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COMPARATIVE GC-MS ANALYSIS OF *CYAMOPSIS TETRAGONOLOBA* FRUIT EXTRACTS

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ABSTRACT: *Cyamopsis tetragonoloba* is widely used by people and is found to have multiple medicinal utilities. Four (chloroform, ethyl acetate, methanolic and aqueous) extracts of *Cyamopsis tetragonoloba* fruit were therefore, analysed by Gas Liquid Chromatography and Mass Spectrometry analysis to assess their phytochemical constituents. The chloroform extract of *Cyamopsis tetragonoloba* fruits showed the presence of thirty one phytochemical constituents of which the major phytochemical compounds were Tetracontane and Stigmasterol. The ethyl acetate extract of *Cyamopsis tetragonoloba* fruit showed the presence of fifty phytochemical constituents. The important phytochemical compounds were stigmasterol and 4-tert-butylcalix [4] arene. Thirty eight phytochemicals were reported in the methanolic extract. The most important ones in term of peak area and retention time were mome inositol and 7-tetradecenal (Z). Mome inositol and 10, 12- Hexadecadien-1-ol was the primary components in a total of 30 phytochemicals obtained from the aqueous extract.

INTRODUCTION: For thousands of years, medicine apparently depended exclusively on leaves, flowers and barks of plants because they consist of a wide variety of chemical compounds that offer a promising source of new drugs. The use and search for drugs and food supplements obtained from natural sources like plant extracts have increased in recent years [1]. Records show that even today 80% of the world population depends on herbal traditional medicine for their primary health care. We know that plants produce chemicals to protect themselves but recent research demonstrates that they can also protect humans against diseases [2]. Plants products are used for curing various diseases in developing countries because they are considered safer and better than synthetic drugs that create problems like side effects and carcinogenic effect [3].

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The use of guar as a traditional plant for food and fodder has a long history. The resource base also suggests medicinal value of this plant in rural and tribal villages of India and abroad. In India, it is grown in Rajasthan, Gujarat, Haryana, Punjab, Uttar Pradesh, Madhya Pradesh and Orissa [4]. Many people in arid and semi arid region of our country are dependent directly or indirectly on the production of guar.

In this modern age where a large number of people have seen diagnosed with life style disorders such as high blood pressure, cholesterol level and diabetes, Guar may play an important role for the alteration of symptoms related to these disease. *Cyamopsis tetragonoloba* is a rich source of secondary metabolites with known significant pharmacological effects. Guar gum which is a mucilaginous polysaccharide or the galactomannan layer of guar seeds have hypoglycemic, hypolipidemic and hypocholesterolemic effect on serum biochemical profile of human and non-human primates reducing total serum cholesterol, triglycerides, cardio vascular risk and increasing the high density lipoprotein cholesterol level and

management of glycemic indices. This is because of its rich phytochemical profile like flavanoids- kaempferol, phenolic compounds- sinapic acid, chlorogenic acid, gallic acid, caffeic acid, ellagic acid, steroids- inositol, ethyl *α*-D glucopyranoside, stigmasterol and some amino acids like glutamine, arginine, aspartic acid and leucine. Guar is also used as a home remedy for the treatment of gastric problems, abdominal discomfort, asthma and inflammation; as laxative and as appetite depressor. It also used as an emulsifier, thickener and stabilizer in wide range of food and industrial applications. Guar can be highly regarded as crop of the future because of its nutritional, chemical and medicinal properties [5]. The objective of the present study is to identify the phytochemical constituents of four different extract of *Cyamopsis tetragonoloba* fruit using GC-MS analysis.

MATERIALS AND METHODS:

Collection of Plant Material: The fruits of M83 variety (notification number 22/11/1991-740 (E) of *Cyamopsis tetragonoloba* were collected from Rajasthan Agriculture Research Institute, Durgapura, Jaipur, India in the year 2014. The herbarium specimen was deposited in University for further reference.

Preparation of Powder and Extract: *Cyamopsis tetragonoloba* fruits were shade dried and washed in tap water and pulverized to fine powder in a mechanical grinder. The powder of *Cyamopsis tetragonoloba* fruit was extracted successively in the ratio of 1:10 (20 g of dry powder: 200 ml of solvent) in each of extracts *viz*. chloroform, ethyl acetate, methanol and water by Soxhlet extraction for relevant periods of time. All the extracts were concentrated to dryness in the oven. All the extracts were stored in a container for further GC-MS analysis.

Gas Chromatography - Mass Spectrometry: The GC-MS analysis of selected sample was performed with Shimadzu GC-MS - QP2010 Ultra.

ANALYTICAL LINE 1

Content	Value	Content	Value
# of Rinses with Presolvent	5	Linear Velocity	39.9 cm/sec
# of Rinses with Solvent (post)	8	Purge Flow	3.0 mL/min
# of Rinses with Sample	2	Split Ratio	10.0
Plunger Speed (Suction)	High	High Pressure Injection	OFF
Viscosity Comp. Time	0.2 sec	Carrier Gas Saver	OFF
Plunger Speed (Injection)	High	Splitter Hold	OFF
Syringe Insertion Speed	High	SPL1 Carrier	Yes
Injection Mod	Normal	Column Oven	Yes
Pumping Time	5	SPL1	Yes
Inj. Port Dwell Time	0.0 sec	MS	Yes
Terminal Air Gap	No	SPL1 Purge	Yes
Plunger Washing Speed	High	External Wait	No
Washing Volume	6uL	Equilibrium Time	0.5 min
Syringe Suction Position	0.0 mm	Ion Source Temp.	230.00 °C
Syringe Injection Position	0.0 mm	Interface Temp.	270.00 °C
Solvent Selection	All A,B,C	Solvent Cut Time:	5.50 min
Column Oven Temp.	60.0 °C	Detector Gain Mode	Relative
Injection Temp.	260.00 °C	Detector Gain	+0.00 kV
Injection Mode	Split	Threshold	1000
Flow Control Mode	Linear Velocity	Start Time	6.00min
Pressure	72.3 kPa	End Time	65.32min
Total Flow	16.2 mL/min	ACQ Mode	Scan
Column Flow	1.20 mL/min	Event Time	0.20sec
Scan Speed	3333	End m/z	650.00
Start m/z	40.00	Sample Inlet Unit	GC

Identification of compounds was conducted using the database of NIST08, WILEY8 and FAME Libraries. Mass spectrum of individual unknown compound was compared with the known compounds stored in the software database Libraries. The name, molecular weight and structure of the compounds of the test materials were insured.

RESULTS AND DISCUSSIONS: Gas chromatography mass spectrometry (GC-MS) is a method that blends the features of Gas Liquid Chromatography and Mass Spectrometry to identify diverse components within a test sample. Applications of GC-MS include explosives probe, environmental analysis, drug detection and identification of unknown samples.

GC-MS methods proved to be very effective and sensitive for the separation and detection of complex mixtures of phytoconstituents. GC-MS Chromatogram of the chloroform extract of *Cyamopsis tetragonoloba* fruit **Fig. 1** showed 31 peaks indicating presence of thirty one phytochemical constituents. On comparison of the mass spectra of the constituents with the NIST08, WILET8 and FAME libraries the thirty one phytoconstituents were characterized and identified **Table 1**.

The major phytochemical constituents were Tetracontane and Stigmasterol. The ethyl acetate extract of *Cyamopsis tetragonoloba* fruit **Fig. 2** showed 50 peaks indicating the presence of all fifty phytochemical constituents. On comparison of mass spectra, fifty phytoconstituents were characterized and identified **Table 2**.

The major phytochemical constituents are stigmasterol and 4-tert-butylcalix [4] arene. The methanolic extract of *Cyamopsis tetragonoloba* fruit **Fig. 3** showed 38 peaks indicating the presence of thirty eight phytochemical constituents. On comparison of mass spectra, thirty eight phytoconstituents were characterized and identified **Table 3**.

The major phytochemical constituents isolated were mome inositol and 7-tetradecenal, (Z). The aqueous extract of *Cyamopsis tetragonoloba* fruit **Fig. 4** showed 30 peaks indicating the presence of thirty phytochemical constituents. On comparison of mass spectra, thirty phytoconstituents were characterized and identify **Table 4**. The major phytochemical constituents in this sample were 10, 12- Hexadecadien-1-ol and Mome inositol.

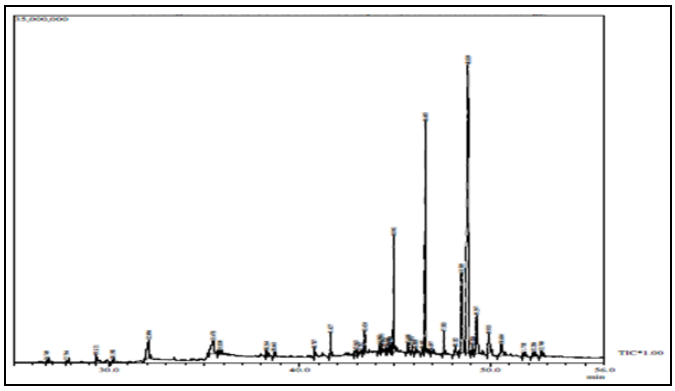

FIG. 1: GC-MS CHROMATOGRAM OF CHLOROFORM EXTRACT OF *CYAMOPSIS TETRAGONOLOBA*

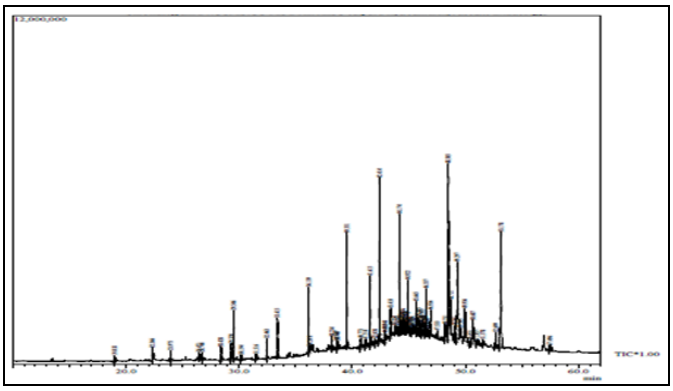

FIG. 2: GC-MS CHROMATOGRAM OF ETHYL ACETATE EXTRACT OF *CYAMOPSIS TETRAGONOLOBA*

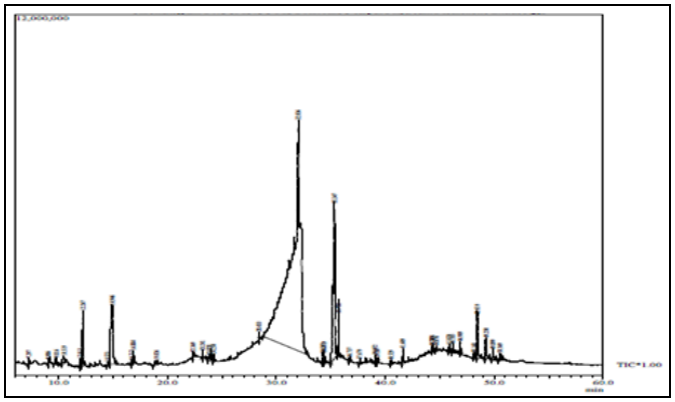

FIG. 3: GC-MS CHROMATOGRAM OF METHANOLIC EXTRACT OF *CYAMOPSIS TETRAGONOLOBA*

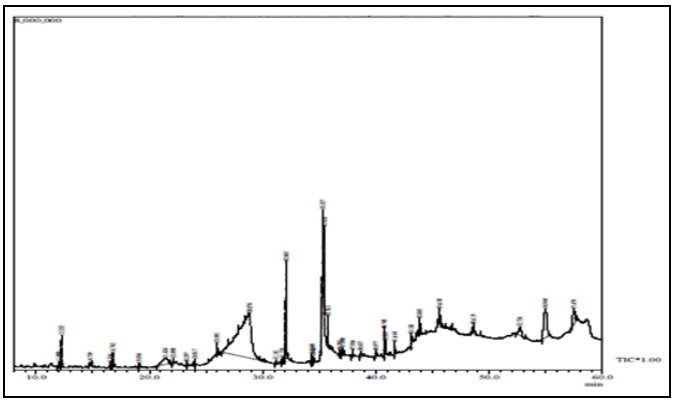

FIG. 4: GC-MS CHROMATOGRAM OF AQUEOUS EXTRACT OF *CYAMOPSIS TETRAGONOLOBA*

TABLE 1: PHYTOCHEMICALS IDENTIFIED IN CHLOROFORM EXTRACTS OF *CYAMOPSIS TETRAGONOLOBA* FRUIT BY GC-MS

Peak #	R. Time	Name of Compound	Molecular formula	Molecular weight	Peak area %
1	26.749	Tetradecanal	$C_{14}H_{28}O$	212	0.17
2	27.794	Tetradecanoic acid	$C_{14}H_{28}O_2$	228	0.12
3	29.321	2,6,10-Trimethyl,14-ethylene-14-pentadecne	$C_{20}H_{38}$	278	0.45
4	30.198	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	$C_{20}H_{40}O$	296	0.12
5	32.096	Hexadecanoic acid	$C_{16}H_{32}O_2$	256	3.68
6	35.478	7-Tetradecenal,(Z)-	$C_{14}H_{26}O$	210	3.46
7	35.830	9-Octadecenoic acid (Z)-	$C_{18}H_{34}O2$	282	0.45
8	38.264	9-Octadecenal,(Z)-	$C_{18}H_{34}O$	266	0.43
9	38.663	Oxalic acid, cyclohexyl tetradecyl ester	$C_{22}H_{40}O_4$	368	0.28
10	40.787	4-(2-Tert-butyl-5-oxo-1,3-dioxolan-4-yl)butyl formamide	$C_{12}H_{21}NO_4$	243	0.50
11	41.627	1,2 –Benzenediccarboxylic acid	$C_{24}H_{38}O_4$	390	1.64
12	42.963	1-cyclohexyldimethylsilyloxybutane	$C_{12}H_{26}O_{Si}$	214	0.55
13	43.202	Cyclohexaneacetic acid, alpha-methyl-alpha-propyl-,methyl ester	$C_{13}H_{24}O_2$	212	0.41
14	43.424	Tetratetracontane	$C_{44}H_{90}$	618	1.37
15	44.207	Nonacosane	$C_{29}H_{60}$	408	0.42
16	44.295	Squalene	$C_{30}H_{50}$	410	0.31
17	44.523	1-Triacontanol	$C_{30}H_{62}O$	438	0.28
18	44.681	Heptadecafluorononanoic acic, undecyl ester	$C_{20}H_{23}F_{17}O_2$	618	0.43
19	44.788	Cyclohexaneacetic acid, alpha-methyl-alpha-propyl-, methyl ester	$C_{13}H_{24}O_2$	212	0.24
20	45.893	Tremulone	$C_{29}H_{46}O$	410	0.31
21	46.084	Stigmasterol acetate	$C_{31}H_{50}O_2$	454	0.30
22	46.605	Tetracontane	$C_{40}H_{82}$	562	15.85
23	46.897	Octacosanoic acid, methyl ester	$C_{29}H_{58}O_2$	438	0.37
24	48.182	Campesterol	$C_{28}H_{48}O$	400	1.06
25	48.509	Stigmasterol	$C_{29}H_{48}O$	412	10.94
26	49.086	2-Nonadecanone	$C_{19}H_{38}O$	282	0.66
27	49.297	Gamma-sitosterol	$C_{29}H_{50}O$	414	5.57
28	49.935	beta-Amyrone	$C_{30}H_{48}O$	424	2.53
29	50.604	Betulin	$C_{30}H_{50}O_2$	442	2.27
30	52.286	2-Hexadecanone	$C_{16}H_{32}O$	240	0.56
31	52.700	Phytol, acetate	$C_{22}H_{42}O_2$	338	0.71

TABLE 2: PHYTOCHEMICALS IDENTIFIED IN ETHYL ACETATE EXTRACTS OF *CYAMOPSIS TETRAGONOLOBA* FRUIT BY GC- MS

Peak #	R. Time	Name of Compound	Molecular formula	Molecular weight	Peak area %
1	19.018	3-Hexadecene, (Z)-	$C_{16}H_{32}$	224	0.23
2	22.366	Cyclohexene, 3-(1,5-dimethyl-4-hexenyl)-6-methylene-[S-(R^*,S^*)]-	$C_{15}H_{24}$	204	0.86
3	23.975	1- Hexadecene	$C_{16}H_{32}$	224	0.42
4	26.471	Curlone	$C_{15}H_{22}O$	218	0.32
5	26.746	Tetradecanal	$C_{14}H_{28}O$	212	0.33
6	29.320	2,6,10-Trimethyl,14-ethylene-pentadecne	$C_{20}H_{38}$	278	0.72
7	29.546	Tetradecanoic acid, trimethylsilyl ester	$C_{17}H_{36}O_2Si$	300	2.05
8	30.194	2-Hexadecen-1-ol,3,7,11,15-tetramethyl-[R-[R^*,R^*-(E)]]-	$C_{20}H_{40}O$	296	0.21
9	31.516	n-Pentadecanoic acid,trimethylsilyl ester	$C_{18}H_{38}O_2Si$	314	0.21

10	32.463	1-Octadecene	$C_{18}H_{36}$	252	0.86
11	33.415	Hexadecanoic acid,trimethylsilyl ester	$C_{19}H_{40}O_2Si$	328	1.88
12	36.159	1-Heneicosanol	$C_{21}H_{44}O$	312	2.90
13	36.260	Eicosane	$C_{20}H_{42}$	282	0.22
14	38.234	9- Octadecenal, (Z)-	$C_{18}H_{34}O$	266	0.64
15	38.637	Oxalic acid, cyclohexyl tetradecyl ester	$C_{22}H_{40}O_4$	368	0.38
16	38.740	4,8,12,16-Tetramethylheptadecan-4-olide	$C_{21}H_{40}O_2$	324	0.32
17	39.551	n-Tetracosanol-1	$C_{24}H_{50}O$	354	5.12
18	40.773	4-(2-Tert-butyl-5-oxo-1,3-dioxolan-4-yl)butyl formamide	$C_{12}H_{21}NO_4$	243	0.48
19	41.615	1,2 –Benzenedicarboxylic acid	$C_{24}H_{38}O_4$	390	3.00
20	42.028	4- Octadecenal	$C_{18}H_{34}O$	266	0.20
21	42.902	1-Cyclohexyldimethylsilyloxybutane	$C_{12}H_{26}O_{Si}$	214	0.13
22	42.948	6-Ethyl-3-trimethylsilyloxydecane	$C_{15}H_{34}OSi$	258	0.31
23	43.410	Tetratetracontane	$C_{44}H_{90}$	618	1.00
24	43.774	Fumaric acid, 2-heptyl octadecyl ester	$C_{29}H_{54}O_4$	466	0.28
25	44.174	Eicosyl pentafluoropropionate	$C_{23}H_{41}F_{52}O_2$	444	3.78
26	44.291	Squalene	$C_{30}H_{50}$	410	0.23
27	44.365	Isomucronulatol	$C_{17}H_{18}O_5$	302	0.34
28	44.670	1-Tricontanol	$C_{30}H_{62}O$	438	0.69
29	44.979	1-Docosanol	$C_{22}H_{46}O$	326	0.31
30	45.062	2-Pentadecanone,6,10,14-trimethyl-	$C_{18}H_{36}O$	268	0.10
31	45.126	Nonadecyl pentafluoropropionate	$C_{22}H_{39}F_5O_2$	430	0.23
32	45.319	Delta-Tocopherol	$C_{27}H_{46}O_2$	402	0.42
33	45.447	1-Nonadecene	$C_{19}H_{38}$	266	0.22
34	45.885	Stigmasta-4,7,22-trien-3-ol	$C_{29}H_{46}O$	410	0.64
35	46.010	Nonahexacontanoic acid	$C_{69}H_{138}O_2$	998	0.06
36	46.067	Stigmasterol acetate	$C_{31}H_{50}O_2$	454	0.27
37	46.203	gamma-Tocopherol	$C_{28}H_{48}O_2$	416	0.87
38	46.634	gamma-Sitosterol	$C_{29}H_{50}O$	414	0.27
39	46.936	alpha-Tocopherol	$C_{29}H_5O_2$	430	1.49
40	47.533	Hexacosyl pentafluoro Propionate	$C_{29}H_{53}F_5O_2$	528	0.27
41	48.231	Campesterol	$C_{28}H_{48}O$	400	1.41
42	48.505	Stigmasterol	$C_{29}H_{48}O$	412	16.49
43	49.297	gamma-Sitosterol	$C_{29}H_{50}O$	414	9.34
44	49.585	3-(1-[2-(1,2-Dimethylpropyl)cyclopropyl]ethyl)-3a,5b-dimethyl hexadecahydro-1H-cyclopenta [a]cyclopropa[t]phenanthren-8-ol	$C_{30}H_{50}O$	426	0.49
45	49.956	beta-Amyrone	$C_{30}H_{48}O$	424	5.98
46	50.455	Tremulone	$C_{29}H_{46}O$	410	0.19
47	51.057	Sitostenone	$C_{29}H_{48}O$	412	0.40
48	51.578	17-Pentatriacontene	$C_{35}H_{70}$	490	0.43
49	52.699	Phytol,acetate	$C_{22}H_{42}O_2$	338	1.52
50	53.178	4-Tert-butylcalix[4]arene	$C_{44}H_{56}O_4$	648	11.04

TABLE 3: PHYTOCHEMICALS IDENTIFIED IN METHANOLIC EXTRACTS OF *CYAMOPSIS TETRAGONOLOBA* FRUIT BY GC- MS

Peak #	R. Time	Name of Compound	Molecular formula	Molecular weight	Peak area %
1	7.297	2,5 Dimethyl-2,4-dihydroxy-3(2H)-furanone	$C_6H_8O_4$	144	0.19
2	9.086	Pantolactone	$C_6H_{10}O_3$	130	0.06
3	9.816	2,5 Dimethyl-3(2H)-furanone	$C_6H_8O_3$	128	0.38

4	10.519	Cyclopentane,1-acetyl-1,2-epoxy-	$C_7H_{10}O_2$	126	0.38
5	12.013	Acetic acid, hexyl ester	$C_8H_{16}O_2$	144	0.22
6	12.267	2,3-Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one	$C_6H_8O_4$	144	2.02
7	14.523	Coumaran	C_8H_8O	120	0.10
8	14.946	5-Hydroxymethylfurfural	$C_6H_6O_3$	126	5.01
9	16.717	5-Acetoxy methyl-2- furaldehyde	$C_8H_8O_4$	168	0.07
10	16.884	Trimethylsilyl 3- methyl -2- furoate	$C_9H1_4O_3Si$	198	0.37
11	19.026	1- Tridecene	$C_{13}H_{26}$	182	0.24
12	22.369	beta- Sesquiphellandrene	$C_{15}H_{24}$	204	0.18
13	23.241	Butylated hydroxyanisole	$C_{11}H_{16}O_2$	180	0.13
14	23.828	1,5- Dibromohexane	$C_6H_{12}Br_2$	242	0.13
15	24.250	N (beta Hydroxyethyl)-4-(gamma-hydroxypropyl)piperidine	$C_{10}H_{21}NO_2$	187	0.12
16	28.433	3- Eicosene	$C_{20}H_{40}$	280	0.11
17	32.036	Mome inositol	$C_7H_{14}O_6$	194	76.09
18	34.292	9,12-Octadecadienoic acid, methyl ester	$C_{19}H_{34}O_2$	294	0.13
19	34.419	9- Octadecenoic acid(Z)-, methyl ester	$C_{19}H_{36}O_2$	296	0.21
20	35.347	7-Tetradecenal,(Z)-	$C_{14}H_{26}O$	210	8.30
21	35.722	Stearic acid	$C_{18}H_{36}O_2$	284	1.04
22	36.737	Bombykol	$C_{16}H_{30}O$	238	0.07
23	37.679	Fumaric acid, 2-dimethyl aminoethyl octadecyl ester	$C_{26}H_{49}NO_4$	439	0.07
24	39.072	Eicosanoic acid	$C_{20}H_{40}O_2$	312	0.14
25	39.287	Dihydroegotamine	$C_{33}H_{37}N_5O_5$	583	0.08
26	40.529	Fumaric acid, 2 dimethyl aminoethyl nonyl ester	$C_{17}H_{31}NO_4$	313	0.05
27	41.609	1,2 –Benzenediccarboxylic acid	$C_{24}H_{38}O_4$	390	0.23
28	44.289	Squalene	$C_{30}H_{50}$	410	0.04
29	44.366	Mucronulatol	$C_{17}H_{18}O_5$	302	0.06
30	44.676	Tricontyl pentafluoropropionate	$C_{33}H_{61}F_5O_2$	584	0.05
31	45.879	Tremulone	$C_{29}H_{46}O$	410	0.09
32	46.183	gamma-Tocopherol	$C_{28}H_{48}O_2$	416	0.10
33	46.909	alpha-Tocopherol	$C_{29}H_5O_2$	430	0.17
34	48.160	Campesterol	$C_{28}H_{48}O$	400	0.13
35	48.459	Stigmasterol	$C_{29}H_{48}O$	412	1.66
36	49.250	gamma-Sitosterol	$C_{29}H_{50}O$	414	0.80
37	49.899	beta-Amyrone	$C_{30}H_{48}O$	424	0.44
38	50.569	Betulin	$C_{30}H_{50}O_2$	442	0.33

TABLE 4: PHYTOCHEMICALS IDENTIFIED IN AQUEOUS EXTRACTS OF *CYAMOPSIS TETRAGONOLOBA* FRUIT BY GC- MS

Peak #	R. Time	Name of Compound	Molecular formula	Molecular weight	Peak area %
1	11.989	Acetic acid, hexyl ester	$C_8H_{16}O_2$	144	0.26
2	12.232	2,3-dihydro-3, 5-dihydroxy-6-methyl-4H-pyran-4-one	$C_6H_8O_4$	144	1.45
3	14.759	5-Hydroxymethylfurfural	$C_6H_6O_3$	126	0.16
4	16.534	Carvacrol	$C_{10}H_{14}O$	150	0.10
5	19.056	1-Dodecanol	$C_{12}H_{26}O$	186	0.13
6	21.434	Xanthosine	$C_{10}H_{12}N_4O_6$	284	3.33
7	22.098	10-Dicahydroquinolinol	$C_9H_{17}NO$	155	0.25
8	23.297	Butylated hydroxyanisole	$C_{11}H_{16}O_2$	180	0.11
9	24.017	1-Hexadecene	$C_{16}H_{32}$	224	0.20
10	25.991	alpha Santalol	$C_{15}H_{24}O$	220	0.38
11	28.876	Mome inositol	$C_7H_{14}O_6$	194	52.15
12	31.161	Hexadecanoic acid, methyl ester	$C_{17}H_{34}O_2$	270	0.14
13	31.729	Dibutyl phthalate	$C_{16}H_{22}O_4$	278	0.21
14	32.065	Hexadecanoic acid	$C_{16}H_{32}O_2$	256	6.87

15	34.348	9,12-Octadecadienoic acid, methyl ester	$C_{19}H_{34}O_2$	294	0.32
16	34.481	9- Octadecenoic acid(Z)-, methyl ester	$C_{19}H_{36}O_2$	296	0.22
17	35.327	Bombykol	$C_{16}H_{30}O$	238	8.28
18	35.428	Cis-Vaccenic acid	$C_{18}H_{34}O_2$	282	2.96
19	35.782	Stearic acid	$C_{18}H_{36}O_2$	284	1.18
20	36.793	1,E-11,Z-13-Octadecatriene	$C_{18}H_{32}$	248	0.35
21	37.040	9,12-Octadecadienoyl chloride,(Z,Z)-	$C_{18}H_{31}ClO$	298	0.27
22	37.936	15-Hydroxypentadecanoic acid	$C_{15}H_{30}O_3$	258	0.27
23	38.637	Ambrettolide	$C_{16}H_{28}O2$	252	0.20
24	39.977	1-Monolinolein	$C_{21}H_{38}O_4$	354	0.18
25	40.839	9- Octadecenal, (Z)-	$C_{18}H_{34}O$	266	0.40
26	41.664	1,2 –Benzenediccarboxylic acid	$C_{24}H_{38}O_4$	390	0.41
27	43.845	Sebacic acid, di(dec-4-enyl) ester	$C_{30}H_{54}O_4$	478	0.57
28	48.619	Hexadecanoic acid, 1,3-propanediyl ester	$C_{35}H_{68}O_4$	552	0.54
29	52.726	Stigmasterol acetate	$C_{31}H_{50}O_2$	454	1.73
30	57.479	Ergostane-3,5,6,12,25-pentol,25-acetate,(3 beta, 5 alpha, 6 beta, 12 beta)	$C_{30}H_{52}O_6$	508	3.02

CONCLUSION: GC-MS analysis is the primary step towards understanding the nature of bioactive compounds of plant and this type of analysis will be helpful for further elaborated study. GC-MS analysis of phytochemicals in *Cyamopsis tetragonoloba* gives a clear image of its pharmaceutical properties because here, we are able to identify some of secondary metabolites that were present in high amounts than others. tetracontane, stigmasterol, 4, Tert butylcalix[4] arene, mome inositol, 7 tetradecenal and 10, 12 Hexadecadien-1-ol that are repeatedly present in the plant extracts and have reported hypoglycemic, hycholesterolemic, antioxidant, anticancerous and thyroid inhibiting properties.

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CONFLICT OF INTEREST: Nil

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