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GC-MS Study of Nutritious leaves of *Ehretia laevis*

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Abstract: During last two decades, use of Ayurveda and other traditional medicines has expanded globally and gained popularity. Medicinal plants are the sole source of active principles capable of curing human's ailments. Thus, natural products have been a major source of drugs for centuries. *Ehretia laevis* is a medicinally important plant belonging to family Boraginaceae. All parts of the plant have medicinal properties. Taking into consideration its medicinal importance, hexane extract obtained by soxhlet extractor of leaves is analyzed. It is examined using GC-MS instrument and identification is performed by similarity index of NIST and WILEY libraries. Eleven compounds are identified. This work is carried out for the first time.
Key Words: *Ehretia laevis*, GC-MS, Soxhlet Extractor.

Introduction

The use of medicinal plants as a source of medicine has been inherited and is an important component of the health care system. Recently, extracts and bioactive compounds which isolated from medicinal plants are used for antibacterial, antifungal and antiviral therapy[1-3]. The plant based traditional medicine system continues to provide primary health care to more than three quarters of the world's population. All over the World, plant derived traditional medicine, therefore has an important role in the maintenance of health. Some major categories of plants derived products include personal care products and phyto-cosmetics, herbal medicines, natural health products and phyto-pharmaceuticals[4].

Literature survey revealed wide biological activity of family Boraginaceae. *Ehretia laevis* is a small tree. It is generally found in Asia and Australian tropics[5]. The inner bark is used as food[5]. Leaves are applied to ulcers and in headache[6]. The quantitative estimation of phytoconstituents and trace elements of the leaves study establishes the nutritional value to contribute as the resources of Fats, Proteins, Carbohydrates, Vitamin-C, E, A , Riboflavin and Thiamine[7]. Fruit is astringent, anthelmintic, diuretic, demulcent, expectorant and is used in affections of urinary passages, diseases of lungs and spleen[6]. Powdered kernel mixed with oil is a remedy in ringworm[6]. Seeds are anthelmintic[6].

With reference to the above facts, the leaves have been examined to know the presence of constituents. In the present study, hexane extract of the leave of *E. laevis* was analyzed. This work will help to identify the compounds, which may be used in body products or of

therapeutic value. GC-MS is one of the best techniques to identify the constituents of hexane extract. It is composed of long chain, branched hydrocarbons, alcohol, fatty acid and esters. This work has been carried out for the first time.

Materials and Methods

Plant Collection and Extraction

The leaves of *Ehretia laevis* were collected from Pune, Maharashtra, India during the month of July. It was identified and authenticated at Botanical Survey of India, Pune, Maharashtra, India. Its voucher number is BSI / WC / Tech / 2006 /185. The air shade dried powdered material (100 g) was extracted with soxhlet extractor for 15 hrs. using n-hexane (40–60). The solvent was removed under reduced pressure. The hexane extract (9%) by weight of the leaves obtained as yellow thick viscous oil. This thick oil was analyzed by Gas Chromatography. It showed the presence of eleven compounds. Further, peaks were examined by Mass spectrometry coupled with Gas chromatography **(Table 1).**

GC-MS Analysis

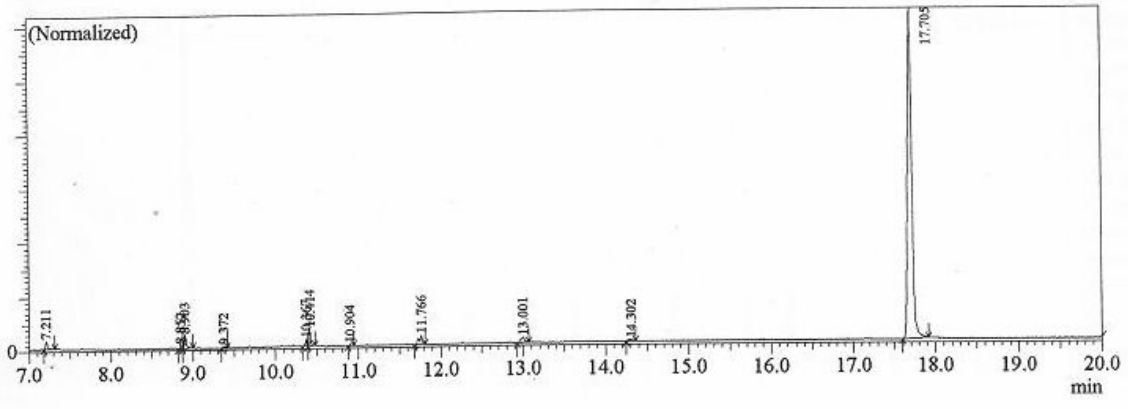
Gas chromatography analysis was performed by Agilent 6890N with FID using HP-5 capillary column. GC-MS analysis was performed using a Shimadzu QP 5050A mass spectrometer coupled with a Shimadzu 17A gas chromatograph fitted with a split-split less injector and a DB-5 fused silica capillary column (30m x 0.25 mm i. d., 0.25 µm film thickness). Helium was used as a carrier gas at a flow rate of 1.0 ml/min. Injection port was maintained at 250^{o}C, and the split ratio was 40:1. Oven temperature programming was done from 50 to 280^{o}C, at 10^{o}C/min, and it was kept at 280^{o}C for 5 min. Interface temperature was kept at 250^{o}C. Ionization mode was electron Impact ionization and the scanning range was from 40 amu to 400 amu. Mass spectra were obtained at 0.5 sec. interval.

Identification of the chemical constituents was based on comparison of their mass spectra with those of authentic standards of mass spectra of NIST and WILEY libraries. Structures were defined by percentage similarity values. They are confirmed by the study of classical fragmentation pattern, base peaks and molecular ion peaks of the compounds (Table 1).

Table 1: GC-MS of the Soxhlet Hexane extract

Sr. No.	Retention Time	Name of the compound	% Similarity	Molecular Ion Peak (g)	Base Peak
1	7.2	Dodecane	97	170	57
2	8.8	1-Tridecene	95	182	55
3	8.9	Tetradecane	97	198	57
4	9.4	n Octylcyclohexane	93	196	83
5	10.4	1Tridecanol	96	200	55
6	10.4	Hexadecane	98	226	57
7	10.9	Decyl cyclohexane	90	224	83
8	11.8	Heptadecane	97	240	57
9	13.0	Nonadecane	92	268	57
10	14.3	Tetratetracontane	97	619	57
11	17.7	Di – n octyl phthalate	97	390	149

Gas Chromatograph of Soxhlet Hexane Extract



Results and Discussion

Soxhlet hexane extract of leaves sample yielded 9% of viscous oil. Use of GC-MS enabled identification of chemical constituents present in it. It contains eleven major constituents. These are identified as hydrocarbons, alcohol, fatty acids, aliphatic and aromatic esters. Two of them are oxygenated and the rest are hydrocarbons. Unsaturated esters are used in various industries. In future the plant material could be screened for various in-vivo studies.

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