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IDENTIFICATION OF SECONDARY METABOLIES FROM PENTATROPIS MICROPHYLLA BY GC-MS ANALYSIS

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ABSTRACT

***Background**: The present study was aimed to determine the presence of biomolecules in the ethanolic leaves extract of Pentatropic microphylla. **Materials and Methods**: Pentatropic microphylla leaves extract was used. Gas Chromatography Mass Spectrum equipment used for identification and determination of the bio active compounds. **Results**: The GC-MS results have shown the different type of secondary metabolites present in the extract. A total of 28 bio active compounds were identified by GC-MS. Out of 28 compounds 2 compounds have shown highly potent 1,6-Anhydro-á-D-glucopyranose (28.7332%) and Propane, 1,1,3-triethoxy (25.9192%) respectively. **Conclusion**: From the results, it is evident that Pentatropic microphylla contains various secondary metabolites, which may heal many diseases. Hence, it is recommended for further evaluation of its pharmacological activity.*

***KEYWORDS**: Pentatropic microphylla, 1,6-Anhydro-á-D-glucopyranose, Propane, 1,1,3-triethoxy*

INTRODUCTION

Past five or six decades thousands of secondary metabolites have been identified and it is utilizing by the pharmaceutical industry for making drugs for various ailments as well as cosmetics; and estimated that thousands of these compounds still exist. Many researchers have been discussed in a lot of literature, reviews and reports about the importance of natural products (1).

Well established and formulated herbal remedies are used around the world varies with the technological advancements of countries that produce and use them. So far, several drugs including strychnine, vincristine, taxol, ergot, etc., are of herbal originated and have involved as a result of extensive ethanomedical research. The field of ethanomedicine play a vital role in the current research and development of important and potent needed medicines for various ailments and

disorders.

Herbal based drugs have been well known facts that successfully treat chronic disease conditions with minimal adverse effects and low cost. Hence there is an increased necessity to find out the bioactive compounds from medicinal plants.

AIM AND OBJECTIVE

The aim of the present study is to examine the Phytochemical compounds present in the ethanol leaves extract of Pentatropis microphylla by Gas-Chromatography and Mass Spectrophotometer (GC-MS) analysis.

MATERIALS AND METHODS

Pentatropis microphylla belongs to the family Asclepiadaceae twining, perennial herb. Leaves are 1-3.5 cm long, 0.5-2.5 cm wide broadly oblong or ovate elliptic.

PLANT SAMPLE EXTRACTION

Plant material – *Pentatropis microphylla* leaves were collected from Cauvery river belt in Tiruchirappalli District of Tamil Nadu and washed through tap water and kept air dried at room temperature for 3 weeks and grounded into powder. The 20gm of powder material was extracted successively using ethanol solvent to soxhlet extractor. Then the crude extract was kept at 4^0 C for further use. Then took 2 mg of crude extract and dissolved 5ml of absolute alcohol for few minutes and then filtered through Whatman filter paper No.1, before filtering, the filter paper along with sodium sulphate is wetted with alcohol. The extract contains both polar and non-polar phytoconstituents.

GC MS ANALYSIS

GC-MS analysis was carried out on a GC Clarus 500 Perkin Elmer system comprising a AOC-20i auto sampler and gas chromatograph interfaced to a mass spectrometer (GC-MS) instrument employing the following conditions. Column Elite-5ms fusedsilica capillary column (30mmx0.25mm ID x 1µ M df, composed 5% Phenyl 95% dimethylpolysiloxane), operating in electron impact mode at 70 eV helium (99.999%) was used as carrier gas at a constant flow of 1ml/min and an injection volume of 0.5 µ 1 was employed (split ratio of 10:1) injector temperature 250^0C, ion source temperature 280^0C. The oven temperature was programmed from 110^0C (isothermal for 2min), with an increase of 10^0C/min, to 200^0C, then 5^0C/min to 280^0C, ending with a 9min isothermal at 280^0C. Mass spectra were taken at 70 eV, a scan interval of 0.5 seconds and fragments from 45 to 450 Da. Total GC running time was 36 minutes.

IDENTIFICATION OF ACTIVE COMPOUNDS

Interpretation on mass spectrum GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more than 62,000 patterns. The spectrum of the unknown compound was compared with the spectrum of the known compound stored in the NIST library. The name, molecular weight and structure of the compounds of the test material were ascertained.

RESULTS AND DISCUSSION

The results have shown in Figure 1. Totally twenty eight compounds were identified in the ethanolic leaves extract of *Pentatropis microphylla* by GC-MS analysis. The active molecules were compared with standard library and identified. The active principles retention time (RT), molecular formula, molecular weight (MW) and concentration (%) are presented in the Table 1. Among the twenty eight compounds two compounds have been identified as most prevailing compounds such us 1,6-Anhydro-á-D-glucopyranose (28.7332%) and Propane, 1,1,3-triethoxy- (25.9192%).

Based on our results the plant definitely have pharmacological activity because of the presence of the bio active compounds.

CONCLUSIONS

As many previous researchers reported that most of the biomolecules have anti microbial or anti diabetic activity. Since, there is no evidence or previous study conducted in this plant. Hence, we recommended for further research to identify its pharmacologic activity by *In-vitro* or *In-vivo* method.

FIGURE 1: *PENTATROPIS MICROPHYLLA* CHROMATOGRAM

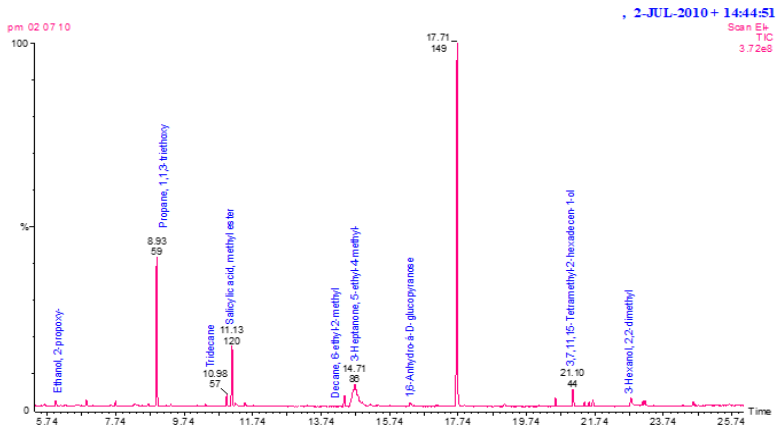

TABLE 1. COMPOUNDS IDENTIFIED IN *PENTATROPIS MICROPHYLLA*

S.No.	Peak Name	Retention Time	Peak Area	Peak Area %
1	Ethanol, 2-propoxy- Formula: $C_5H_{12}O_2$	5.98	229568	1.5782

	MW: 104			
2	Vinyl Ether Formula: C_4H_6O	6.58	101218	0.6958
	MW: 70			
3	Pentane, 1,1-diethoxy- Formula: $C_9H_{20}O_2$	6.88	224878	1.5459
	MW: 160			
4	Glycerin Formula: $C_3H_8O_3$	7.07	17364	0.1194
	MW: 92			
5	Decane, 2,5,9-trimethyl- Formula: $C_{13}H_{28}$	7.73	190733	1.3112
	MW: 184			
6	Benzene, (1,1-dimethylethoxy)- Formula: $C_{10}H_{14}O$	7.61	70437	0.4842
	MW: 150			
7	3,3-Diethoxy-1-propanol Formula: $C_7H_{16}O_3$	8.53	13328	0.0916
	MW: 148			
8	Benzeneacetaldehyde Formula: C_8H_8O	8.67	87885	0.6042
	MW: 120			
9	Propane, 1,1,3-triethoxy- Formula: $C_9H_{20}O_3$	8.93	3770368	25.9192
	MW: 176			
10	Hexane, 1,1-diethoxy- Formula: $C_{10}H_{22}O_2$	9.20	29025	0.1995
	MW: 174			
11	Hydroperoxide, 1-methylbutyl Formula: $C_5H_{12}O_2$	9.83	28997	0.0031
	MW: 104			
12	4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl- Formula: $C_6H_8O_4$	10.36	61812	0.1993
	MW: 144			
13	Tridecane Formula: $C_{13}H_{28}$	10.98	273151	0.4249
	MW: 184			
14	Salicylic acid, methyl ester Formula: $C_8H_8O_3$	11.13	1766373	1.8778
	MW: 152			
15	Pyrocatechol Formula: $C_6H_6O_2$	11.23	210483	12.1429
	MW: 110			
16	Dianhydromannitol Formula: $C_6H_{10}O_4$	11.50	132329	1.4470
	MW: 146			
17	Decane, 6-ethyl-2-methyl-	14.42	348531	0.9097

	Formula: $C_{13}H_{28}$ MW: 184			
18	3-Heptanone, 5-ethyl-4-methyl- Formula: $C_{10}H_{20}O$ MW: 156	14.71	4179706	2.3960
19	1,6-Anhydro-á-D-glucopyranose (levoglucosan) Formula: $C_6H_{10}O_5$ MW: 162	16.33	347836	28.7332
20	3,4-Hexanediol, 2,5-dimethyl- Formula: $C_8H_{18}O_2$ MW: 146	17.13	65379	2.3912
21	4-Tetradecanol Formula: $C_{14}H_{30}O$ MW: 214	19.10	96666	0.4494
22	3,7,11,15-Tetramethyl-2-hexadecen-1-ol Formula: $C_{20}H_{40}O$ MW: 296	21.10	547443	0.6645
23	Z-2-Dodecenol Formula: $C_{12}H_{24}O$ MW: 184	21.43	137403	3.7634
24	3-Hexanol, 2,2-dimethyl- Formula: $C_8H_{18}O$ MW: 130	22.79	567332	0.9446
25	Pentadecanoic acid, 2,6,10,14-tetramethyl-, methyl ester Formula: $C_{20}H_{40}O_2$ MW: 312	23.12	116017	3.9001
26	Oxalic acid, allyl pentadecyl ester Formula: $C_{20}H_{36}O_4$ MW: 340	24.61	122722	0.7976
27	Pentadecanoic acid, 2,6,10,14-tetramethyl-, methyl ester Formula: $C_{20}H_{40}O_2$ MW: 312	25.61	39941	0.8436
28	Squalene Formula: $C_{30}H_{50}$ MW: 410	31.89	769226	0.2746

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