ulcer and infections in the mouth. A few leaves chewed will cure these conditions.
- **Insect Bites:** The herb is a prophylactic or preventive and curative for insect stings or bites. A teaspoonful of the juice of the leaves is taken and is repeated after a few hours. Fresh juice must also be applied to the affected parts. A paste of fresh roots is also effective in case of bites of insects and leeches (Sharma et.al. 1998).

Reported in vitro studies

1. Friability.
2. Drug Content Uniformity.
3. Moisture Content Analysis.
4. Disintegration Time Studies
5. Determination of swelling index
6. Stability studies

METHOD OF PREPARATION OF TULSI TABLETS

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 650C in the oven.

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.

Fig. Structure of Tulsi

The Formula of Tulsi tablet:

Sr.	Ingredient	Quanity	Uses
1	Tulsi Powder	250 mg	Drug
2	Potassium Sorbate	1.2 mg	Preservative
3	Strach Paste	5%	Excipient
4	Talc	5mg	Flow Property

EVALUATION OF TABLET:

A) ***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]***

1)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

1. ***Test for glycoside:***

Salkowski's test: 2ml of chloroform was mixed with crude extract. Then 2ml of concentrated H2S04 was added carefully and shaken gently. A reddish brown colour indicated the presence of glycoside.

2. ***Test for flavonoids:***

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

3.*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.

4.*Test for tannin:*

ml of distilled water and 2-3 drops of ferric chloridesolution was added to 0.5 ml of crude extract. A black coluration indicated the presence of tannin.

5.*Test for carbohydrate:*

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

6. ***Test for phenol:***

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

C)*Qualitative Test For Tablet 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-

Weight Variation = (Iw — Aw)/Aw 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.

Average weight of Tablets	Deviation (%)	Number of Tablets
Less than 80 mg	± 10.0 ±20.0	Minimum 18 Maximum 2
80mg to 250 mg	±7.5 ±15.0	Minimum 18 Maximum 2
More than 250 mg	±5.0 ±10.0	Minimum 18 Maximum 2

Table: Organoleptic evaluation of Tulsi Tablet

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. sample A had a whitish brown colour, sample B had a yellowish brown colour, sample C had a brown color 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/cm2 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/Cm2)	5	8	7	6

Table: Qualitative test for table

Thefollowing Equipment and Instruments are used for entire formulation of Tablet (OSCIMUM SANCTUM)

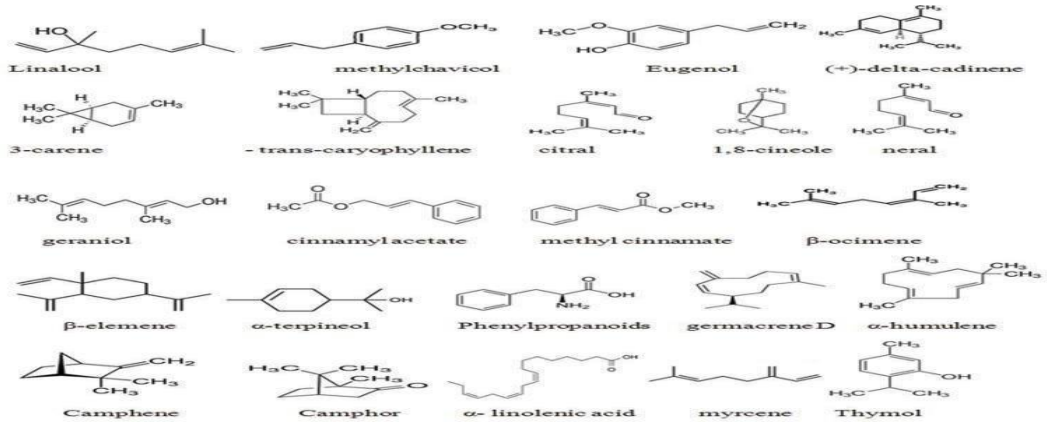
Sr.No	Instrument/equipment	company
1	Electronic balance	Citizen CTG-302
2	Hardness tester	Monsanto
3	Friabilitytest apparatus	Roche Friabilator
4	Dissolution tester	(USPtype-2)Electro Lab
5	Uv spetrometer	Shimadzu (1800)
6	PH meter	Hanna Instruments, Italy
7	Humidity chember	Thermo Lab.
8	autoclave	Thermofisher Scientific.
9	Tablet mold	Silicone Mold
10	Vernier caliper	Mitutoyo Vernier Caliper

Evaluation of Tulsi herbal tablet:

A. Macroscopic Evaluation of formulated tablet:

Sr. No	Parameter	Observation
1	colour	Redish
2	odour	Plesant
3	taste	Sweet
4	texture	smooth
5	shape	round
6	touch	soft

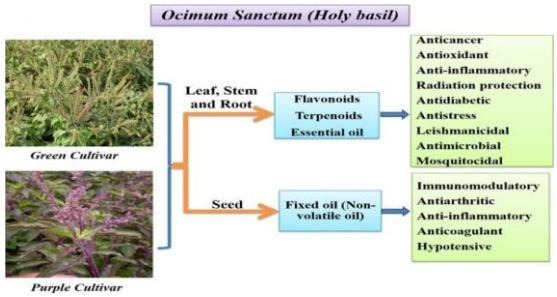
Table: Macroscopic evaluation of formulated Tablet



PHYTOCHEMISTRY

Ocimum basilicum L. Contains (-)-linalool (30-40%), eugenol (8-30%), and methyl chavicol (15-27%). Minor basil oil constituents are (+)-delta-cadinene, 3-carene, alpha- humulene, citral, and (-)-trans- caryophyllene.[12] Thai basil oil contains methyl chavicol (93.0%), eugenol (41.5%), gamma- caryophyllene (23.7%), and methyl eugenol (11.8%) as major compounds [Figure 1].

Hoary basil oil contained high amounts of geraniol (32.0%) and neral (27.2%) and small amounts of methyl chavicol (0.8%).[13] *Linum usitatissimum*,oil contains high alpha- linolenic acid contents mainly eicosanoid precursor polyunsaturated fatty acids (PUFA) which are highly anti- inflammatory[14] [Figure 1]. *Ocimum basilicum* L. EO contains eugenol (67.4% and 72.8%), β- elemene (11.0%



and 10.9%), β-caryophyllene (7.3% and 8.4%), and germacrene D (2.4% and 2.2%), while the major components in *O. basilicum* cvs. "Vikarsudha" and "CIM- Soumya" were methyl chavicol (68.0% and 64.9%) and linalool (21.9% and 25.6%), along with bicyclogermacrene (2.0% and 0.7%) and α-terpineol (1.2% and 0.1%). Eugenol (77.2%), 1,8- cineole (7.6%), germacrene D (2.7%), and β-caryophyllene (1.7%) were identified as the major constituents of *Ocimum gratissimum* (OG) [Figure 1].

EO from *Ocimum kilimandscharicum* mainly contains monoterpenoids (95.8%), represented by camphor (64.9%), limonene (8.7%), camphene (6.4%) and (E)-β-ocimene (3.0%),[4] *O. basilicum* contains methyl chavicol (87.0%) and{(Z)-and (E)-methyl cinnamate (69.1%).[15] EO yield andquality of methyl eugenol rich sacred/holy basil (OT L.f.; Lamiaceae) (E)-cinnamyl acetate, eugenol and beta- elemene constituents of the oil.[16] Gas chromatographic analysis indicated the presence of camphor, caryophyllene oxide, cineole, methyleugenol, limonene, myrcene, and thymol, all known insect repellents.

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 standardizationis massively wide and deep. There are various factorsnecessary for standardization of herbal drugs. Standardization was performed for organoleptic properties, physicochemical properties as per standard parameters. The standard parameters were recognizedand 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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