ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014

GC-MS Studies of the Plant Clematis Gouriana

J.Arul Hency Sheela

Assistant professor of Chemistry, Bharath University, Chennai – 600073, India

ABSTRACT: The aim of the present study was to investigate the essential chemicals of the plant clematis gouriana..The GC-MS analysis is done using the instrument GC Clarus 500 Perkin Elmer with Turbo mass 5.2 software. The sample volume is 2µL. The sample Ethanolic extract of **clematis gouriana**. Is run for 36 minutes. The chromatogram (Figure.10) shows 14 prominent peaks in the Retention time range 12.195-29.031.

KEYWORDS*:* ClematisGouriana,GC-MS Analysis,Chromatogram,Retention time.

I.INTRODUCTION

GAS CHROMATOGRAPHY

Gas Chromatography (GC), also sometimes known as Gas-Liquid chromatography, (GLC), is a separation technique in which the mobile phase is a gas. Gas chromatography is always carried out in a column, which is typically "packed" or "capillary" (see below).

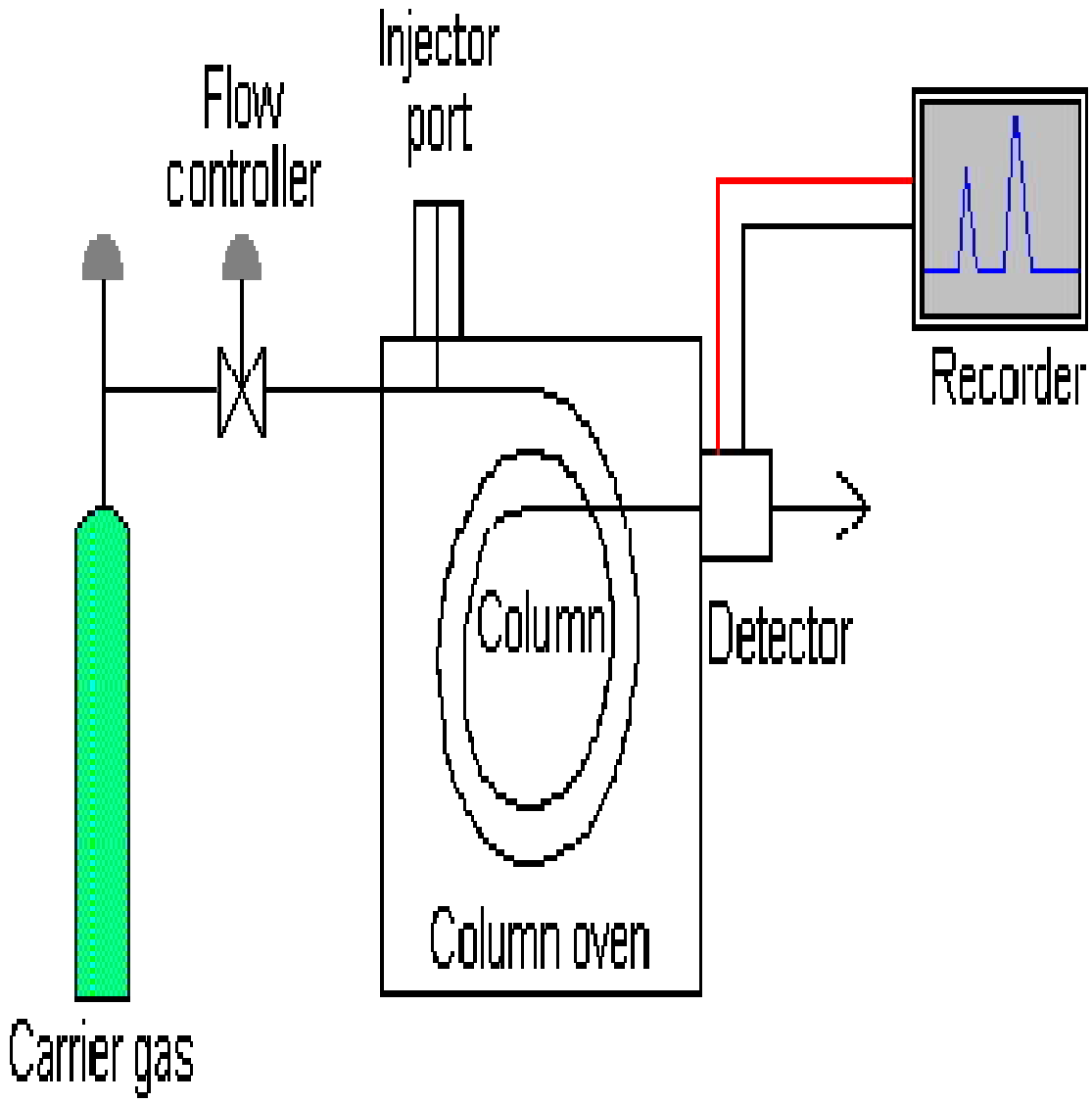
Gas chromatography (GC) is based on a partition equilibrium of analyte between a solid stationary phase (often a liquid silicone-based material) and a mobile gas (most often Helium). The stationary phase is adhered to the inside of a small-diameter glass tube (a capillary column) or a solid matrix inside a larger metal tube (a packed column). It is widely used in analytical chemistry; though the high temperatures used in GC make it unsuitable for high molecular weight biopolymers or proteins (heat will denature them), frequently encountered in biochemistry, it is well suited for use in the petrochemical, environmental monitoring and remediation, and industrial chemical fields. It is also used extensively in chemistry research

ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014



II.EXPERIMENTAL METHODS

Analysis of Sample: The Ethanolic extract of the plant is subjected GC-MS studies. The details are given here.

GC PROGRAMME

Column Elite-1(100% dim ethyl poly siloxane), 30*0.25mm*1µmdf

Equipment GC Clarus 500 Perkin Elmer

Carrier Gas 1ml per min, Split 10:1

ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014

Detector Mass detector Turbo mass gold-Perkin Elmer
Software Turbo mass 5.2
Sample injected 2µl

Oven temperature programme

110^0C-2 min hold
Up to 200°C at the rate of 10°C/min-No hold
Up to 280°C at the rate of 5°C/min-9 min hold
Injector temperature 250°C
Total GC running time 36 min

III.MS PROGRAMME

Library used NIST Version- Year 2005
Inlet line temperature 200oC
Source temperature 200° C
Electron energy 70ev
Mass scan (m/z) 45-450
Solvent Delay 0-2 min
Total MS running time 36 min

GC-MS DATA

The chromatogram of the GC-MS analysis is given in the Figure 1
The list of compounds predicted by the Software Turbo mass 5.2 is given in the Table 1 *Photochemical screening of the plant Clematis gouriana*

S.No	Phytochemicals	Ether Layer I&III	Ether Layer II	Ether Layer IV	Aqueous Layer	Hexane Extract
1.	**Alkaloids**			(+)	(+)	
2.	**Carbohydrates**	(+)				
3.	**Steroids**	(+)				
4.	**Saponins**	(+)			(+)	
5.	**Tannin**		(-)		(+)	

ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014

6.	**Phenolic compounds**		(+)			(-)
7.	**Flavonoids**	(-)	(+)			
8.	**Terpenoids**	(+)				

List of compounds present in the ethanolic extract of clematis gouriana.

.No.	RT (min)	Name of the compound	Molecular Formula	MW	Peak Area %
1.	12.195	6, 10, 14-Trimethyl-2-pentadecanone.	$C_{18}H_{36}O$	147	3.35
2.	12.475	Isobutyl phthalate	$C_{16}H_{22}O_4$	154	1.64
3.	12.950	Phthalic acid, 4-bromophenyl heptyl ester.	$C_{21}H_{23}BrO_4$	128	0.76
4.	13.352	Hexadecanoic acid.	$C_{16}H_{32}O_2$	446	4.02
5.	13.425	Di-butyl phthalate	$C_{16}H_{22}O_4$	396	8.70
6.	13.670	Hexadecanoic acid, ethyl ester	$C_{18}H_{36}O_2$	208	2.25
7.	14.187	N-Tridecanol.	$C_{13}H_{28}O$	198	0.97
8.	14.600	4-methyl -2-4-diphenyloxazol-5(4H)-one.	$C_{16}H_{13}NO_2$	256	0.35
9.	15.253	Octadecanoic acid$$Stearicacid.	$C_{18}H_{28}O_2$	282	2.90
10.	15.534	Octadecanoic acid, ethyl ester.	$C_{20}H_{40}O_2$	284	4.94
11.	15.609	3-bromo octane	$C_8H_{17}Br$	296	1.25
12.	15.692	Hexahydrothunbergol.	$C_{20}H_{38}O$	306	0.40
13.	16.381	Tetradecyl 2-methyl propanoate	$C_{16}H_{36}O_2$	410	6.32
14.	18.203	3, 7, 11, 15-tetramethylhexadecanol.	$C_{20}H_{34}O_2$	306	2.48
15.	18.535	Mono(2-ethylhexyl)phthalate	$C_{16}H_{22}O_4$	238	15.50
16.	20.856	.delta.-Tocopherol	$C_{27}O_2$	356	27.03
17.	21.011	.delta.-Tocopherol	$C_{27}O_2$	356	11.7

ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014

18	29.031	A:Friedooleanan-3-one	$C_{30}H_{50}O$	426	6.93

I V. CONCLUSION

The GC-MS analysis is done using the instrument GC Clarus 500 Perkin Elmer with Turbo mass 5.2 software. The sample volume is 2µL. The sample Ethanolic extract of ***clematis gouriana.*** Is run for 36 minutes. The chromatogram (Figure.10) shows 14 prominent peaks in the Retention time range 12.195-29.031. The peak at 12.195 retention time is having the peak area 3.35. This largest peak is due to the presence of .Delta.-Tocopherol (Molecular weight 194). The Second less prominent peak at 18.535 retention time has the peak area 15.50 it is due to the presence of Mono (2-ethyl hexyls) phthalate (M.W.238). The third less significant peak at 21.011 retention time with the peak area11.7 is characteristic of .Delta.-Tocopherol (M.W.278). The Fourth less prominent peak at13.425 retention time (8.70 peak area) denotes the Dibutyl- phthalate (M.W. 396). The other less prominent peaks at other retention times are given in Table.11.S analysis predicts the presence of various Phytoconstituents of acids, esters, alcohols, glycosides, ethers, etc. The possible structures of these compounds are given in Figure

REFERENCES

1. Grierson, A. J. C. & D. J. Long
Flora of Bhutan including a record of plants from Sikkim. (F Bhutan) -**1984**
2. Chinese Academy of Sciences
Flora republican popular isilicatef.China) - **1959**
3. Grey-Wilson
Clematis: the genus. (Gen Clematis) 38–39, **2000.**
4. Hara, H. et al.
An enumeration of the flowering plants of Nepal. (L Nepal) 1978–1982, **1959.**
5 K.M.Matthew
Flora of the Tamil Nadu Carnatic, the Rapinat Herbarium, St. Joseph's College, Trichy, India,*(I)*156,**1981.**
6. K.M.Matthew,
Flora of the Palani Hills, the Rapinat Herbarium, St. Joseph's College, Trichy, India, *(III),*236-237,**1999.**

ISSN: 2319-8753

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 6, June 2014