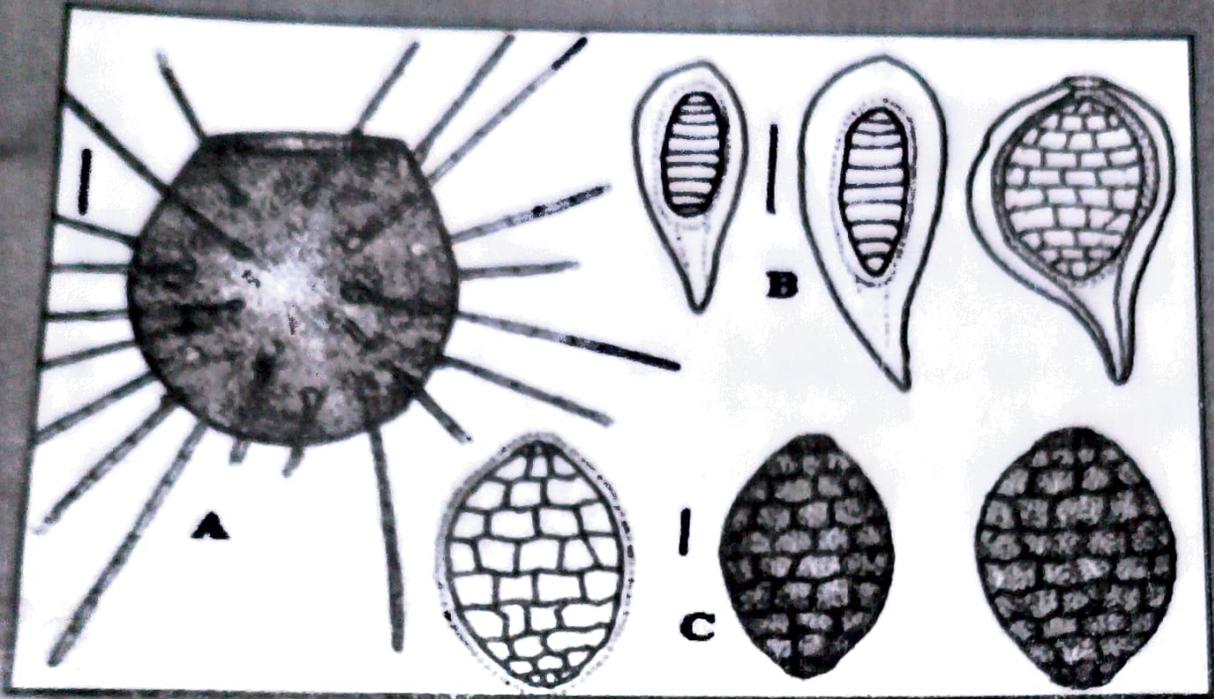


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PHARMACOGNOSTIC STUDY OF OCIMUM GRATISSIMUM LINN. (FAMILY: LAMIACEAE)

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ABSTRACT

Preliminary phytochemical parameters of *Ocimum gratissimum* L. (Family-Lamiaceae) were studied. The leaves are dark green with aromatic odour and bitter taste. Microscopic characters shows presence of numerous glandular simple trichomes and anemocytic stomata. T. S. of leaves shows a pot shape midrib and thin lamina with uneven lower epidermis attached at the lateral sides. Preliminary phytochemical analysis revealed presence of alkaloids, tannins, flavonoids and terpenoids.

Key Words : Phytochemistry, *Ocimum gratissimum*, Lamiaceae.

Introduction:

The medicinal plant, *Ocimum gratissimum* L. belonging to Family Lamiaceae, is a perennial, woody, shrub that is distributed throughout India. In Marathwada region it is commonly found on road sides. The herbal based medicine play an important role in healthcare management system (Adeyemi et. al., 2009) and hence Pharmacognostic investigations of *Ocimum gratissimum* L. were undertaken.

Material and methods:

Plant material was collected from field, washed with tap water, shade dried, coarsely powdered and stored in tightly capped containers for further investigation. Dried plant parts were successively extracted with petroleum ether, chloroform, methanol, using Soxhlet apparatus. The extract was concentrated to dryness at 40 °C in rotatory evaporator. The yield of each extract was calculated and hose were stored in refrigerator.

Trans-sections (T.S) of leaf, petiole, node, stem, and root were taken by free hand section. The sections were stained with safranin and light green and mounted in DPX after the customary dehydration. Microphotographs of section were taken by

using micro photographic camera. For studying leaf architecture, leaves were cleaned with 10 % NaOH, followed by trichloroacetic acid and phenol solution (2:1 by weight) and then stained with Kores stamp pad purple ink (Rao et. al. 1980).

Sample of plant powder was stained with phloroglucinol solution followed by concentrate hydrochloric acid (1:1). It was mixed well and allowed to stand for about 3 minutes. It was then mounted in glycerine and observed under microscope it was then stained with iodine solution for identification of starch grains. It was treated with concentrate H₂SO₄, for the identification of calcium oxalate crystals. The microscope characters of powder were studied following Fahn (1997). Number of stomata, Stomatal Index, Vein islet number, Veinlet termination number were determined as per the methods outlined by Khandelwal, (2003) and Salisbury (1927, 1933). Palisade ratios (PR), was calculated as the average number of palisade cells (P) beneath each epidermal cell (E) as defined by Zorning and Weiss; (1925).

Various physic-chemical parameters like ash values (Total Ash, Acid soluble, acid insoluble ash and water-soluble and water insoluble ash values, extractive values (ethanol and water soluble) were measured following suitable methods (Ccurum,1987; WHO, 1998; Muthuraja, 2009; Gupta, 2003)

The fluorescence characters of the plant powders was studied in both day light and UV light (254 and 365 nm) and after treatment with different reagents like sodium hydroxide, picric acid, acetic acid, hydrochloric acid, iodine and ferric chloride (Chase and Pratt, 1949; Kokoshi et. al., 1958). The extracts in different solvents like petroleum ether, chloroform, methanol, and water were subjected to qualitative tests for the identification of phytochemical constituents like Alkaloids, Glycosides, Steroids, Terpenoids, Flavonoids, Tannins, Saponnins, Carbohydrates, Proteins etc. as per the standard procedure (Evans, 2006).

Results and Discussion:

The leaf had a pot shaped midrib and a thin lamina with uneven lower epidermis attached at the lateral sides of its upper side leaving a concave central dorsal depression. Midrib consists of radiating arc of xylem and phloem. Both upper and lower epidermis show simple, covering, uniseriate trichomes as well as sessile short stalked, glandular trichomes. Numerous glandular simple trichomes of average length (10 μ) were observed in the leaf powder. The leaves exhibited anemocytic type of Stomata. The various stomatal frequency and Stomata index, were 14.8, 6.09, respectively on adaxial surface, while those were 64.4 and 19.06 respectively on abaxial epidermis. Vein let

number and Veinlet termination number were 41 and 33 respectively.

The alcohol Soluble Extractive values (%) for leaf, stem and roots were 43.84, 24.84 and 18.24 %, as against 520, 819.520 and 17.92 % respectively water soluble extractive values. The values of the ash content has been presented in Table 1. Flavonoids, Terpenoids were detected in most of extracts, however, tannins were detected in methanolic and aqueous extracts only.

Table 1 : Ash values in *Ocimum gratissimum* L.

	Leaf	Stem	Root
T.A.	6.08	3.08	1.82
A.S.A.	2.46	2.16	1.32
A.I.A.	3.62	0.92	0.5
W.S.A.	5.68	2.13	1.02
W.I.A.	0.4	0.95	0.8

T.A. : Total, A.S.A. : Acid Soluble, A.I.A. : Acid insoluble, W.S.A. : Water soluble, W.I.A. : Water insoluble ash

The effect of various chemicals on colour of the powder has been summarised in Table 2. Almost all phytochemicals (e.g. Volatile oil, Starch, Protein, Tannin, Fat, Saponnin, Glycoside, Alkaloids and Flavonoids) tested were present in the leaves, however, out of these tannins and flavonoids were not detected in stem and roots.

Table 2: Effects of chemicals on powdered parts of *Ocimum gratissimum*.

Sr no	Reagent	Leaf	Stem	Root
1	Powder	Olive green	Light brown	Light brown
2	Powder + Iodine	Light brown	Pinkish	Dark brown
3	Pd + 5% feric chloride	Brown	Pinkish	Dark brown
4	Pd + 1N NaOH	Yellowish brown	Faint yellow	Light brown
5	Pd + Acetic Acid.	Green	Faint brown	Faint brown
6	Extracts + Acetic acid + 50% H ₂ SO ₄ .	Faint brown	Faint brown	Faint brown
7	Pd + 50% H ₂ SO ₄	Greenish yellow	Faint yellow	Faint brown
8	Pd, concentrate HCl.	Green	Pale yellow	Faint brown
9	Pd + Ammonia.	Faint green	Pale yellow	Faint brown
10	Pd + Ammonia + pt. ferrocyanide.	Faint green	Dark green	Yellow green
11	Extracts + 4% NaOH + 1% CuSO ₄ .	Dark green	Yellow green	Yellow green
12	Extracts + 40% NaOH + 1% Lead acetate.	Light green	Yellow	Light green
13	Pd + 50% Nitric acid + ammonia.	Orange brown	Radish brown	Lemon yellow
14	Pd + satu. Picric Acid.	Light orange	Lemon yellow	Light yellow

In present study, some diagnostic feature has been described to identify and differentiate the leaf of *Ocimum gratissimum* Linn from the other crude drugs. The information provides specific parameters of standardization, which are useful in correct identification and authentication of this plant.

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