

The GC MS Analysis of Ethyl Acetate Extract Of 'Flueggea Leucopyrus.

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Abstract

The present study deals with the GC MS analysis of one medicinal plant, *Flueggealeucopyrus*. Ethno-pharmacologically this plant is used to treat cough, hay asthma, bowel complaints, diarrhoea, gonorrhoea, constipation, mental illness, kidney stones, cancer and also as a laxative. This plant was collected from nearby hills of Chengalpattu, Tamilnadu. The ethyl acetate extract of the aerial parts of the plant was subjected to GC MS study following standard protocols. It was observed that some very important molecules such as 7-Octadecyne, 2-methyl-, 2H-1-Benzopyran-2-one, 7,8-dihydroxy-6-methoxy-, Ethanol, 2-(9-octadecenyloxy)-, (Z)-, dl.alpha.-Tocopherol, Ursodeoxycholic acid, Stigmasterol were found in the GC MS profile which has far reaching medicinal roles, thereby supporting the medicinal value of this plant.

Keywords: GC MS, Ethyl acetate, *Flueggealeucopyrus*, dl.alpha.-Tocopherol, Ursodeoxycholic acid, Stigmasterol

INTRODUCTION

Flueggealeucopyrus Willd is a common medicinal plant known as Katupila in Tamil language, is used as a medicine by ethnic people for treating cough, hay asthma, bowel complaints, diarrhoea, gonorrhoea, constipation, mental illness, kidney stones, and cancer. It is also as a laxative (Bulugahapitiyaet al, 2014; Dondaet al, 2013; Helinaet al, 2015). The anti-inflammatory, anti-arthritis and anti-oxidant, antibacterial and wound healing properties of *F. leucopyrus* have been reported (Kumar et al, 2016). Ajmeeret al, 2014 have reported its wound healing potential in diabetic wound management. Rajeswari and Srinivasan, 2017 have reported its anti-inflammatory role on experimental rats. The diuretic potential of the aqueous extracts of this plant was reported by Ellepolaet al, 2015. Soyaset al. 2014 have reported the antioxidant and anti-proliferative activity of this plant. The aphrodisiac properties of this plant were studied by Unsaleet al, 2018. Samarakoonet al, 2014 have shown the cytotoxic and apoptotic role of the decoction of the aerial parts of this plant. The present work is in continuation of our work to report the molecular roles of herbal plants and medicines (Priyadarshiniet al, 2017; Jayakumariet al, 2017; Raoet al, 2018; Vijayalakshmi and Rao, 2019; Yuvarajet al, 2019; Mutteviet al, 2019, Raoet al, 2019; Mutteviet al, 2020; Vijayalakshmi and Rao, 2020; Janakiet al, 2021). Sudhaet al, 2013 have also reported the GC MS profile of ethanolic extract of the aerial parts of this plant. Rajeswari and Srinivasan, 2015 have reported the GC MS profile of the ethanolic extracts of the leaves of this plant.

MATERIALS AND METHODS

The plant *Flueggealeucopyrus* was collected from the nearby hills at Chengalpattu, Tamil Nadu. The plant was identified by a qualified botanist at Chennai. The ethyl acetate extract of the shade dried

whole plant was collected after 48 h of soaking. The extract was evaporated and the dried powder was used for GC-MS analysis by standard procedures.

GC-MS Procedure

Instrument: GC (Agilent: GC: (G3440A) 7890A. MS/MS: 7000 Triple Quad GCMS) was equipped with MS detector.

Sample Preparation

About 100 ml sample was dissolved in 1 ml of suitable solvents. The solution was stirred vigorously using vortex stirrer for 10 s. The clear extract was determined using GC for analysis.

GC-MS Protocol

Column DB5 MS (30 mm × 0.25 mm ID × 0.25 μm, composed of 5% phenyl 95% methylpolysiloxane), electron impact mode at 70 eV; helium (99.999%) was used as carrier gas at a constant flow of 1 ml/min injector temperature 280°C; auxiliary temperature: 290°C ion-source temperature 280°C.

The oven temperature was programmed from 50°C (isothermal for 1.0 min), with an increase of 40°C/min, to 170°C C (isothermal for 4.0 min), then 10°C/min to 310°C (isothermal for 10 min) fragments from 45 to 450 Da. Total GC running time is 32.02 min. The compounds are identified by GC-MS Library (NIST and WILEY).

RESULTS AND DISCUSSION

The results of the GC-MS analysis of the aerial parts of *Fluggealeucopyrus* ethyl acetate extract, along with the possible medicinal role of each molecule of *Fluggealeucopyrus* extract are tabulated in Table 1. Figure 1 represents the GC-MS profile of ethyl acetate extract of the whole plant of *Fluggealeucopyrus*. The identification of metabolites was accomplished by comparison of retention time and fragmentation pattern with mass spectra in the NIST spectral library stored in the computer software (version 1.10 beta, Shimadzu) of the GC-MS along with the possible pharmaceutical roles of each bio molecule as per Dr. Duke's Phytochemical and ethnobotanical data base (National Agriculture Library, USA) and others as shown in Table 1. Table 1 indicates the types of compounds present in the ethyl acetate extract of this plant. Among them 7-Octadecyne, 2-methyl-, 2H-1-Benzopyran-2-one, 7,8-dihydroxy-6-methoxy-, Ethanol, 2-(9-octadecenyloxy)-, (Z)-, dl.-alpha.-Tocopherol, Ursodeoxycholic acid, Stigmasterol do have medicinal values such as antioxidant, anti-cancer, anti-allergic, neuro-stimulatory activities which augur well with its medicinal role.

CONCLUSION

Thus it can be concluded that due to the presence of these molecules, *Fluggealeucopyrus* has the medicinal roles for which it is used. Further work to isolate and understand the molecular mechanism is warranted.

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Figure 1.Represents the GC MS graph of *Fluggealeucopyrus*ethyl acetate extract.

Qualitative Compound Report

Data File	280121033.D	Sample Name	Fluggea leucopyrus
Sample Type		Position	120
Acq Method	GC Screening New Method.M	Acquired Time	30-01-2021 PM 11:29:50
Comment			

User Chromatogram

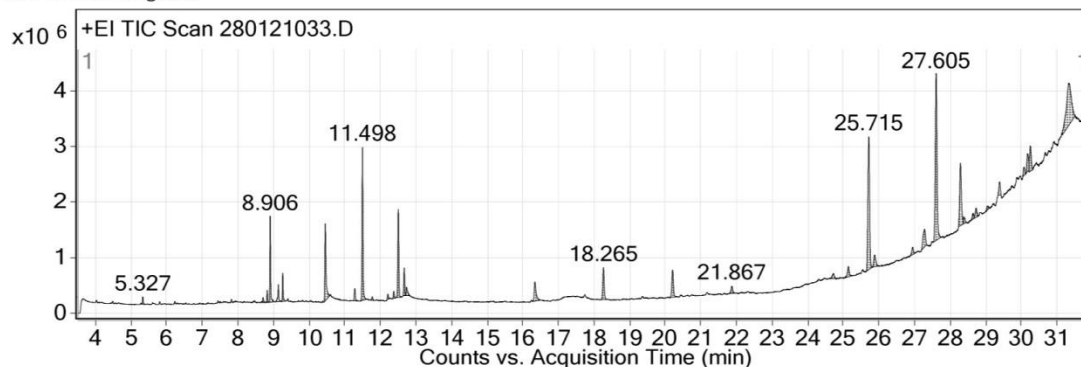


Table1. Indicates the retentions time, types of possible compound, molecular formula, molecular mass, percentage peak area and the possible medicinal roles of each compound as shown in the GC MS profile of *Fluggealeucopyrus*.

Ret. Time	Name of The Molecule	Mol. Formula	Molecular Mass	% Peak Area	Medicinal roles
8.91	Bicyclo[3.1.1]heptane, trimethyl-	2,6,6-C10H18	138.1	3.98	Not known
9.14	7-Octadecyne, 2-methyl-	C19H36	264.3	0.98	Catechol-O-Methyl-Transferase-Inhibitor, Methyl-Donor, Methyl-Guanidine-Inhibitor
10.45	n-Hexadecanoic acid	C16H32O2	256.2	5.56	Not known
12.51	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	C20H40O	296.3	6.73	Not known
12.67	Ethyl 9,12,15-octadecatrienoate	C20H34O2	306.3	1.61	Not known
16.34	2H-1-Benzopyran-2-one, dihydroxy-6-methoxy-	7,8-C10H8O5	208	2.24	Acidifier, Arachidonic acid Inhibitor, Increases Aromatic Amino acid decarboxylase activity, Inhibits production of uric acid, Urine acidifier, Anaphylactic, Antitumor, Arylamine-N-Acetyltransferase-Inhibitor, Decreases Norepinephrine Production, Down regulates nuclear and cytosol androgen reuptake, GABA-nergic, Increases natural killer cell activity, Inhibits Production of Tumor Necrosis Factor, Myo-neuro-stimulant,
18.27	2-((Octan-2-yloxy)carbonyl)benzoic acid	C16H22O4	278.2	2.71	Not known
25.14	Ethanol, 2-(9-octadecenyl)-, (Z)-	C20H40O2	312.3	1.17	Ethanol absorption inhibitor, Ethanolytic
25.72	dl-.alpha.-Tocopherol	C29H50O2	430.4	13.38	Tocopherol synergist, 5 alpha reductase inhibitor, Alpha agonist, Alpha amylase inhibitor, Alpha glucosidase inhibitor, HIF-1 alpha inhibitor, Ikappa B-alpha phosphorylation inhibitor, Increase alpha mannosidase activity, Interleukin 1-alpha inhibitor, Testosterone-5-Alpha-Reductase-Inhibitor, TNF- alpha inhibitor
25.87	cis-1-Chloro-9-octadecene	C18H35Cl	286.2	1.43	Not known
27.28	Ursodeoxycholic acid	C24H40O4	392.3	9.20	Acidifier, arachidonic acid inhibitor, increases aromatic amino acid decarboxylase activity, inhibits production of uric acid
27.61	Stigmasterol	C29H48O	412.4	17.28	Precursor of progesterone , acts as intermediate in the biosynthesis of

				androgens and estrogens, anti-osteoarthritic, antihypercholesterolemic, cytotoxic, antitumor, hypoglycemic, antimutagenic, antioxidant, anti-inflammatory, analgesic (Kauret <i>al</i> , 2011)
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