



# Phytochemical and Ethnobotanical studies of some medicinally important *Ocimum* sps from Kinwat and Mahur Region of Maharashtra.

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## Abstract

*Ocimum sanctum* also known as Tulsi or Holy basil is an aromatic plant and it belongs to the family Lamiaceae. It is widely used as medicine to cure various ailments. The proposed paper aims at the scientific study of the ethno medicinal survey, of some of the medicinally important *Ocimum* Genus such as *Ocimum tenuiflorum*, *O. gratissimum*, *O. basclicum* and *O. americanaum* carried out during the month of August to November in 2019. The focal point of this survey was to do the Ethnobotanical study of some of the medicinal plants of *Ocimum* Genus used by local villagers in the region of Kinwat and Mahur region of Maharashtra. Further they were analysed for different Phytochemical components from the different species *Ocimum* genus. The dried powder of Tulsi (20g) was placed in the thimble of Soxhlet apparatus and the experiment was done separately for methanol, ethanol and distilled water.

**Keywords:**-Phytochemical, Ethnobotanical survey, *Ocimum* sp. soxhlet apparatus. Etc.

## INTRODUCTION

In India, 68 species of *Ocimum* are found out of total 150 reported species of the world till date. Plants belonging to Lamiaceae are effective source of traditional and modern medicines, useful for primary health care. *Ocimum sanctum* L. commonly known as holy basil (Tulsi) is an herbaceous perennial, belongs to family Lamiaceae and is considered as one of the most important source of medicine and drugs with many secondary metabolites and essential oils recommended for treatment of malaria, diarrhoea, bronchial asthma, dysentery, bronchitis, skin diseases, arthritis, painful eye diseases, chronic fever and eye diseases etc. (Bohan et. al. 1994 and Bonjar 2004) In addition, *Ocimum sanctum* also shows anticancerous, antifungal, antimicrobial, antifertility, hepatoprotective, antispasmodic, cardio protective, antiemetic, antidiabetic and so many very important medicinally properties. The pharmacological studies reported in the present research confirm the therapeutic value of *O. Sanctum*. Therefore, the present study looks into the Ethnobotanical survey, extraction and preliminary Phytochemical analysis of four *Ocimum* genus such as *Ocimum* sp. i.e. *Ocimum tenuiflorum*, *O. gratissimum*, *O. basclicum* and *O. americanaum*.

## MATERIALS AND METHODS

### Ethnobotanical study: -

The observations are based on the basis of Ethnobotanical survey carried out from the region of Kinwat and Mahur region of Maharashtra . . The information is obtained through interviews with Local Medicinal Practitioners, Vaidyas, Maharaj, Shepherds and Experts of this community. The questionnaires were used to get information regarding the medicinal plants and its proper uses along with its local names, its useful parts, mode of preparation and administration. The information recorded is further cross checked by the different beneficiaries at various Tandas. The standard method was followed in the regards to collect plant materials, drying, mounting of plant specimens. The identification and nomenclature of plants are based on Flora of Marathawada (V.N. Naik 1998). The herbarium sheets of collected plants specimens are deposited at Department of Botany, N.E.S. Science college, Nanded.

### Phytochemical analysis:-

#### Collection of Plant Material

Four species of *Ocimum* i.e. *Ocimum tenuiflorum* , *O. gratissium*, *O. baselicum* and *O. americanaum* were collected, identified (Naik, 1998) from Kinwat forest in separate polythene bags. The materials were brought to laboratory, root stem and leaves were separated and dried under the shade until dryness. After drying the plant material were made powder using mechanical grinder. Extraction of plant Materials. About 20 gm of powder were extracted separately using 70% ethanol in a Soxhlet Extractor (Borosil) for about six hours. After extraction the obtained extract were vaporized under reducer pressure on vacuum evaporator. The extract was stored at low temperature in refrigerator for further study.

#### Phytochemical Qualitative analysis:

The extracts of *Ocimum tenuiflorum* and *Ocimum gratissimum* were tested for various phytochemical constituents namely Amino acids, Carbohydrates, Flavonoids, Glycosides, Phenolics, Steroids, Saponins, and Tannins. Phytochemical screenings of the extracts were carried out by the standard established methods mentioned in table.



Figure 1. Soxhlet Extractor (Borosil)

**RESULT AND DISCUSSION:-**Table 1. Preliminary Phytochemical analysis of *Ocimum tenuiflorum*, *O. gratissimum*, *O. baselicum* and *O. americanum*.

Sr. No.	Constituent	Methods of Analysis	<i>Ocimum tenuiflorum</i>		<i>Ocimum gratissimum</i>		<i>Ocimum baselicum</i>		<i>Ocimum americanum</i>	
			Leaves	Stem	Leaves	Stem	Leaves	Stem	Leaves	Stem
1	Amino Acids	Phydrin Test	+	+	+	+	+	+	+	+
2	Alkaloids	Dragendorff's test	+	+	+	+	-	-	+	+
3	Carbohydrates	Benedict's Test	-	-	-	-	-	-	-	-
4	Flavonoids	Lead Acetate Test	+	+	+	+	+	+	+	+
5	Glycosides	Keller Killiani's Test	+	-	+	-	+	+	+	+
6	Phenolics	Ferric Chloride test	+	+	+	+	-	-	+	+
7	Steroids	Liebermann's Test	-	-	-	-	-	-	+	+
8	Saponins	Foam Test	-	-	-	-	+	+	-	-
9	Tannins	Lead Acetate Test	+	-	+	-	-	-	+	+

(+/- : Presence/Absence)

Preliminary Phytochemical analysis of stem extracts of all the four *Ocimum* species showed Amino acids, Alkaloids, Phenolics and Flavonoids. From this it may be concluded that all the three species of *Ocimum* consists of similar types of phytochemical compounds. Similar type of study was also made by Praseetha *et. al.* (2016) in which ethanolic leaf extracts of both plants contains similar compounds except Tannins. Plants belonging to *Lamiaceae* are effective source of traditional and modern medicines, useful for primary health care. The results of Phytochemical analysis of *Ocimum tenuiflorum* and *Ocimum gratissimum* are shown in Table 1. From the observation table it is found that leaves of all the three species of *Ocimum* contains common phytochemicals like Amino Acids, Alkaloids, Flavonoids, Glycosides, Phenolics and Tannins except Steroids, Saponins and Carbohydrates. Preliminary phytochemical evaluations is the step to identify different classes of constituent that are primary constituents like carbohydrate, proteins, and lipids or secondary metabolite like glycosides, alkaloids, volatile oil, tannins etc. of great. The plants having secondary metabolites are usually responsible for medicinal efficacy. Hence plant material is subjected to preliminary phytochemical screening for detection of various chemical constituents.

**Enumeration*****Ocimum americanum* :-**

**Morphology:** - It is a pubescent erect much branched herb having 15 to 60 cms high with a sub-quadrangular striate branches. Leaves are elliptic lanceolate, entire or faintly toothed, glabrous and gland dotted. Flowers are white, pink or purplish in elongate racemes with more or less closely set whorls. Fruits are small, nutlets pitted, mucilaginous when wetted found in open fields and waste lands.

**THERAPEUTIC USES:-** Aqueous decoction of Tulsi leaves is given to patients suffering from gastric and hepatic disorders. Herbal preparations containing *Ocimum* have been suggested to shorten the course of illness, clinical symptoms and biochemical parameters in patients suffering from viral hepatitis. The leaf juice of *Ocimum americanum* along with Triphala is used in Ayurvedic eye drop preparations recommended for glaucoma, cataract, chronic conjunctivitis and other painful eye diseases.

The juice of fresh leaves is also given to patients to treat chronic fever, dysentery, hemorrhage and dyspepsia. A decoction of Tulsi leaves is a popular remedy for cold. Tulsi leaves also check vomiting and has been as anthelmintic.

### ***Ocimum basilicum***:-

**Morphology**:- *Ocimum basilicum* is an annual plant found widely in the tropical, subtropical and temperate regions of the world. Grow about two feet long. Leaves are opposite, narrow at the tips. Flowers are verticillaster and they are often white, labiate (like lips) and are six in numbers, pedicel is almost sessile, calyx is five lobed, bilabiate. It reaches a mature height of 15-18 inches with white flower spikes. Dwarf Bush Basil grows in the form of a globe and normally doesn't exceed 8-10 inches in height. The leaves are small and the flavor is mild.

**THERAPEUTIC USES**:- Demulcent, Antiperiodics, Emmenagogue .. The Leaves of *O. basilicum* are aromatic used as a expectorant. Decoction of the leaves is effective in gastric and hepatic disorders and also most useful in catarrh, bronchitis, in cough (due to heat). It is used for stomach problems it acts as diuretic, tonic. Usually leaves are brushed into paste and applied over the inflammations best treatment seeds are mucilaginous and demulcent, used, as a home remedies, urino-genital diseases, such as gonorrhoea. Oil of seeds are best in medication of syphilis, otitis and otorrhoea, whereas the fragrant oil of basil leaves and seeds (obtained after steam distillation) are used in perfumes and toiletries. Decoction of roots is useful in malarial fever as antiperiodics leaves extract is used as eardrops in earache. The flowering tops are used to flavour foods, in dental and oral products and in fragrances. These are used frequently in soups, desserts, pickles, pizza, spaghetti sauce, egg, cheese dishes, tomato juice, dressings, confectionery, salads, meat products etc. Basil is well known as a plant of a folk medicinal value. It is good for treating nausea, flatulence and dysentery. It is immune stimulant, sedative, hypnotic, anticonvulsant, diuretic, carminative, galactagogue, stomachic, spasmodic and vermifuge purposes. also used in pharmacy for diuretic and stimulating properties, in perfumes and cosmetics for its smell; in fact, it is a part of many fragrance compositions. Aerial part shows antispasmodic, aromatic, carminative, digestive, stomachic, and tonic agents, they are also used externally for the treatment of acne, insect stings, snake bites, and skin infections also for treating nausea, dysentery, mental fatigue, cold, rhinitis, increased plasma lipid content, soothes the nerves.

### ***Ocimum gratissimum*** :-

**Morphology**: *Ocimum gratissimum* is an aromatic, perennial herb 1-3 m tall; stem erect, round-quadrangular, much branched, glabrous or pubescent, woody at the base, often with epidermis peeling in strips.

**THERAPEUTIC USES**:- Clove basil is an aromatic, stimulant, antispasmodic, antiseptic herb that repels insects. • Expels internal parasites and lowers fevers. The leaves and stems are used internally in the treatment of colds, especially chest colds; fevers, headache, impotence, diarrhea, dysentery, post-partum problems, and worms in children. • Applied externally, the leaves are used to treat rheumatism and lumbago. • An essential oil obtained from the leaf has shown marked antibacterial activity.

### ***Ocimum tenuiflorum*** :-

**Morphology**: Holy basil is an erect many branched having 30-60cm tall with hairy stems. Leaves are green or purple they are simple with an ovate up to 5cm (2.0in) long blade which usually has a slightly toothed margin they are strongly scented and have a desiccate phyllotaxy. The purplish flowers are placed in close whorls on elongate racemes. The two main morphotypes cultivated in India and Nepal are green leaves (Sri or Lakshmi Tulasi) and purple leaved (Krishna Tulasi).

**THERAPEUTIC USES** :- Used in Ayurveda for the treatment of diseases. Used as herbal tea. Used



in Thai dishes also insect repellent., treat insect bites Food and medicine. Treatment of Bronchitis, Bronchial asthma, Malaria, Diarrhea, Dysentery, Skin diseases, Arthritis, Painful eye diseases and chronic fever..



The medicinally important parts of *Ocimum* sp. are their leaves and tender shoots and they are used as pharmaceutical agents because of their antimicrobial, antiemetic, antidiabetic, antifertility, antiasthmatic, antistress, insecticidal, diuretic, expectorant, analgesic, hepatoprotective properties (Sankar *et al.* 2014) Adulteration is described as intentional substitution with another plant species or intentional addition of a foreign substance to increase the weight or potency of the product or to decrease the cost. Unintentional adulterations also exist in herbal raw material trade due to various reasons and many of them are left unknown. The use of wrong plant species, adulteration results in adverse effects (Mahashabde *et. al.* 2011). Phytochemical analysis of leaves *O. tenuiflorum* and *O. gratissimum*. Padwal and Jadhav (2020) showed more or less similar type of compounds including amino acids, alkaloids, flavonoids, glycosides, phenolics and tannins in both species. Padwal. and Sable (2019) in a ethanobotanical study Showed the utilization of herbal plants amongs the Labhan community at the primary stage of any disease. It is significant to mention that such an ethno botanical treasure of medicinal plants may helpful to the mankind.

## CONCLUSION

The present study underlines the closeness of tribal people with the nature. It reveals how tribal people have sufficient ethnomedicinal knowledge of herbal plants in Kinwat forest range. As cultural heritage, these people hand overed it from generations to generations and hopes it should be recorded and documented for further generations. The present study focused on the utilization of *Ocimum* plants amongs the local people and villagers at the primary stage of any disease. It is significant to mention that such an ethno botanical treasure of medicinal plants may helpful to the mankind. The analysis of phytochemicals in the present study has proved that in all the four *Ocimum* species Showed the presence of the phytochemicals which are known as biologically active compounds such as phenols, flavonoids, saponins, tannins, alkaloids has antioxidant activity. A higher concentration of

phytochemicals is found in *Ocimum basilicum* especially flavonoids. The constituents of *Ocimum* plants have shown a greater advantage in the treatment of various diseases. The phytochemicals present in all the sources of *Ocimum* has shown higher antioxidant activity. Therefore from our present work, it can be concluded that phytochemical components are the rich sources of antioxidants which has a more beneficial role in the pharmacology.

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