# Chemical Composition of Methanolic Extract of Tulsi Leaves (*Ocimumsantum* L.)

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***Abstract: Osmiumsantum*** **L. is serve as medicine in Indian medicinal system from ancient time and today's. This plant is potential source of bioactive molecules. In recent years, the indigenous system of medicine are getting more importance because of therapeutic value of these medicinal plants. In present study primary biochemical analysis followed by HRLCMS analysis leads to the identification of 15 Acids. In which Pteroyl-D-glutamic acid, Tuberonic acid, Baeomycesic Acid, various chemical compounds getting eluted from chemical profile of methanol extract of Tulsi leaf.**

## I. INTRODUCTION

*Ocimumsantum* L. plant is commonly known as tulsi belongs to family Lamiaceae. Tulsi is an incredible herb revered in Indian mythology known for its medicinal properties. Tulsi is branched shrub 30-60 cm tall with hairy stem. This plant is used to prevent cough, cold, fever, asthma, hepatic disease and many skin disease. (SunitaVerma, *et.al.* 2016) It is also known as aromatic plant. Plant derived drugs forms an important part of the modern medicinal system. Tulsi is consider as a natural resources for biological research. Extract of tulsi is useful for management of many infections and pathogens. Present investigations were monitor Methanolic extract of tulsi.

## II. MATERIALS AND METHOD

*Collection of plant material: Ocimumsantum* L. were collected from Aurangabad.

*Methanol extract:* 40 gm powder of fresh and shad dry leaves extracted by Soxhlet extraction.

*High Resolution Liquid Chromatography - Mass Spectroscopy (HRLC- MS):*

Samples were analyzed on a LC-ESI-Q-TOF-MS (Agilent Technologies 6550 i-Funnel) system equipped with a G4220B pump, G4226A auto sampler and G1316C, and a diode array detector (DAD). The elution solvent consisted of a gradient system of 0.1% formic acid in water (A) and acetonitrile (B) at a flow rate of 0.3 ml/min. The gradient system started with 95% A: 5% B reaching 5% A: 95% B in 50 min., then back to initial composition 95% A: 5% B in 10 min which was held at same composition for 5 min. The MS analysis was carried out by ESI positive ionization mode. MS source conditions were as follows: capillary voltage 3500 V, Gas temperature 250 C, drying gas flow 13 L/min, sheath Gas temp 300, sheath Gas Flow 11, nebulizing gas pressure 35 (psig), fragmentor 175 V, Skimmer 65 V, OctopoleRF Peak 750 V, and mass range m/z 50–1000. The resolution was 40,000 FWHM. Metlin database was used to structure confirmation.

## III. RESULTS AND DISCUSSION

HRLC-MS analysis lead to the identification of various phytochemical compounds from HR fractions of methanol extract of tulsi leaves. Acids were identified through mass spectrometry attached with HR which showed the presence of 15 acids and results of present phytochemical screening are tabulated in (Table 1).

Acids identified from methanol extract of tulsi leaves *i.e.* r, Pteroyl-D-glutamic acid, Tuberonic acid, Baeomycesic Acid, , Ramipril The retention time, mass, molecular formula and M/Z value, DB difference (ppm) of 26 major metabolites was evaluated (Table No. 1). Mass to charge ratio (M/Z) was calculated from spectra (Table- 1). HRLC-MS chromatogram of the extract showed relative concentrations of various chemical compounds. Heights of peak indicate relative concentrations of components. Nature, molecular formula and structure of chemical compounds were analyzed by using Mass spectrometer at different times. Large compound splits into small ones giving rise to appearance of peaks at various m/z ratios. These HRLC-MS spectra are fingerprint of that compound and can be identified with the help of data library.

The main chemical constituent of Tulsi are Oleanolic acid, Ursolic acid, Rosmarinic acid was reported (Srinivas, *et.al.*, 2015) In present study Tuberonic acid,4-Hydroxypelargonic acid,5-Phenylaleric acid and Usnic acid were observed. The leaves of Tulsi contain 0.7%volatile oil, comprising about 71% Eugenol and 20% methyl Eugenol. The oil also contain Carvacrol and Sesquiterpine Caryophyllene. (Kalyankumr, *et.al.*,2012) R.Shanmuga*et.al* (2011) reported Rosmaric acid and Ursolic acid and it has vast therapeutic applications like Antiinfiammatry, Antioxident, Anticarcinogenic and Neuroprotective properties. In present study observed that leaves extract of *Ocimumsantum* found to have Pharmacological constituent.

Table- 1 Acids Present in Tulsi Leaf

| Sr. no | Name of compounds | RT | Mass | Formula | M/Z |
|---|---|---|---|---|---|
| 1 | **Pteroyl-D-glutamic acid** | 1.488 | 473.1648 | $C_{20}H_{23}N_7O_7$ | 474.1721 |
| 2 | **1-Cyclohexene-1-acrylic acid, 2,6,6-trimethyl-3-oxo-** | 4.522 | 208.1092 | $C_{12}H_{16}O_3$ | 209.1165 |
| 3 | **5,8,11-heptadecatriynoic acid** | 5.004 | 258.156 | $C_{17}H_{22}O_2$ | 259.1633 |
| 4 | **Undecylic acid** | 5.067 | 186.1626 | $C_{11}H_{22}O_2$ | 209.1519 |
| 5 | **4-hydroxy pelargonic acid** | 7.116 | 174.1266 | $C_9H_{18}O_3$ | 197.1158 |
| 6 | **5-Phenylvaleric acid** | 7.116 | 178.0981 | $C_{11}H_{14}O_2$ | 179.1054 |
| 7 | **3E,5E-tridecadienoic acid** | 7.49 | 210.1609 | $C_{13}H_{22}O_2$ | 211.1683 |
| 8 | **3-Phenoxypropionic acid** | 7.584 | 166.0617 | $C_9H_{10}O_3$ | 167.069 |
| 9 | **6-methyl caprylic acid** | 10.583 | 158.132 | $C_9H_{18}O_2$ | 181.1213 |
| 10 | **(-)-Usnic acid** | 10.969 | 344.0872 | $C_{18}H_{16}O_7$ | 345.0944 |
| 11 | **Baeomycesic acid** | 11.619 | 374.0976 | $C_{19}H_{18}O_8$ | 375.1048 |
| 12 | **Docosanedioic acid** | 13.664 | 370.3164 | $C_{22}H_{42}O_4$ | 371.3238 |
| 13 | **12beta-Hydroxy-3-oxo-5betacholan-24-oic Acid** | 20.992 | 390.2747 | $C_{24}H_{38}O_4$ | 391.2815 |
| 14 | **2,4,6-trimethyl-2,15-tetracosadienoic acid** | 23.329 | 406.3797 | $C_{27}H_{50}O_2$ | 429.369 |
| 15 | **Tuberonic acid** | 4.523 | 226.119 | $C_{12}H_{18}O_4$ | 227.1263 |

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