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Gas Chromatography - Mass Spectrum Analysis of Bioactive Compound of the Petrolieum Ether Extract of Tabebuiarosea

KEYWORDS: Tabebuiarosea,GC-MS analysis, 9,12octadecadienoic acid, 2, 6 di hexecanoate, tetratriacontane, butyl ester, stearic acid and oleic acid.

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ABSTRACT *Tabebuiarosea is one of the medicinally important plants. The herbal products obtained from the bark of tabebuiatress are called "taheeebo", "Lapacho", "pau d' arco" and "iperoxo". Traditionally, taheebo has been used for treating ulcers, syphilis, gastrointestinal problems, candidiasis, cancer, diabetes, prostatitis, constipation and allerigies. The present investigation was carried out to determine the possible chemical compounds from tabebuiarosea by GC-MS technique. The major chemical constitutents are 9,12 octadecadienoic acid (17.25%), (+)- Ascorbic acid,ethyl ester (14.32%), Tetratriacontane(7.72%), Hexadecanoic acid, butyl ester(6.30%), octadecanoic acid(6.30%), Oleic acid, butyl ester (4.84%).*

INTRODUCTION

Natural products have played an important role in the development of drugs and drugs leads for various diseases including cancer[1]. The secondary metabolites from natural sources are good candidates for drug development because being elaborated within the living systems, they are perceived to exhibit more biological friendliness than totally synthetic drugs[2]. Thus a search for anticancer compound from medicinal plants is on a rise.

Tabebuiarosea (Betrol)Dc belong to the family Bignoiaceae[3] commonly known as "pink trumpet tree" can grow up to 15mts and well known for its beautiful flowers. The timber is widely used for general construction and carpentry in many European countries. The fruits are green, long and bean pod-like with a length of 20-40cm (8-16inch). The fruits turn dark brownwhen ripe and contain flat, heart-shaped seed with tiny wings. The graceful beauty is a treat for the eyes, but the tree has medical uses as weel. Tea made from the leaves and bark is known to have a fever reducing effect[4].Taheebo is reported to be an astringent, anti-inflammatory, antibacterial, antifungal, diuretic and laxative[5-9]

METERIALS AND METHODS

COLLECTION OF PLANT METERIALS

The plant flowers were collected from the tree found in the Sastar University, vallam, thanjavur(Dt). The collected flowers were botanically authenticated by Dr.S. John BrittoRapinat Herbarium, st.Joseph's college, Trichy.

PREPARATION OF POWDER AND EXTRACT

The flower (1Kg) was shade dried,crushed by hand and extracted with petroleum ether for 48 hours. The distillation using soxhletapparatus then the extract was filtered and vaccum dried. The extract was used for GC-MS analysis.

GC-MS ANALYSIS

GC-MS technique was used in this study to identify the compounds present in the extract. GC-MS technique was carried out at periyarmaniammai University Thanjavur, Tamilnadu. GC column used is Rtx-5ms (Restek), with ultra-high pure helium gas at a flow rate of 1.33 mL/minute. 1 microlitre sample was injected into the column inlet. The inlet temperature was 260 degrees centrigrade, with a split ratio of 10. The column temperature program was to start at a final temperature of 60 degrees centigrade during sample injection, with a ramping rate of 10 degree per minute till it attained a final temperature of 200 degrees and then a hold time of 3 minutes and again increasing to 280 degrees centrigrade with a ramping rate of 10 degrees per minute, and maintained at 280 degrees centrigrade for 10 minutes. The ion source was temperature was maintained at 200 degrees centigrade, and m/z was monitored from 40 to 700.Compound identification was obtained by comparing the retention times with those of authentic compounds and the spectral data obtained from library data of the corresponding compounds. The given sample was extracted with petroliem ether and analyzed in GC-MS for different components.

RESULT AND DISCUSSION

The sample of petroleum ether extract was run for 35 mints. The chromatogram (Fig 1) show 7 prominent peak in the retention time rang 23.006-33.757.the peak at 24.986 retention time is having the peak area 17.72. This largest peak is due to the presence of 9, 12octadecadienoic acid. The second less prominent peak at 23.006 retention time has the peak area 14.32 is due to the presence of (+) - Ascorbic acid, 2,6-dishexdecanoate. The third less significant peak at 33.575 retention time with the peak area 7.72 is characteristic of all Tetratriacontance. The fourth less prominent peak at 29.397 retention time with the peak area 6.30 denotes Hexadecanoic acid, butyl ester. The other less prominent peak at other retention times is given in table 1. The total ion chromatograph (TLC)

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showing the peak identities of the compounds identified have been given in Figur 1.

Fig1: GC-MS anlysis of *tabebuia rosea* flower

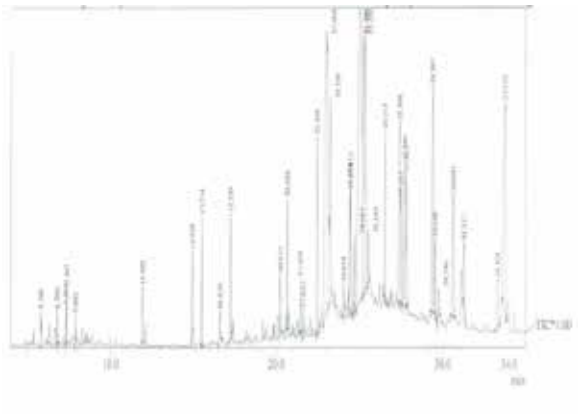

Table1Compound identified in tabebuiarosea plant extract (GC MS study)

No	RT	Name of the compound	Molecular Formula	MW	Peak Area (%)
1	5.790	1-Hexanol,2Ethyl	$C_8H_{18}O$	130	0.16
2	6.790	Benzen,4-ethyl-1,2-dimethyl	$C_{10}H_{14}$	134	0.28
3	7.294	Benzen,1,2,4,5-tetramethyl	$C_{10}H_{14}$	134	0.32
4	7.367	Benzen,1,2,4,5-tetramethyl	$C_{10}H_{14}$	134	0.49
5	7.900	1,3-cyclo pentadiene,1,2,3,4 tetramethyl-5-methylene	$C_{10}H_{14}$	134	0.27
6	11.958	1-pentadecane	$C_{15}H_{30}$	210	0.67
7	14.958	Furanacetic acid, 4-hexyl 2,5-dihydro-2,5 dihydro-2,5 dioxo	$C_{12}H_{16}O_5$	240	1.29
8	15.534	Phenol, 2,4-Bis (1,1-Dimethyl ethyl)	$C_{14}H_{22}O$	206	1.06
9	16.630	Dodecanoic acid,	$C_{12}H_{24}O_2$	200	0.50
10	17.239	Nonadecene	$C_{19}H_{38}$	266	1.51
11	20.233	Tetradecanoic acid, Myristic acid	$C_{14}H_{28}O_2$	228	0.75
12	20.656	1-Nonadecene	$C_{19}H_{38}$	266	1.38
13	21.429	2-Pentadecanone, 6,10,14 trimethyl	$C_{18}H_{36}O$	268	0.54
14	21.623	Pentadecanoic acid	$C_{15}H_{30}O_2$	242	0.31
15	22.433	Hexadecanoic acid, methyl ester	$C_{17}H_{34}O_2$	270	2.29
16	23.006	1-(+)- Ascorbic acid 2,6-dihexadecanoate	$C_{38}H_{68}O_8$	652	14.32
17	23.239	Tetredecanoic acid, ethyl ester	$C_{16}H_{32}O_2$	256	4.53
18	24.034	Heptadecanoic acid	$C_{17}H_{34}O_2$	270	0.37
19	24.408	Methyl 10-trans,12-cis-octadienoate	$C_{19}H_{34}O_2$	294	1.55
20	24.453	9-octadecenoic acid, methyl ester	$C_{19}H_{36}O_2$	296	2.06
21	24.682	Methyl stearate, octadecanoicacid,methyl ester	$C_{19}H_{38}O_2$	298	0.72
22	24.986	9,12 octadecadienoi acid, linolsaeure	$C_{18}H_{32}O_2$	298	17.25
23	25.200	Octadecanoic acid, stearic acid	$C_{18}H_{36}O_2$	284	6.24
24	25.200	Hexadecanoic acid, butyl ester, palmitic acid,	$C_{20}H_{40}O_2$	312	6.30
25	25.533	Hexadecane 1,1,bis (dodecyloxy)	$C_{40}H_{82}O_2$	594	0.92
26	26.517	Hexacosane	$C_{26}H_{54}$	366	2.30
27	27.398	Oleic acid, butyl ester, (Z)9-octadecenoic acid butyl ester	$C_{22}H_{42}O_2$	338	4.84
28	27.492	n-propyl 9,12,15-octadeca trienoate	$C_{21}H_{36}O_2$	320	1.66
29	27.700	octadecenoic acid, butyl ester	$C_{22}H_{44}O_2$	340	2.76
30	27.815	Tetracosane	$C_{24}H_{50}$	338	2.17
31	29.397	Hexacosane, Eines	$C_{26}H_{54}$	366	5.21
32	29.740	Palmiticacid,N-octyl ester	$C_{24}H_{48}O_2$	368	1.21
33	29.740	2-eicosanol,(+-)2-1osanol	$C_{20}H_{42}O$	298	0.58
34	30.641	Bis (2-ethyl hexyl) phthalate	$C_{24}H_{38}O$	390	2.84
35	31.277	Tetracontane, n-tetracontane	$C_{40}H_{82}$		1.23
36	33.324	14-Beta-H- porgna	$C_{21}H_{36}$	288	1.40

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No	RT	Name of the compound	Molecular Formula	MW	Peak Area (%)
37	33.757	Tetratriacontane	$C_{34}H_{70}$	478	7.72

CONCLUSION

The present study has been found useful, where a variety of active compounds have been found in petroleum ether extract. The presence of various bioactive compounds. (alkenes, phenols, alkaloids and flavonoids) Justifies the use of the whole plant for various ailments by traditional practitioners. It could be concluded that the *Tabebuiarosea* flowers of petroleumether extract is individual phytochemical constituents and subjecting it to biological testing will definitely give fruitful results

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