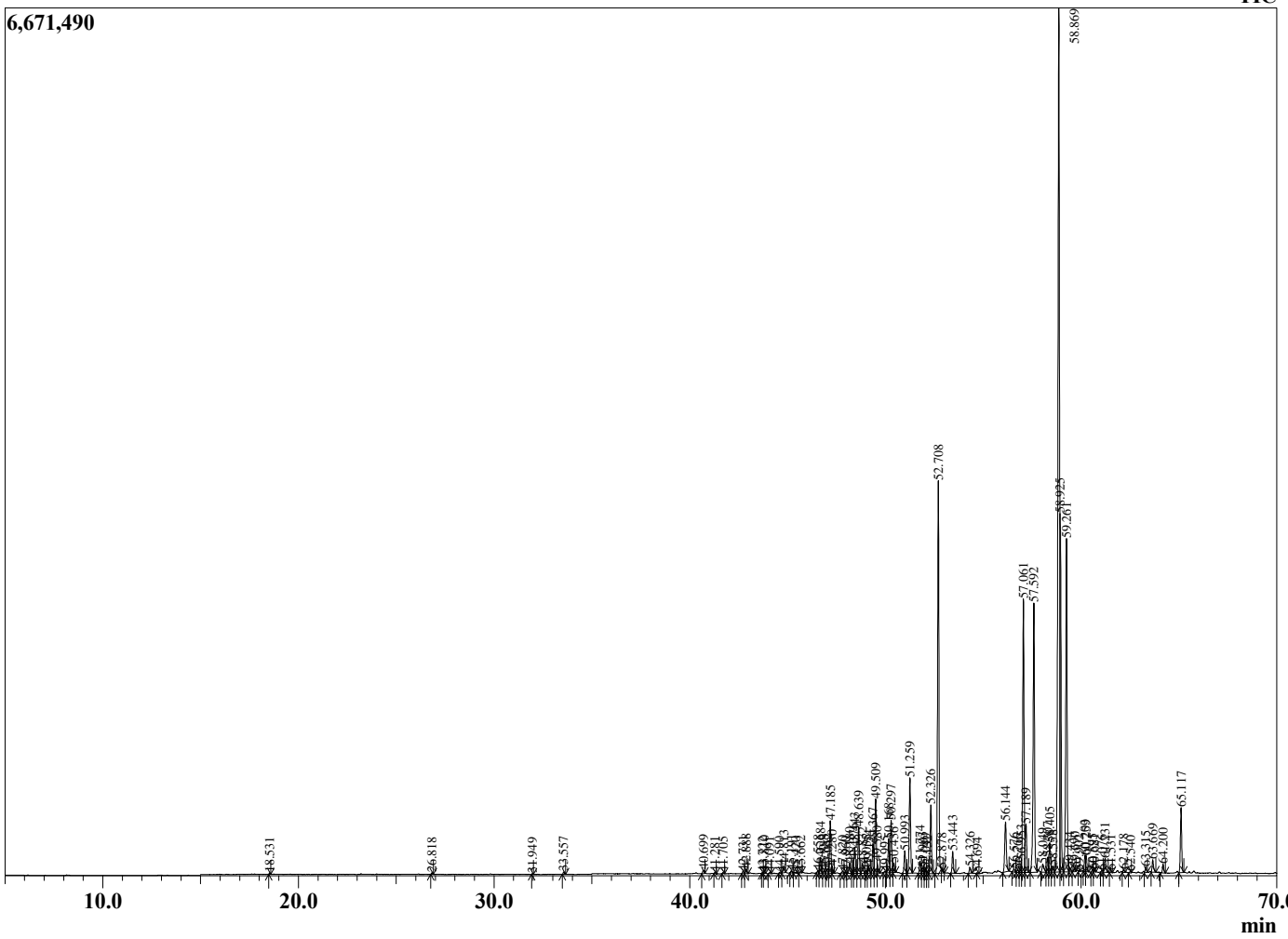
Sample Information

Analyzed by : Dr. Robert S. Pappas :
Analyzed 3/17/2021 3:25:37 AM :
Sample Type Essential Oil
Sample Name : Amyris Oil -BIOAROMA
Sample ID : BB22AB
Injection Volume : 0.10
Instrument ID: : GC-3

Chromatogram Amyris Oil-BIOAROMA



Comments:

The analysis of this Amyris batch sample meets the expected chemical profile for authentic essential oil of *Amyris balsamifera.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Peak Report TIC

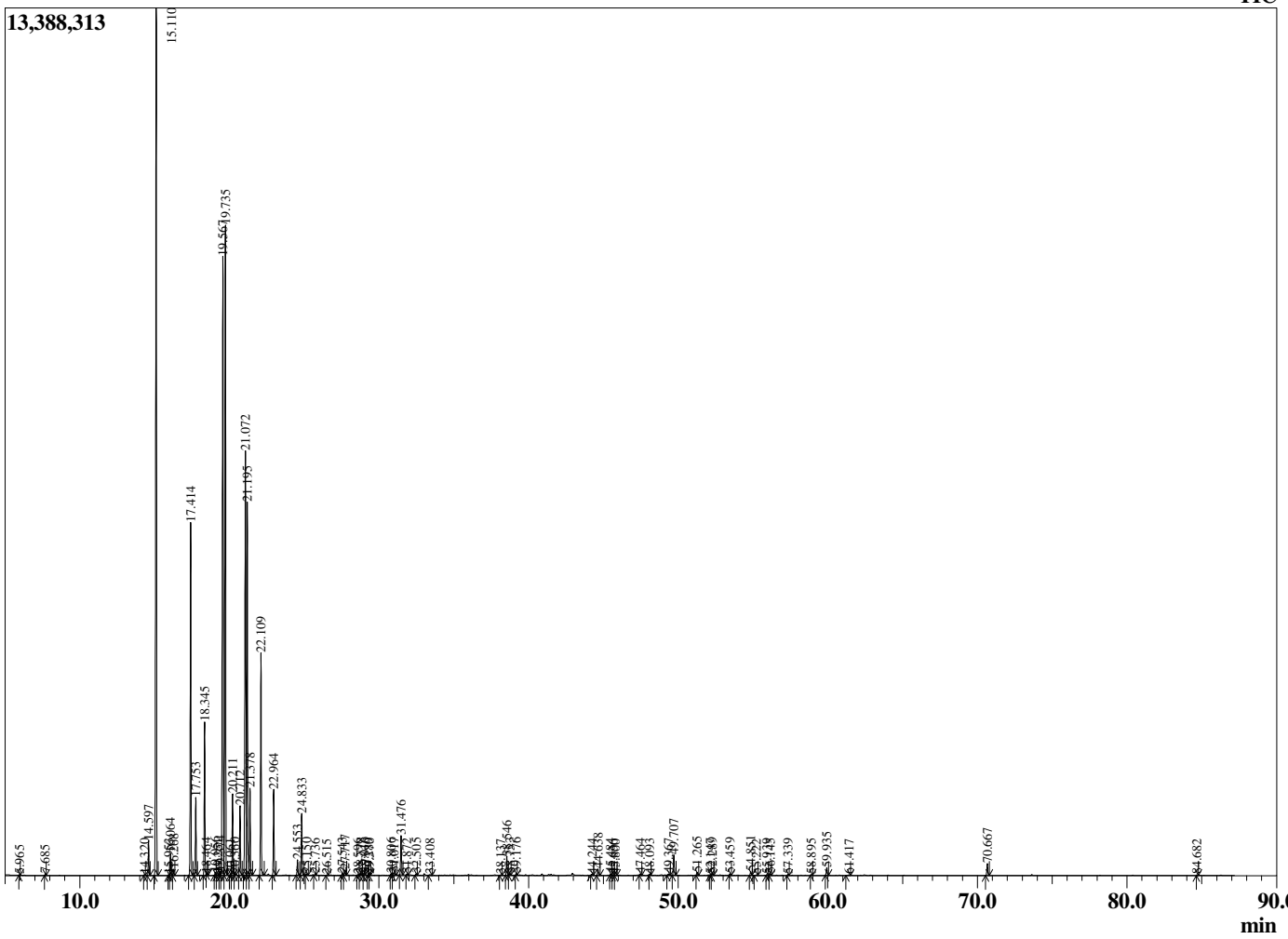
R.Time	Name	Area%
18.531	Limonene	0.03
26.818	Citronellal	0.04
31.949	Citronellol	0.01
33.557	Geraniol	0.05
40.699	Unidentified	0.09
41.281	Unidentified	0.03
41.705	Unidentified	0.03
42.731	Unidentified	0.06
42.888	beta-Elemene	0.11
43.722	Unidentified	0.02
43.810	Unidentified	0.05
44.091	cis-beta-Caryophyllene	0.04
44.590	Unidentified	0.01
44.813	trans-beta-Caryophyllene	0.22
45.191	Unidentified	0.06
45.420	gamma-Elemene	0.05
45.662	trans-alpha-Bergamotene	0.04
46.558	epi-beta-Santalene	0.06
46.684	alpha-Acoradiene	0.41
46.888	(E)-beta-Farnesene	0.07
47.052	alpha-Humulene	0.18
47.185	beta-Acoradiene	1.47
47.280	Unidentified	0.14
47.820	Unidentified	0.08
47.960	Unidentified	0.03
48.180	Unidentified	0.29
48.376	trans-Cadina-1(6),4-diene	0.26
48.443	gamma-Curcumene	0.75
48.639	Ar-Curcumene	1.22
48.832	Unidentified	0.31
49.035	delta-Selinene	0.07
49.154	beta-Selinene	0.20
49.367	Valencene	0.83
49.509	alpha-Zingiberene	2.30
49.580	Unidentified	0.18
49.995	Unidentified	0.04
50.168	4-epi-cis-Dihydroagarofuran	0.92
50.297	beta-Bisabolene	1.34
50.436	Dihydroagarofuran	0.26
50.993	(-)-alpha-Panasinsen	0.63
51.259	beta-Sesquiphellandrene	2.60
51.774	alpha-Maaliene	0.32
51.903	Unidentified	0.18
52.040	Selina-4(15),7(11)-diene	0.13
52.132	Unidentified	0.05
52.326	Selina-3,7(11)-diene	1.83
52.708	alpha-Elemol	10.87
52.878	Unidentified	0.01
53.443	(E)-Nerolidol	0.57
54.326	Unidentified	0.16
54.694	Caryophyllene oxide	0.01
56.144	5-epi-7-epi-alpha-Eudesmol	1.69
56.576	Zingiberenol	0.09
56.766	Unidentified	0.08
56.953	Unidentified	0.24
57.061	10-epi-gamma-Eudesmol	7.53
57.189	Unidentified	1.43
57.592	gamma-Eudesmol	8.02
58.049	Hinesol	0.34
58.307	Unidentified	0.41
58.405	Unidentified	0.83
58.558	Unidentified	0.20

R.Time	Name	Area%
58.869	Valerianol	28.20
58.925	alpha-Eudesmol + beta-Eudesmol	7.44
59.261	7-epi-alpha-Eudesmol	9.47
59.434	Unidentified	0.12
59.690	Unidentified	0.11
59.902	Unidentified	0.03
60.203	Unidentified	0.36
60.259	Unidentified	0.40
60.595	alpha-Bisabolol	0.07
60.681	Unidentified	0.06
61.076	Unidentified	0.06
61.231	Unidentified	0.46
61.531	Unidentified	0.06
62.178	(2E,6E)-Farnesol	0.08
62.540	Unidentified	0.04
63.315	Unidentified	0.14
63.669	Unidentified	0.37
64.200	Unidentified	0.27
65.117	Drimenol	1.73
		100.00

Sample Information

Analyzed by	**: Dr. Robert S. Pappas**
Analyzed	**: 7/9/2020 3:24:21 PM**
Sample Type	**: Essential Oil**
Sample Name	**: Angelica Root - BIOAROMA**
Sample ID	**: BA18FB**
Injection Volume	**: 0.10**
Instrument ID:	**: GC-2**

Chromatogram Angelica Root -BIOAROMA



Comments:

The analysis of this Angelica root batch sample meets the expected chemical profile for authentic essential oil of *Angelica archangelica.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Peak Report TIC

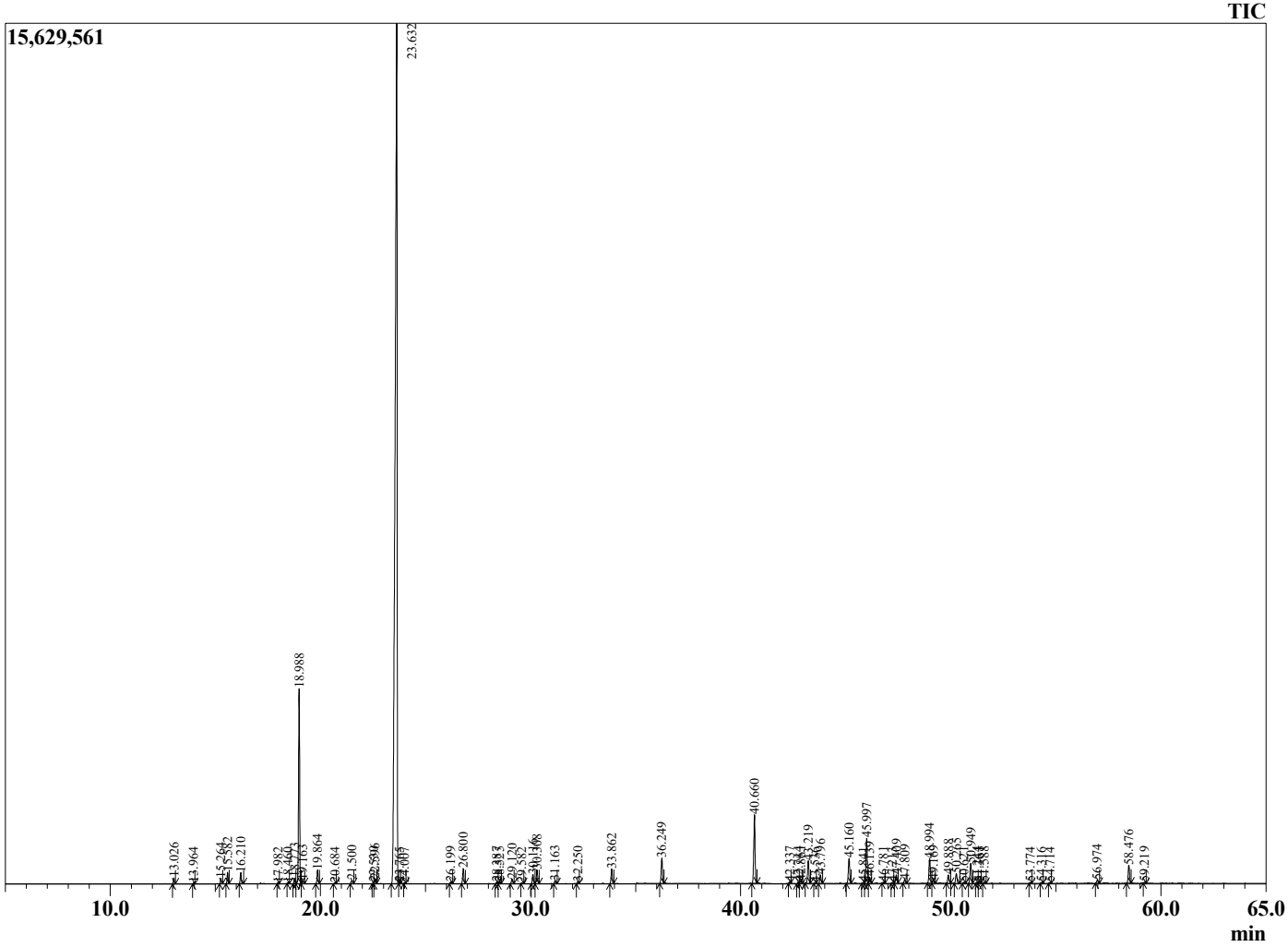
R.Time	Name	Area%
5.965	Heptane	0.01
7.685	Toluene	0.02
14.320	Hashishene	0.02
14.597	alpha-Thujene	0.66
15.110	alpha-Pinene	20.01
15.953	alpha-Fenchene	0.02
16.064	Camphene	0.41
16.268	Verbenene	0.12
17.414	Sabinene	7.09
17.753	beta-Pinene	1.48
18.345	Myrcene	3.07
18.464	Carveol	0.01
19.056	alpha-Terpinene	0.06
19.251	Octanal	0.04
19.374	Pseudolimonene	0.10
19.567	alpha-Phellandrene	16.16
19.735	3-Carene	14.68
20.061	1,4-Cineole	0.02
20.211	alpha-Terpinene	1.65
20.360	ortho-Cymene	0.03
20.712	para-Cymene	1.50
21.072	Limonene	11.00
21.195	beta-Phellandrene	7.94
21.378	(Z)-beta-Ocimene	1.79
22.109	(E)-beta-Ocimene	4.67
22.964	gamma-Terpinene	1.79
24.553	Isoterpinolene	0.34
24.833	Terpinolene	1.34
25.150	para-Cymenene	0.04
25.736	Linalool	0.03
26.515	Unidentified	0.01
27.543	cis-p-Menth-2-en-1-ol	0.05
27.717	allo-Ocimene	0.12
28.596	Unidentified	0.02
28.778	Unidentified	0.06
29.016	trans-Verbenol	0.05
29.289	Unidentified	0.03
29.370	Unidentified	0.02
30.806	p-Mentha-1,5-dien-8-ol	0.03
31.017	1,3,5-Undecatriene	0.07
31.476	Terpinen-4-ol	0.91
31.872	Cryptone	0.03
32.505	Myrtenal	0.06
33.408	cis-Piperitol	0.03
38.137	Phellandral	0.02
38.546	Bornyl acetate	0.44
38.753	Sabinyl acetate	0.05
39.176	Unidentified	0.05
44.244	Isoledene	0.04
44.638	alpha-Copaene	0.16
45.484	beta-Elemene	0.03
45.636	Unidentified	0.01
45.800	Unidentified	0.02
47.464	trans-beta-Caryophyllene	0.03
48.093	beta-Copaene	0.03
49.367	(E)-beta-Farnesene	0.05
49.707	alpha-Humulene	0.51
51.265	Germacrene D	0.08
52.147	Unidentified	0.02
52.289	alpha-Muurolene	0.06
53.459	delta-Cadinene	0.03
54.851	Unidentified	0.10

R.Time	Name	Area%
55.222	alpha-Elemol	0.02
55.939	Germacrene B	0.02
56.145	Unidentified	0.04
57.339	Unidentified	0.03
58.895	Humulene epoxide II	0.01
59.935	omega-Tridecanolide	0.20
61.417	Cubenol	0.03
70.667	omega-Pentadecanolide	0.32
84.682	Osthole	0.01
		100.00

Sample Information

Analyzed by : **Dr. Robert S. Pappas**
Analyzed : **7/12/2020 4:08:03 AM**
Sample Type : **Essential Oil**
Sample Name : **Basil ct. Linalool -** BIOAROMA
Sample ID : **BA18FC**
Injection Volume : **0.10**
Instrument ID: : **GC-3**

Chromatogram Basil ct. Linalool - BIOAROMA



Peak Report TIC

R.Time	Name	Area%
13.026	alpha-Pinene	0.22
13.964	Camphene	0.04
15.264	Sabinene	0.21
15.582	beta-Pinene	0.44
16.210	Myrcene	0.45
17.982	alpha-Terpinene	0.03
18.460	para-Cymene	0.04
18.773	Limonene	0.25
18.988	1,8-cineole	8.35
19.163	cis-beta-Ocimene	0.15
19.864	trans-beta-Ocimene	0.60
20.684	gamma-Terpinene	0.04
21.500	trans-Sabinene hydrate	0.17
22.530	Terpinolene	0.06
22.596	cis-Linalool oxide (furanoid)	0.23
23.632	Linalool	68.98
23.765	Hotrienol	0.04
24.007	1-Octen-3-yl-acetate	0.02
26.199	trans-Myroxide	0.07
26.800	Camphor	0.72
28.387	delta-Terpineol	0.07
28.525	Borneol	0.07
29.120	Terpinen-4-ol	0.22
29.582	3-(Z)-Hexenyl butyrate	0.03
30.116	alpha-Terpineol	0.44
30.308	p-allyl-Anisole	0.65
31.163	Octyl acetate	0.12
32.250	Citronellol	0.08
33.862	Geraniol	0.69
36.249	Bornyl acetate	1.27
40.660	Eugenol	3.42
42.337	alpha-Copaene	0.06
42.744	Elemene isomer	0.07
42.861	beta-Bourbonene	0.12
43.219	beta-Elemene	1.20
43.536	alpha-Cubebene	0.03
43.796	Methyleugenol	0.43
45.160	beta-Caryophyllene	1.35
45.841	Unidentified	0.06
45.997	trans-alpha-Bergamotene	2.40
46.139	alpha-Guaiene	0.35
46.781	cis-Murrola-3,5-diene	0.04
47.213	trans-beta-Farnesene	0.03
47.409	alpha-Humulene	0.43
47.809	cis-Cadina-1(6),4-diene	0.18
48.994	Germacrene D	1.32
49.169	beta-Sesquiphellandrene	0.16
49.888	Bicyclogermacrene	0.46
50.265	alpha-Bulnesene	0.54
50.621	beta-Bisabolene	0.06
50.949	gamma-Cadinene	1.05
51.244	delta-Cadinene	0.06
51.361	trans-Calamenene	0.06
51.588	beta-Sesquiphellandrene	0.07
53.774	Nerolidol	0.04
54.316	Maaliol	0.05
54.714	Spathulenol	0.04
56.974	1,10 di-epi-Cubenol	0.17
58.476	alpha-Muurolol	0.95
59.219	Cubenol	0.04
		100.00

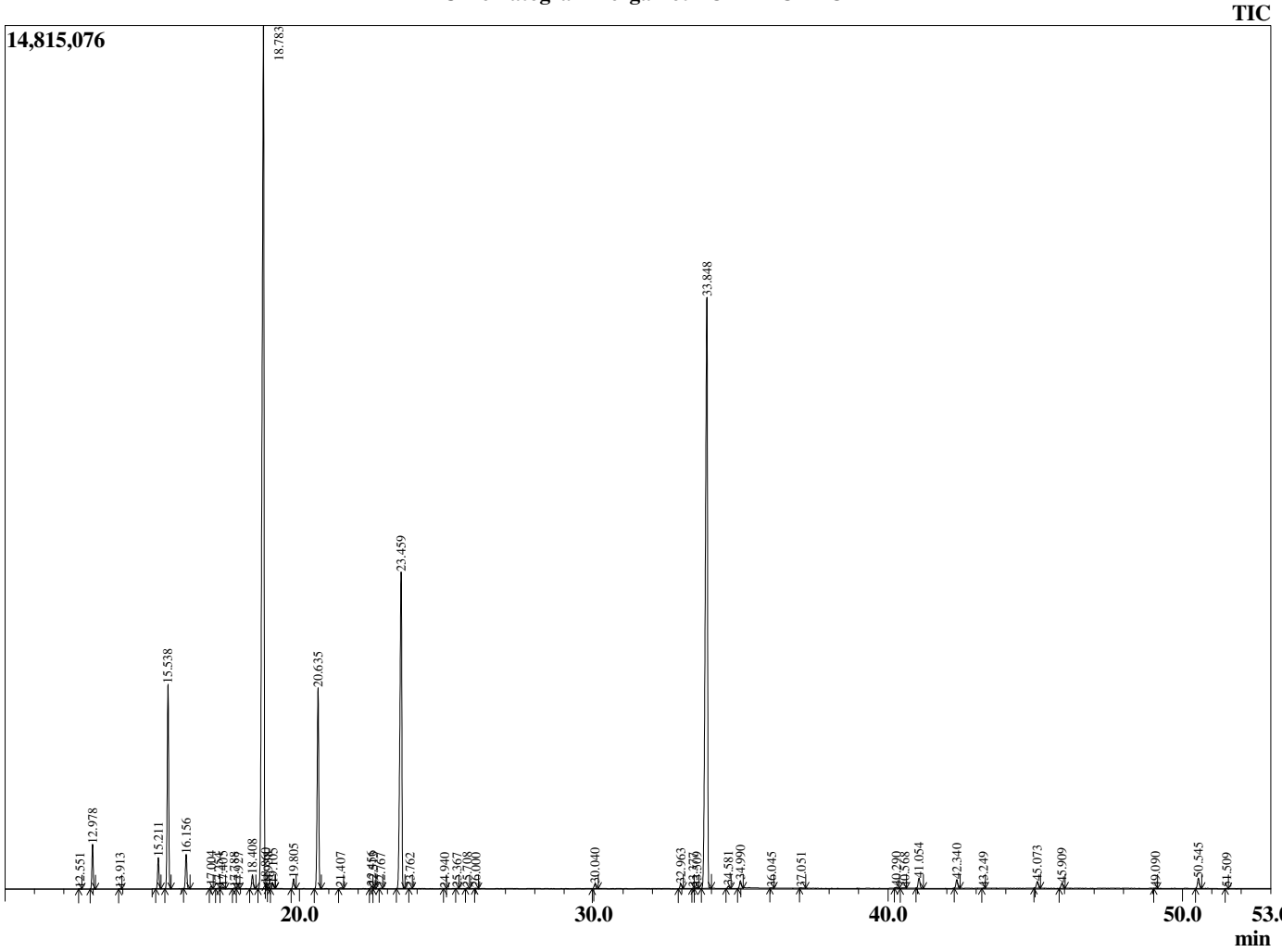
Comments:

The analysis of this Basil ct. Linalool batch sample meets the expected chemical profile for authentic essential oil of *Ocimum basilicum*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 10/18/2020 12:48:55 PM : Essential Oil
Sample Type : Bergamot FCF -BIOAROMA
Sample Name :BA29IA
Sample ID : 0.10
Injection Volume : GC-3
Instrument ID:

Chromatogram Bergamot FCF - BIOAROMA



Peak Report TIC

R.Time	Name	Area%
12.551	alpha-Thujene	0.01
12.978	alpha-Pinene	1.25
13.913	Camphene	0.01
15.211	Sabinene	0.94
15.538	beta-Pinene	6.43
16.156	Myrcene	1.10
17.004	Octanal	0.08
17.254	alpha-Phellandrene	0.02
17.405	delta-3-Carene	0.06
17.788	1,4-Cineole	0.02
17.927	alpha-Terpinene	0.02
18.408	para-Cymene	0.47
18.783	Limonene	38.09
18.860	beta-Phellandrene	0.02
18.938	1,8-Cineole	0.01
19.105	(Z)-beta-Ocimene	0.15
19.805	(E)-beta-Ocimene	0.32
20.635	gamma-Terpinene	6.89
21.407	n-Octanol	0.05
22.456	Terpinolene	0.09
22.513	trans-Linalool oxide (furanoid)	0.03
22.767	Dehydro-para-cymene	0.01
23.459	Linalool	13.35
23.762	Unidentified	0.01
24.940	Unidentified	0.01
25.367	allo-Ocimene	0.01
25.708	cis-Limonene oxide	0.02
26.000	trans-Limonene oxide	0.01
30.040	alpha-Terpineol	0.17
32.963	Neral	0.18
33.377	Carvone	0.01
33.509	Unidentified	0.03
33.848	Linalyl acetate	27.95
34.581	Unidentified	0.09
34.990	Geranial	0.31
36.045	Unidentified	0.01
37.051	Unidentified	0.01
40.290	alpha-Terpinyl acetate	0.04
40.568	Eugenol	0.02
41.054	Neryl acetate	0.41
42.340	Geranyl acetate	0.34
43.249	Unidentified	0.01
45.073	beta-Caryophyllene	0.28
45.909	trans-alpha-Bergamotene	0.20
49.090	Unidentified	0.02
50.545	beta-Bisabolene	0.41
51.509	Unidentified	0.01
		100.00

Comments:

The analysis of this Bergamot FCF batch sample meets the expected chemical profile for authentic essential oil of *Citrus bergamia.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

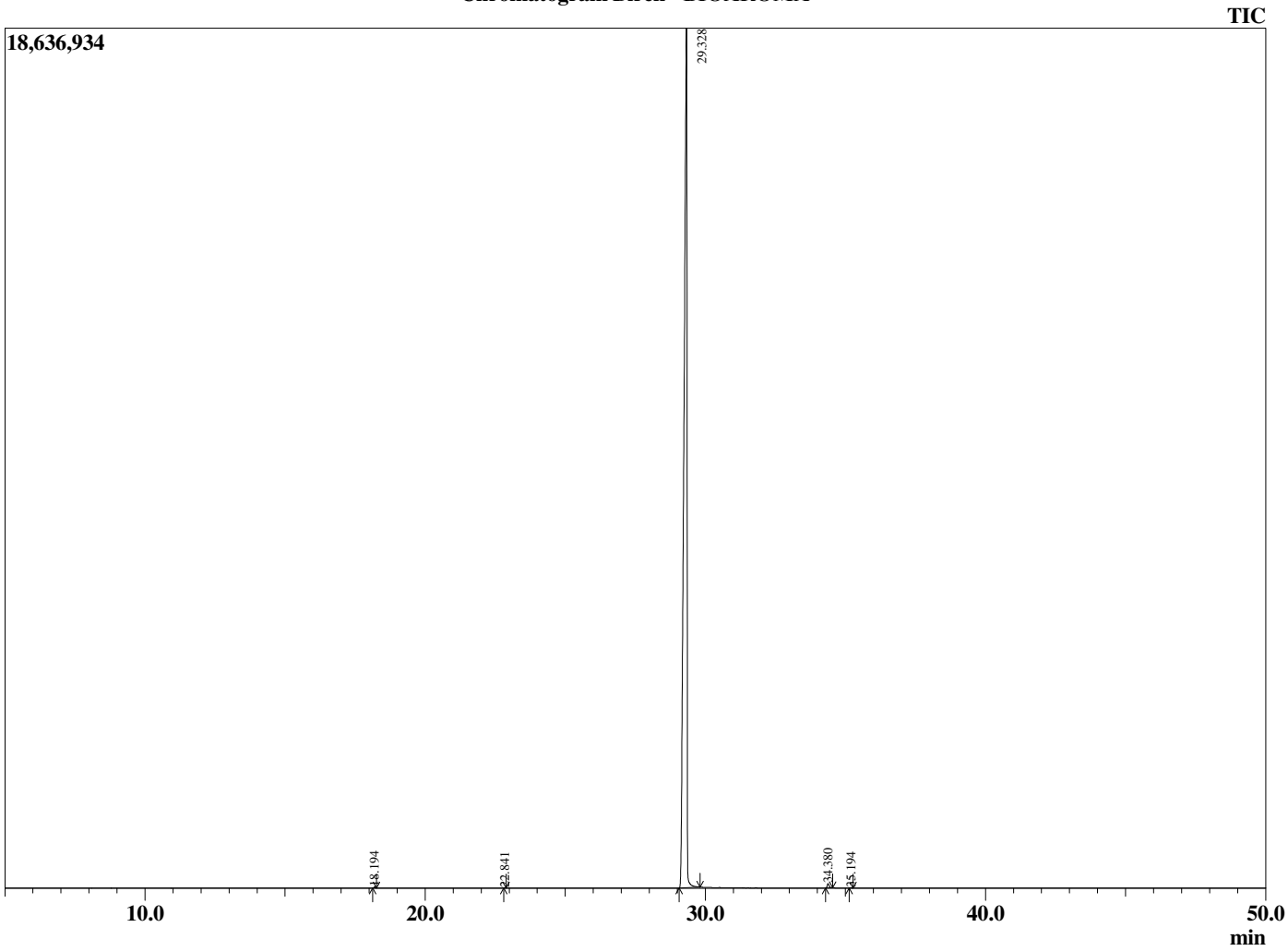
Sample Information

Analyzed by	**: Dr. Robert S. Pappas :**
Analyzed	**7/11/2020 5:01:54 AM :**
Sample Type	**Essential Oil**
Sample Name	**: Birch - BIOAROMA**
Sample ID	**: BA18FE**
Injection Volume	**: 0.10**
Instrument ID:	**: GC-4**

Peak Report TIC

R.Time	Name	Area%
18.194	Limonene	0.07
22.841	Linalool	0.01
29.328	Methyl salicylate	99.60
34.380	Ethyl salicylate	0.31
35.194	Unidentified	0.02
		100.00

Chromatogram Birch - BIOAROMA



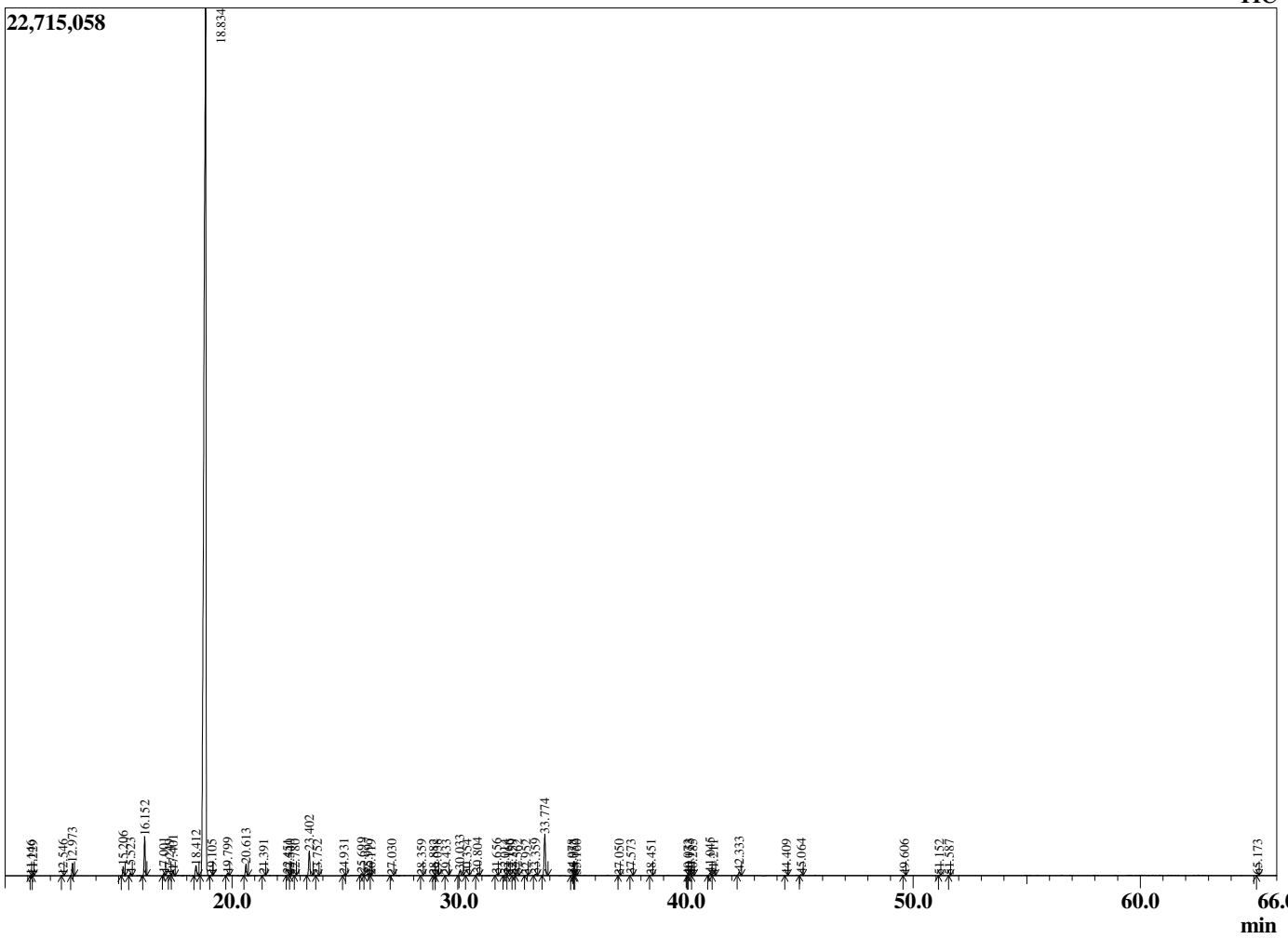
Comments:

The analysis of this Birch batch sample meets the expected chemical profile for authentic essential oil of *Betula lenta.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 10/16/2020 11:27:46 PM
Sample Type : Essential Oil
Sample Name : Orange Oil Bitter-
Sample ID BIOAROMA : BA29IB
Injection Volume : 0.10
Instrument ID: : GC-3

Chromatogram Orange Oil Bitter-BIOAROMA



Peak Report TIC

R.Time	Name	Area%
4.799	Heptane	0.00
11.146	Nonane	0.00
11.229	Heptanal	0.00
12.546	alpha-Thujene	0.03
12.973	alpha-Pinene	0.62
15.206	Sabinene	0.47
15.523	beta-Pinene	0.13
16.152	Myrcene	2.02
17.001	Octanal	0.12
17.249	alpha-Phellandrene	0.02
17.401	delta-3-Carene	0.27
18.412	para-Cymene	0.65
18.834	Limonene	88.58
19.105	(Z)-beta-Ocimene	0.04
19.799	(E)-beta-Ocimene	0.13
20.613	gamma-Terpinene	0.65
21.391	1-Octanol	0.05
22.451	Terpinolene	0.05
22.540	Unidentified	0.00
22.780	Unidentified	0.01
23.402	Linalool	1.46
23.752	Nonanal	0.03
24.931	trans-para-Mentha-2,8-dien-1-ol	0.06
25.699	cis-Limonene oxide	0.13
25.997	trans-Limonene oxide	0.17
26.119	Unidentified	0.00
27.030	Citronellal	0.02
28.359	Nonanol	0.02
28.882	Unidentified	0.02
29.038	Terpinen-4-ol	0.01
29.433	Unidentified	0.02
30.033	alpha-Terpineol	0.33
30.354	Unidentified	0.04
30.804	Capraldehyde	0.14
31.656	trans-Carveol	0.07
32.014	Nerol	0.06
32.166	Unidentified	0.02
32.359	Unidentified	0.00
32.562	cis-Carveol	0.05
32.952	Neral	0.03
33.359	Carvone	0.09
33.774	Linalyl acetate	2.69
34.978	Geranial	0.06
35.052	Unidentified	0.01
35.160	Unidentified	0.01
37.050	Unidentified	0.01
37.573	Unidentified	0.03
38.451	Unidentified	0.02
40.073	Unidentified	0.00
40.153	Unidentified	0.05
40.285	Unidentified	0.01
41.045	Neryl acetate	0.16
41.211	Unidentified	0.01
42.333	Geranyl acetate	0.21
44.409	Dodecanal	0.01
45.064	beta-Caryophyllene	0.05
49.606	Valencene	0.03
51.152	Unidentified	0.01
51.587	Unidentified	0.01
		100.00

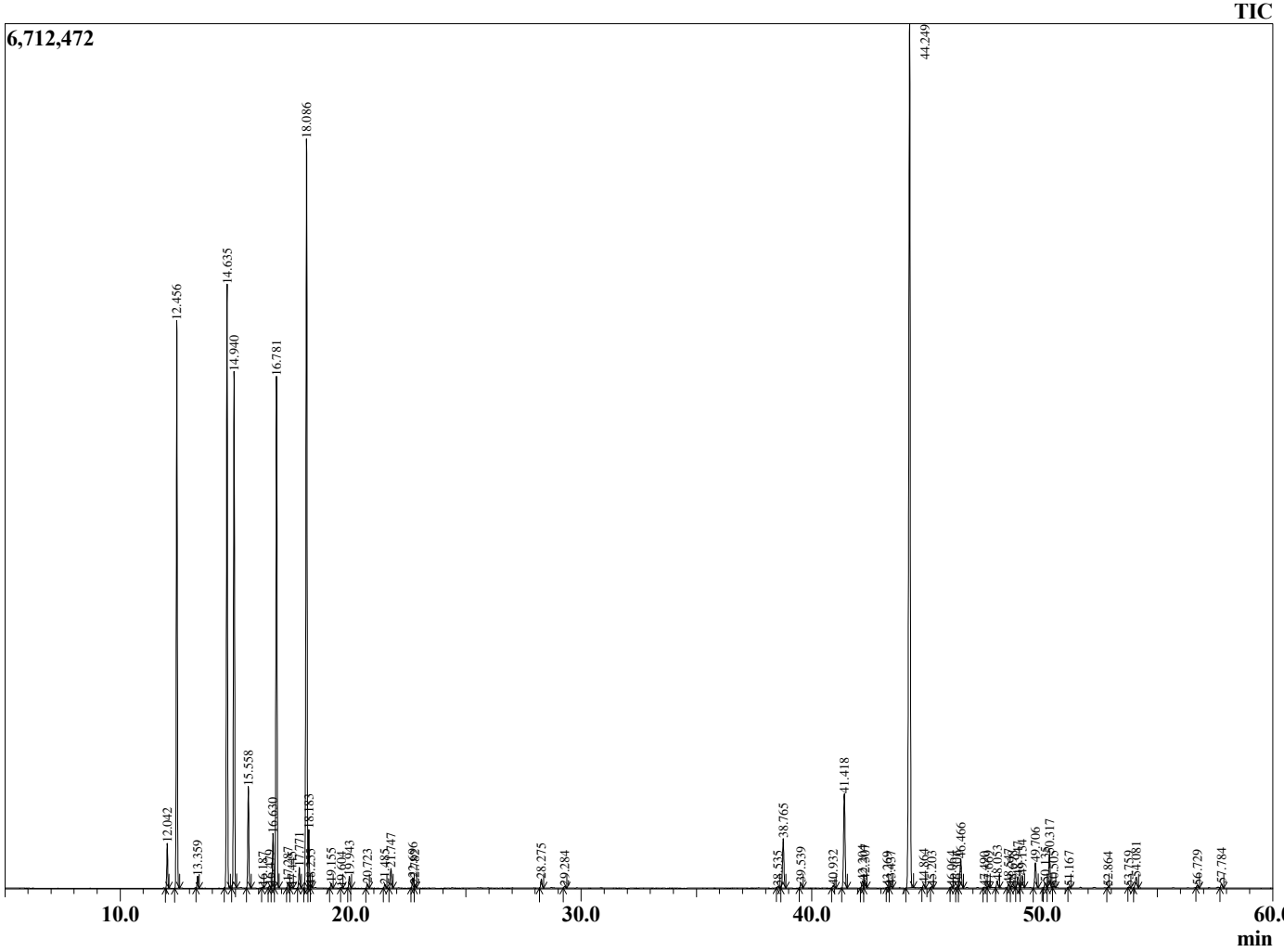
Comments:

The analysis of this Orange, Bitter batch sample meets the expected chemical profile for authentic essential oil of *Citrus sinensis*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 11/20/2020 10:57:00 AM
Sample Type : Essential Oil
Sample Name : Black pepper Oil-BIOAROMA
Sample ID : BA29IC
Injection Volume : 0.10
Instrument ID: : GC-4

Chromatogram Black pepper Oil-BIOAROMA



Comments:

The analysis of this Black Pepper batch sample meets the expected chemical profile for authentic essential oil of *Piper nigrum.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

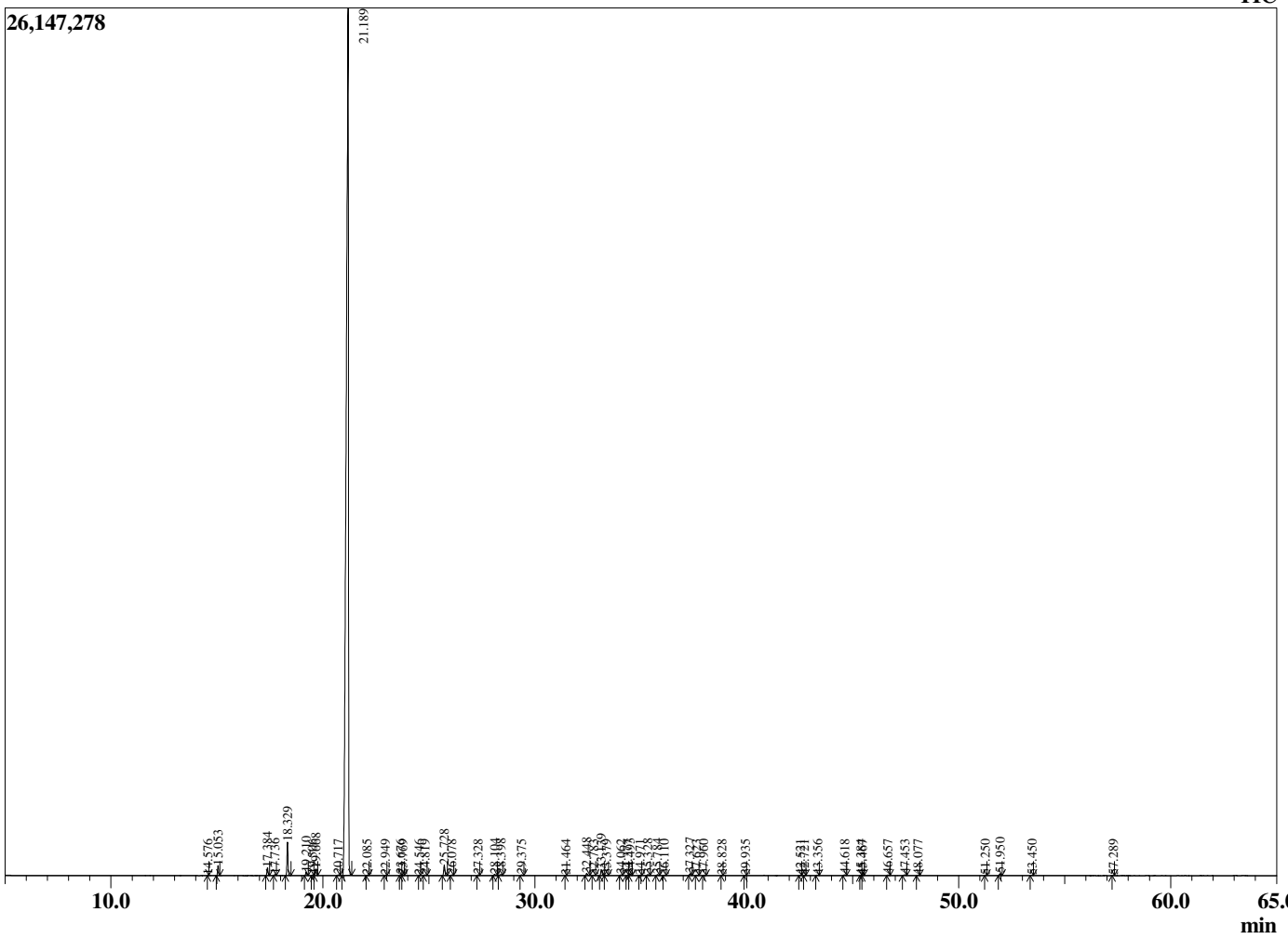
Peak Report TIC

R.Time	Name	Area%
12.042	alpha-Thujene	0.80
12.456	alpha-Pinene	10.33
13.359	Camphene	0.23
14.635	Sabinene	11.70
14.940	beta-Pinene	10.42
15.558	Myrcene	2.03
16.187	Terpinolene	0.02
16.479	Pseudolimonene	0.05
16.630	alpha-Phellandrene	1.10
16.781	delta-3-Carene	10.87
17.287	alpha-Terpinene	0.12
17.445	meta-Cymene	0.02
17.771	para-Cymene	0.44
18.086	Limonene	15.89
18.183	beta-Phellandrene	1.17
18.255	1,8-Cineole	0.05
19.155	(E)-beta-Ocimene	0.10
19.604	Unidentified	0.02
19.943	gamma-Terpinene	0.25
20.723	trans-Sabinene hydrate	0.09
21.485	Isoerpinolene	0.08
21.747	Terpinolene	0.46
22.696	Linalool	0.24
22.782	Unidentified	0.06
28.275	cis-Sabinene hydrate	0.22
29.284	alpha-Terpineol	0.05
38.535	Bicycloelemene	0.04
38.765	delta-Elemene	1.29
39.539	alpha-Cubebene	0.13
40.932	Cyclosativene	0.07
41.418	alpha-Copaene	2.57
42.204	beta-Cubebene	0.20
42.307	beta-Elemene	0.21
43.269	Unidentified	0.01
43.437	alpha-Gurjunene	0.05
44.249	trans-beta-Caryophyllene	24.26
44.864	beta-Copaene	0.10
45.203	alpha-Guaiene	0.03
46.064	trans-Murrola-3,5-diene	0.03
46.306	(E)-beta-Farnesene	0.03
46.466	alpha-Humulene	0.79
47.490	cis-Murrola-4(14),5-diene	0.03
47.669	trans-Cadina-1(6),4-diene	0.03
48.053	Germacrene D	0.18
48.547	beta-Selinene	0.10
48.698	trans-Muurola-4(14),5-diene	0.05
48.947	Bicyclogermacrene	0.34
49.134	alpha-Muurolene	0.34
49.706	beta-Bisabolene	0.67
50.135	4-epi-cubedol	0.14
50.317	delta-Cadinene	0.89
50.505	trans-Calamene	0.04
51.167	trans-Cadina-1,4-diene	0.03
52.864	(E)-Nerolidol	0.01
53.759	Spathulenol	0.01
54.081	Caryophyllene oxide	0.35
56.729	Unidentified	0.06
57.784	delta-Cadinol	0.11
		100.00

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 7/12/2020 5:40:39 AM
Sample Type : Essential Oil
Sample Name : Blood Orange -
Sample ID BIOAROMA : BA18FF
Injection Volume : 0.10
Instrument ID: : GC-2

Chromatogram Blood Orange - BIOAROMA



Peak Report TIC

R.Time	Name	Area%
14.576	alpha-Thujene	0.00
15.053	alpha-Pinene	0.49
17.384	Sabinene	0.41
17.736	beta-Pinene	0.05
18.329	Myrcene	1.70
19.210	Octanal	0.18
19.506	alpha-Phellandrene	0.02
19.668	delta-3-Carene	0.35
20.717	para-Cymene	0.04
21.189	Limonene	94.27
22.085	trans-beta-Ocimene	0.02
22.949	gamma-Terpinene	0.01
23.676	1-Octanol	0.04
23.769	trans-Sabinene hydrate	0.02
24.546	Isoterpinolene	0.01
24.819	Terpinolene	0.05
25.728	Linalool	0.60
26.078	Nonanal	0.04
27.328	trans-para-Mentha-2,8-dienol	0.04
28.104	cis-Limonene oxide	0.08
28.398	trans-Limonene oxide	0.10
29.375	Citronellal	0.05
31.464	Terpinen-4-ol	0.00
32.448	alpha-Terpineol	0.15
32.783	Unidentified	0.03
33.139	Decanal	0.37
33.379	Octyl acetate	0.02
34.062	trans-Carveol	0.04
34.377	Nerol	0.02
34.493	Citronellol	0.08
34.971	cis-Carveol	0.02
35.328	Neral	0.05
35.784	Carvone	0.06
36.110	Geraniol	0.02
37.327	Geranial	0.10
37.623	1-Decanol	0.02
37.960	Perillaldehyde	0.02
38.828	Thymol	0.01
39.935	Unidentified	0.02
42.521	Limonene glycol	0.02
42.721	Unidentified	0.01
43.356	Unidentified	0.03
44.618	alpha-Copaene	0.05
45.384	beta-Cubebene	0.02
45.467	beta-Elemene	0.02
46.657	Dodecanal	0.03
47.453	beta-Caryophyllene	0.05
48.077	beta-Copaene	0.03
51.250	Germacrene D	0.01
51.950	Valencene	0.11
53.450	delta-Cadinene	0.03
57.289	Caryophyllene oxide	0.01
		100.00

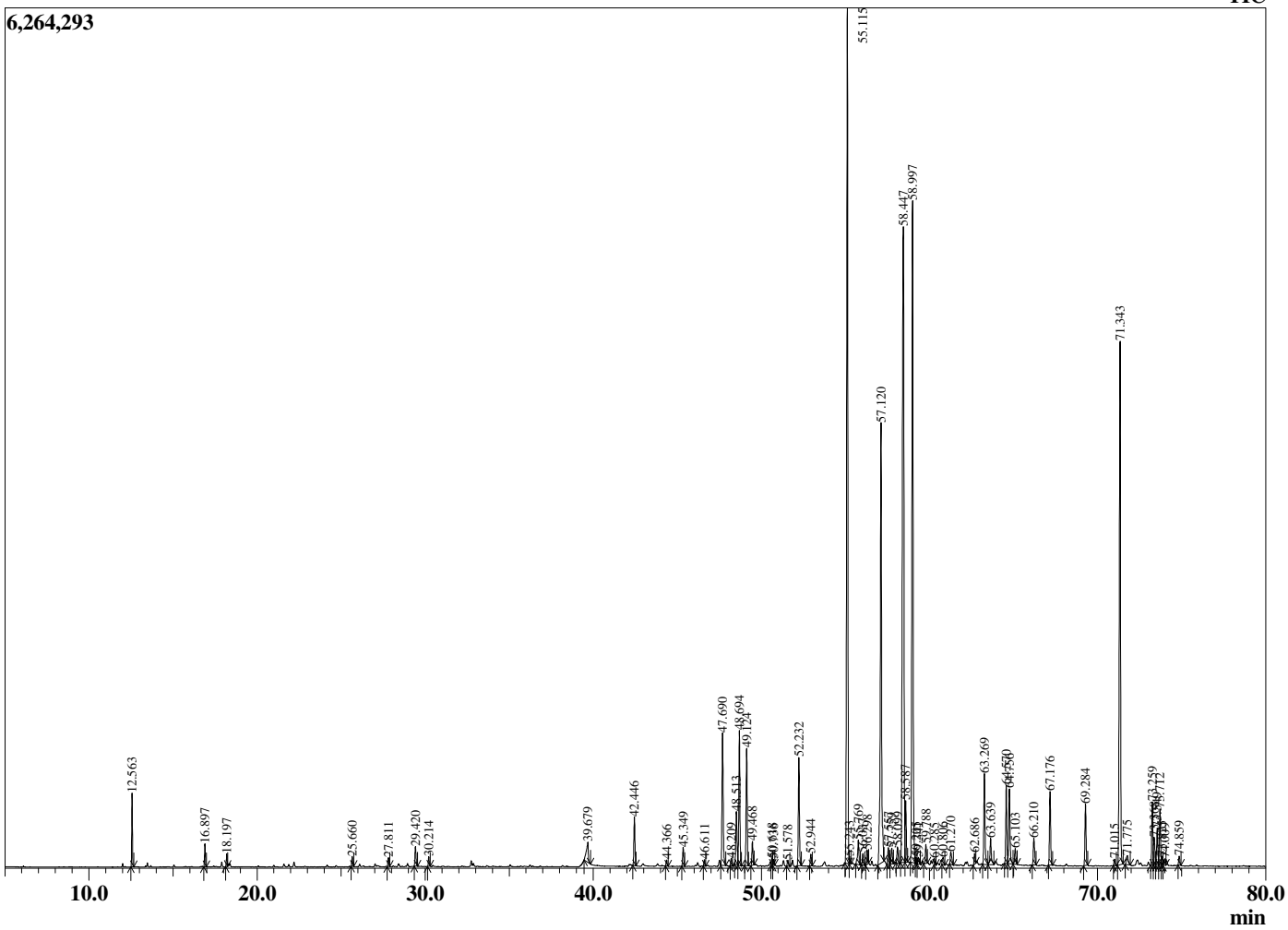
Comments:

The analysis of this Blood Orange batch sample meets the expected chemical profile for authentic essential oil of *Citrus sinensis*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 7/10/2020 5:24:06 PM
Sample Type : Essential Oil
Sample Name : Blue Cypress - BIOAROMA
Sample ID : BA18FG
Injection Volume : 0.10
Instrument ID: : GC-3

Chromatogram Blue Cypress - BIOAROMA



Comments:

The analysis of this Blue Cypress batch sample meets the expected chemical profile for authentic essential oil of *Callitrus intratropica*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

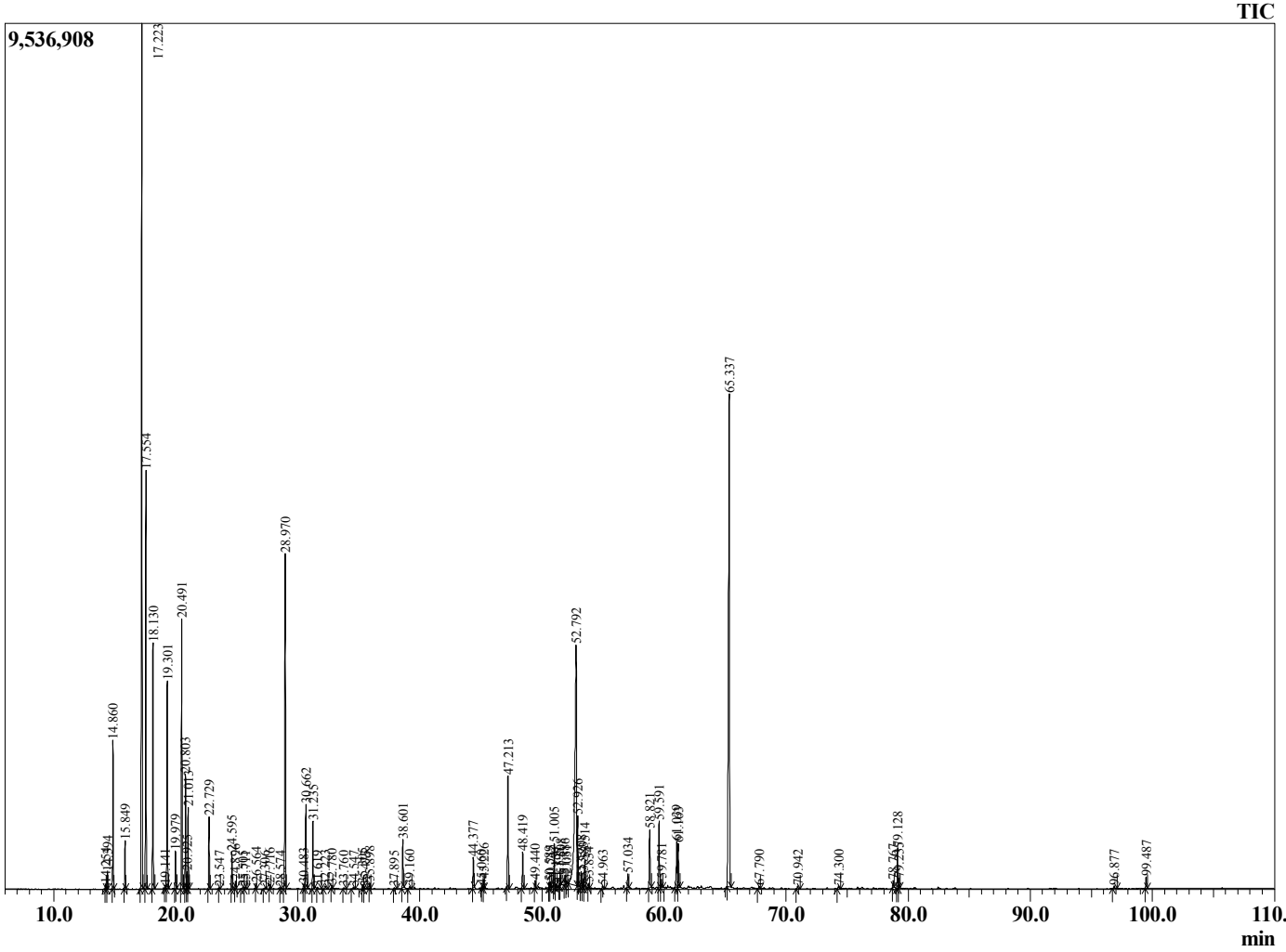
Peak Report TIC

R.Time	Name	Area%
12.563	alpha-Pinene	0.88
16.897	delta-3-Carene	0.31
18.197	Limonene	0.18
25.660	trans-Pinocarveol	0.16
27.811	Borneol	0.15
29.420	alpha-Terpineol	0.35
30.214	Verbenone	0.15
39.679	Myrtenoic acid	0.65
42.446	beta-Elemene	0.85
44.366	beta-Caryophyllene	0.10
45.349	alpha-Guaiene	0.33
46.611	alpha-Humulene	0.11
47.690	Unidentified	2.74
48.209	Unidentified	0.13
48.513	4-epi-cis-Dihydroagarofuran	1.08
48.694	beta-Selinene	2.42
49.124	alpha-Selinene	2.18
49.468	alpha-Bulnesene	0.42
50.618	Unidentified	0.10
50.736	Unidentified	0.09
51.578	Unidentified	0.11
52.232	Elemol	1.92
52.944	Unidentified	0.21
55.115	Guaiol	16.30
55.243	Unidentified	0.10
55.769	Eremoligenol isomer	0.52
56.037	Eudesm-5-en-11-ol	0.22
56.298	Maaliol	0.24
57.120	gamma-Eudesmol	9.34
57.557	Eremoligenol isomer	0.30
57.759	Hinesol	0.31
58.099	Unidentified	0.34
58.447	alpha-Eudesmol	17.06
58.587	Unidentified	1.13
58.997	Bulnesol	13.19
59.205	Unidentified	0.12
59.341	Unidentified	0.16
59.788	Unidentified	0.33
60.285	Unidentified	0.12
60.806	Juniper camphor	0.18
61.270	Unidentified	0.31
62.686	Unidentified	0.19
63.269	Unidentified sesquiterpenol	1.81
63.639	Unidentified sesquiterpenol	0.62
64.570	Unidentified	1.45
64.756	Unidentified sesquiterpenol	1.55
65.103	Unidentified	0.33
66.210	Callitrin isomer	0.59
67.176	Callitrin	1.40
69.284	Callitrisin isomer	1.15
71.015	Unidentified	0.11
71.343	Dihydrocolumellarin	10.60
71.775	Unidentified	0.29
73.259	Callitrisin	1.17
73.368	Unidentified	0.57
73.549	Callitrisin isomer	0.70
73.712	Columellarin	1.10
73.825	Unidentified	0.15
74.009	Callitrisin isomer	0.17
74.859	Unidentified	0.17
		100.00

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 1/7/2021 5:25:25 AM
Sample Type : Essential Oil
Sample Name : Blue Tansy - BIOAROMA
Sample ID : BB05AA
Injection Volume : 0.10
Instrument ID: : GC-2

Chromatogram Blue Tansy -BIOAROMA



Comments:

The analysis of this Blue Tansy batch sample meets the expected chemical profile for authentic essential oil of *Tanacetum annuum.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Peak Report TIC

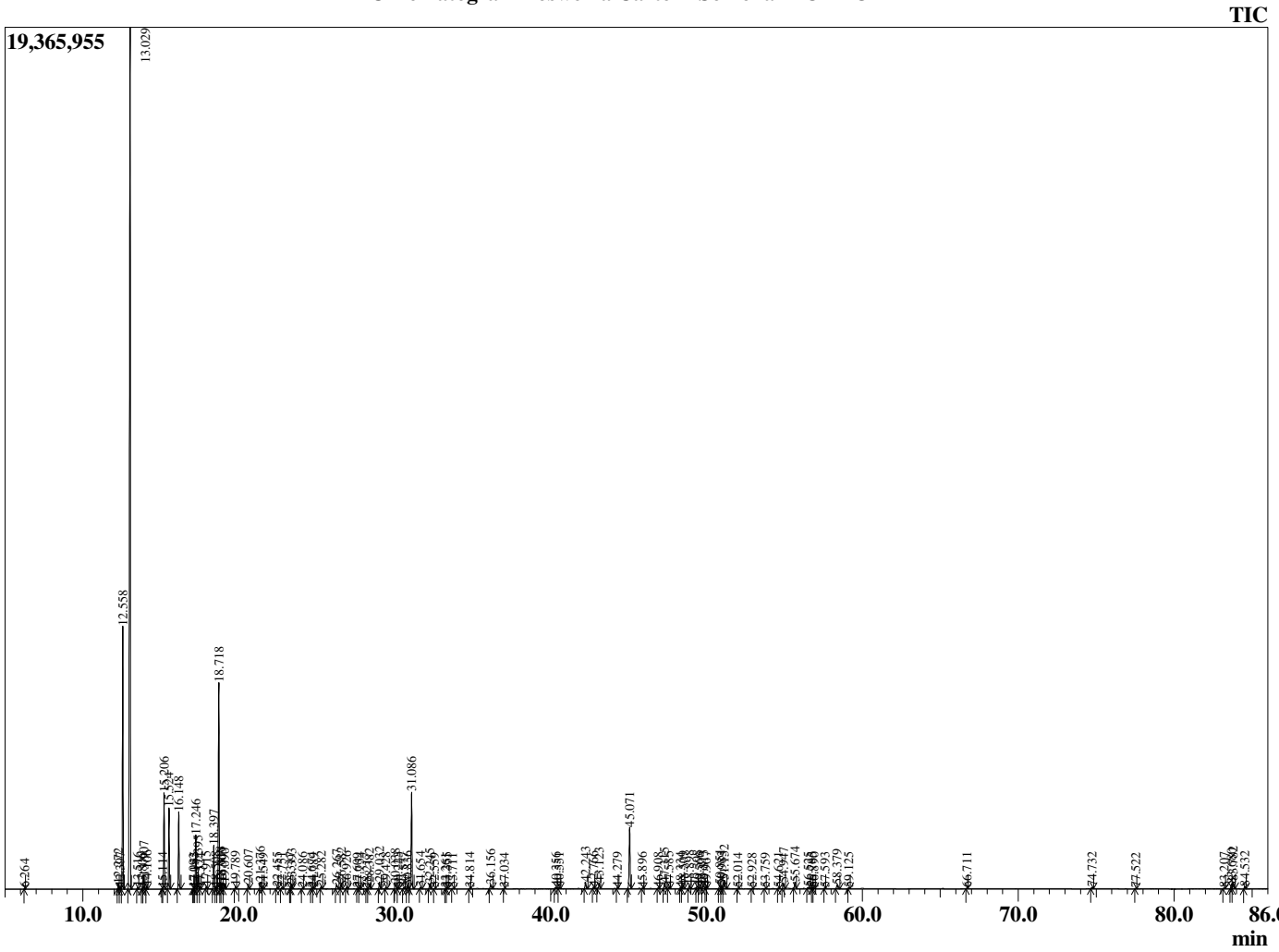
R.Time	Name	Area%
14.254	Tricyclene	0.07
14.394	alpha-Thujene	0.26
14.860	alpha-Pinene	2.31
15.849	Camphene	0.76
17.223	Sabinene	16.44
17.554	beta-Pinene	6.94
18.130	Myrcene	4.09
19.141	Pseudolimonene	0.04
19.301	alpha-Phellandrene	3.52
19.979	alpha-Terpinene	0.65
20.491	para-Cymene	4.77
20.803	Limonene	2.02
20.925	beta-Phellandrene	0.28
21.013	1,8-Cineole	1.43
22.729	gamma-Terpinene	1.27
23.547	trans-Sabinene hydrate	0.03
24.595	Terpinolene	0.68
24.896	6,7-Epoxymyrcene	0.14
25.505	Linalool	0.06
25.711	2-Methylbutyl-2-methylbutyrate	0.05
26.564	Unidentified	0.09
27.306	cis-p-Menth-2-en-1-ol	0.03
27.716	4-Acetyl-1-methylcyclohexene	0.06
28.574	trans-p-Menth-2-en-1-ol	0.03
28.970	Camphor	7.10
30.483	Unidentified	0.08
30.662	Borneol	1.76
31.235	Terpinen-4-ol	1.29
31.619	para-Cymen-8-ol	0.03
32.223	alpha-Terpineol	0.11
32.780	alpha-Phellandrene epoxide	0.04
33.760	Unidentified	0.04
34.547	(Z)-3-Hexenyl-2-methylbutyrate	0.03
35.305	Unidentified	0.06
35.473	Cuminaldehyde	0.04
35.898	Piperitone	0.11
37.895	Phellandral	0.04
38.601	Thymol	0.94
39.160	Carvacrol	0.05
44.377	alpha-Copaene	0.63
45.060	Sesquithujene	0.06
45.226	trans-beta-Elemene	0.16
47.213	trans-beta-Caryophyllene	2.34
48.419	(E)-beta-Farnesene	0.78
49.440	alpha-Humulene	0.15
50.589	trans-Cadina-1(6),4-diene	0.09
50.715	gamma-Curcumene	0.12
51.005	Germacrene D	0.88
51.150	Unidentified	0.05
51.395	Eremophiline	0.03
51.508	beta-Selinene	0.20
51.886	Bicyclogermacrene	0.21
52.031	alpha-Muurolene	0.04
52.792	3,6-Dihydrochamazulene	11.91
52.926	Dihydrochamazulene isomer	1.38
53.208	delta-Cadinene	0.31
53.383	Dihydrochamazulene isomer	0.22
53.514	beta-Sesquiphellandrene	0.62
53.834	Dihydrochamazulene isomer	0.08
54.963	alpha-Elemol	0.06
57.034	Caryophyllene oxide	0.29
58.821	5,6-Dihydrochamazulene	1.29

R.Time	Name	Area%
59.591	Dihydrochamazulene isomer	1.47
59.781	Guaiol	0.20
61.039	Dihydrochamazulene isomer	1.16
61.163	alpha-Eudesmol	1.02
65.337	Chamazulene	14.70
67.790	Unidentified	0.06
70.942	Phytone	0.07
74.300	Unidentified	0.07
78.767	Unidentified	0.15
79.128	9-(15,16-Dihydro-15-methylenegeranyl)-alph	0.96
79.235	9-(15,16-Dihydro-15-methylenegeranyl)-p-cy	0.17
96.877	Unidentified	0.06
99.487	Unidentified	0.24
		100.00

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 10/17/2020 3:23:39 AM
Sample Type : Essential Oil
Sample Name : Boswellia Carterii Somolia
Sample ID BIOAROMA : BA29IR
Injection Volume : 0.10
Instrument ID: : GC-3

Chromatogram Boswellia Carterii Somolia BIOAROMA



Comments:

The analysis of this Frankincense - carterii batch sample meets the expected chemical profile for authentic essential oil of *Boswellia carterii*. No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Peak Report TIC

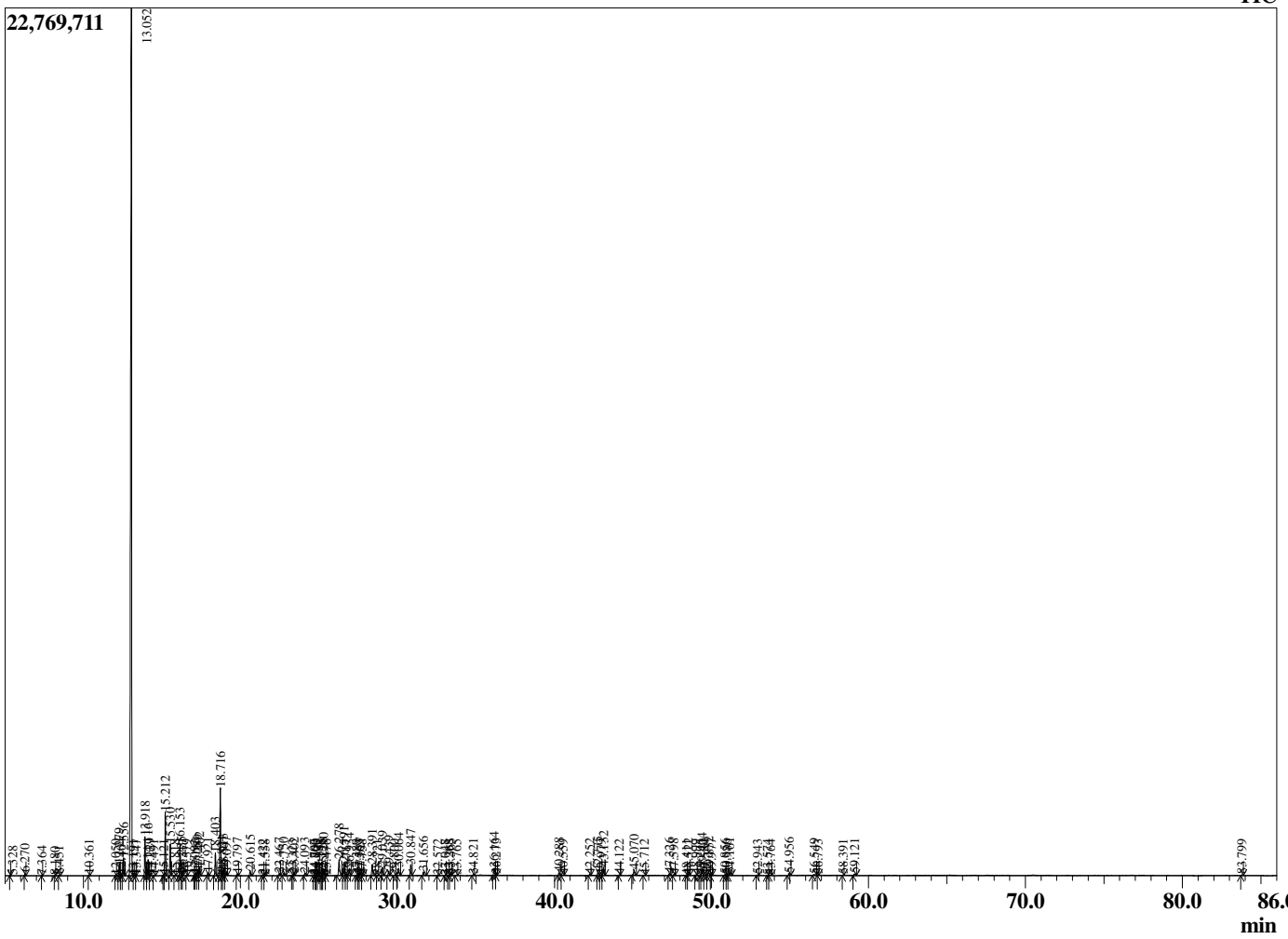
R.Time	Name	Area%
6.264	Toluene	0.03
12.272	Hashishene	0.20
12.397	Tricyclene	0.06
12.558	alpha-Thujene	10.45
13.029	alpha-Pinene	44.57
13.516	Thujadiene isomer	0.06
13.806	alpha-Fenchene	0.03
13.907	Camphene	0.51
14.106	Thuja-2,4(10)diene	0.13
15.114	Unidentified	0.03
15.206	Sabinene	3.97
15.524	beta-Pinene	3.41
16.148	Myrcene	3.20
17.092	Pseudolimonene	0.02
17.155	Unidentified	0.02
17.246	alpha-Phellandrene	2.30
17.395	delta-3-Carene	0.74
17.524	Hexyl acetate	0.02
17.915	alpha-Terpinene	0.12
18.397	para-Cymene	1.98
18.508	Methyl octyl ether	0.10
18.718	Limonene	9.30
18.818	beta-Phellandrene	0.27
18.909	1,8-Cineole	0.26
19.090	(Z)-beta-Ocimene	0.24
19.789	(E)-beta-Ocimene	0.12
20.607	gamma-Terpinene	0.20
21.376	1-Octanol	0.33
21.549	Unidentified	0.02
22.455	Terpinolene	0.09
22.751	Dehydro-para-cymene	0.08
23.317	Perillene	0.03
23.393	Linalool	0.24
24.086	Unidentified	0.04
24.674	beta-Thujone	0.04
24.789	Myrcenol	0.03
25.282	alpha-Campholenal	0.12
26.267	trans-Pinocarveol	0.26
26.582	trans-Verbenol	0.28
26.926	alpha-Phellandrene-8-ol	0.11
27.609	trans-Pinocamphone	0.02
27.754	Unidentified	0.04
28.217	Unidentified	0.02
28.382	para-Mentha-1,5-dien-8-ol	0.28
29.032	Terpinen-4-ol	0.33
29.428	para-Cymen-8-ol	0.06
30.038	alpha-Terpineol	0.35
30.223	Estragole	0.05
30.577	alpha-Phellandrene epoxide	0.06
30.836	Verbenone	0.14
31.086	Octyl acetate	4.95
31.654	trans-Carveol	0.08
32.245	1-Methoxy Decane	0.26
32.559	cis-Carveol	0.03
33.261	Unidentified	0.02
33.355	Carvone	0.06
33.711	Unidentified	0.03
34.814	Unidentified	0.04
36.156	Bornyl acetate	0.24
37.034	Carvacrol	0.02
40.356	alpha-Cubebene	0.09
40.551	Eugenol	0.05

R.Time	Name	Area%
42.243	alpha-Copaene	0.37
42.766	beta-Bourbonene	0.11
43.123	beta-Elemene	0.31
44.279	alpha-Gurjunene	0.04
45.071	beta-Caryophyllene	3.52
45.896	trans-alpha-Bergamotene	0.04
46.908	trans-Murrola-3,5-diene	0.04
47.315	alpha-Humulene	0.34
47.585	Alloaromadendrene	0.07
48.334	10-beta-H-Cadina-1(6),4-diene	0.05
48.509	trans-Cadina-1(6),4-diene	0.14
48.898	Germacrene D	0.15
49.398	beta-Selinene	0.14
49.566	trans-Muurola-4(14),5-diene	0.07
49.813	alpha-Selinene	0.20
49.967	alpha-Muurolene	0.09
50.851	gamma-Cadinene	0.20
50.983	Cubebol	0.13
51.152	delta-Cadinene	0.47
52.014	trans-Cadine-1,4-diene	0.02
52.928	alpha-Elemol	0.02
53.759	Unidentified	0.02
54.621	Spathulenol	0.03
54.947	Caryophyllene oxide	0.32
55.674	Viridiflorol	0.36
56.525	Unidentified	0.10
56.785	10-epi-gamma-Eudesmol	0.04
56.890	1,10-di-epi-Cubenol	0.03
57.593	1-epi-Cubenol	0.02
58.379	tau-Cadinol	0.25
59.125	Unidentified	0.04
66.711	Unidentified	0.04
74.732	Unidentified	0.09
77.522	Unidentified	0.02
83.207	Cembrenol	0.05
83.680	Incensole	0.26
83.782	Serratol	0.43
84.532	Incensyl acetate	0.12
		100.00

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 10/18/2020 10:50:58 AM
Sample Type : Essential Oil
Sample Name : Boswellia sacra -
Sample ID BIOAROMA : BA29IS
Injection Volume : 0.10
Instrument ID: : GC-3

Chromatogram Boswellia sacra - BIOAROMA



Comments:

The analysis of this Frankincense - sacra batch sample meets the expected chemical profile for authentic essential oil of *Boswellia sacra.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

Peak Report TIC

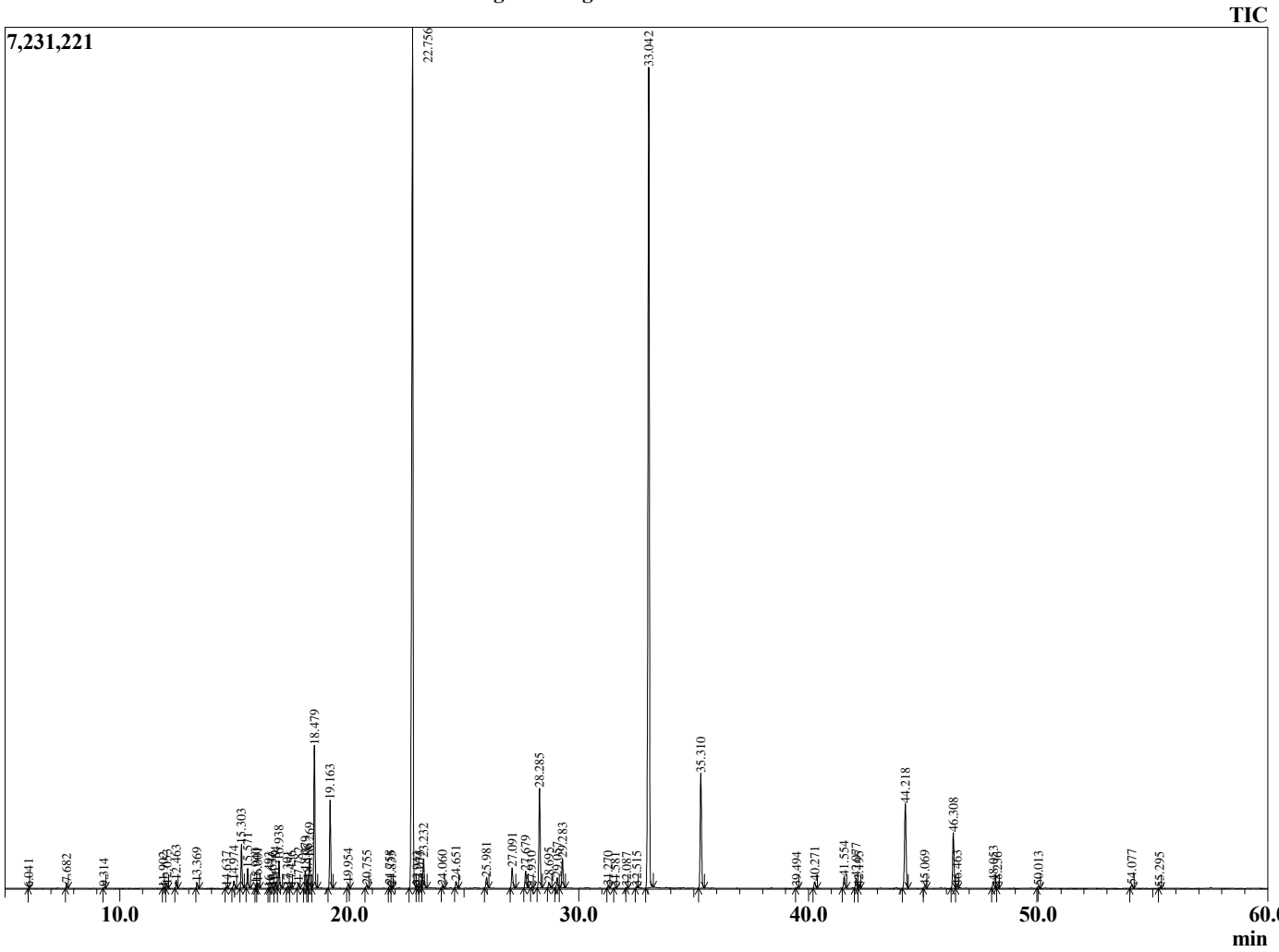
R.Time	Name	Area%
3.773	Unidentified	0.02
5.328	2,5,5-trimethyl-cyclopentadiene	0.01
6.270	Toluene	0.10
7.364	Unidentified	0.01
8.180	Unidentified	0.01
8.451	6,6-Dimethylhepta-2,4-diene	0.05
10.361	Unidentified	0.04
12.050	2,5-Dimethyl-1,5-hexadien-3-ol	0.01
12.279	Hashishene	0.59
12.404	Tricyclene	0.08
12.556	alpha-Thujene	0.93
13.052	alpha-Pinene	66.50
13.191	Unidentified	0.01
13.347	Unidentified	0.00
13.918	Camphene	2.07
14.116	Thuja-2,4(10)diene	0.85
14.229	Unidentified	0.07
14.491	Unidentified	0.02
15.121	Unidentified	0.04
15.212	Sabinene	3.44
15.530	beta-Pinene	1.74
15.818	Unidentified	0.03
16.153	Myrcene	1.79
16.235	Unidentified	0.15
16.317	Sulcatol	0.01
16.579	Unidentified	0.04
17.092	Psuedolimonene	0.02
17.160	Unidentified	0.16
17.259	alpha-Phellandrene	0.35
17.402	delta-3-Carene	0.45
17.921	alpha-Terpinene	0.17
18.403	para-Cymene	1.34
18.716	Limonene	5.19
18.821	beta-Phellandrene	0.23
18.913	1,8-Cineole	0.34
19.097	(Z)-beta-Ocimene	0.21
19.797	(E)-beta-Ocimene	0.12
20.615	gamma-Terpinene	0.32
21.422	trans-Sabinene hydrate	0.02
21.558	Pinol	0.03
22.467	Terpinolene	0.16
22.750	Dehydro-para-cymene	0.22
23.323	Perillene	0.03
23.402	Linalool	0.15
24.093	Unidentified	0.12
24.707	Unidentified	0.05
24.760	Unidentified	0.01
24.800	Unidentified	0.01
24.935	trans-para-Mentha-2,8-dien-1-ol	0.01
25.158	Unidentified	0.02
25.228	Unidentified	0.09
25.290	alpha-Campholenal	0.49
25.476	Unidentified	0.04
26.278	trans-Pinocarveol	1.27
26.591	trans-Verbenol	0.86
26.717	Camphor	0.04
26.934	alpha-Phellandrene-8-ol	0.45
27.389	Sabina ketone	0.04
27.563	Unidentified	0.04
27.627	trans-Pinocamphone	0.20
27.758	Pinocarvone	0.02
28.391	para-Mentha-1,5-dien-8-ol	0.81

R.Time	Name	Area%
28.721	Isopinocamphone	0.02
29.039	Terpinen-4-ol	0.58
29.439	para-Cymen-8-ol	0.31
29.800	Unidentified	0.03
30.064	Myrtenol	0.68
30.847	Verbenone	0.75
31.656	trans-Carveol	0.27
32.572	cis-Carveol	0.04
33.048	Unidentified	0.02
33.268	Cuminal	0.03
33.365	Carvone	0.08
33.765	Linalyl acetate	0.04
34.821	Unidentified	0.07
36.164	Bornyl acetate	0.52
36.273	Unidentified	0.04
40.288	alpha-Terpinyl acetate	0.22
40.559	Eugenol	0.04
42.252	alpha-Copaene	0.09
42.775	beta-Bourbonene	0.27
42.979	alpha-Bourbonene	0.03
43.132	beta-Elemene	0.62
44.122	Unidentified	0.03
45.070	beta-Caryophyllene	0.42
45.712	beta-Copaene	0.03
47.326	alpha-Humulene	0.14
47.598	Alloaromadendrene	0.06
48.411	Unidentified	0.02
48.522	trans-Cadina-1(6),4-diene	0.07
48.999	Unidentified	0.05
49.295	beta-Guaiene	0.04
49.404	beta-Selinene	0.50
49.584	trans-Muurola-4(14),5-diene	0.03
49.832	alpha-Selinene	0.25
49.977	alpha-Muurolene	0.05
50.856	gamma-Cadinene	0.07
50.986	Cubebol	0.03
51.161	delta-Cadinene	0.18
52.943	Elemol	0.04
53.574	Unidentified	0.02
53.764	Unidentified	0.04
54.956	Caryophyllene oxide	0.19
56.549	Humulene epoxide II	0.09
56.793	10-epi-gamma-Eudesmol	0.03
58.391	tau-Cadinol	0.03
59.121	alpha-Eudesmol	0.15
83.799	Serratol	0.04
		100.00

Sample Information

Analyzed by : Dr. Robert S. Pappas
Analyzed : 11/21/2020 8:09:52 AM
Sample Type : Essential Oil
Sample Name : Bulgarian Lavender-
Sample ID BIOAROMA : BA29IAB
Injection Volume : 0.10
Instrument ID: : GC-2

Chromatogram Bulgarian Lavender-BIOAROMA



Peak Report TIC

R.Time	Name	Area%
3.682	Unidentified	0.01
4.113	3-Methylbutanal	0.01
6.041	Toluene	0.01
7.682	Hexyl methyl ether	0.12
9.314	n-Hexanol	0.03
11.902	Tricyclene	0.02
12.053	alpha-Thujene	0.10
12.463	alpha-Pinene	0.21
13.369	Camphene	0.17
14.637	Sabinene	0.03
14.974	1-Octen-3-ol	0.27
15.303	3-Octanone	1.29
15.571	Myrcene	0.59
15.940	Butyl butyrate	0.10
16.001	3-Octanol	0.19
16.493	Unidentified	0.02
16.636	alpha-Phellandrene	0.05
16.784	delta-3-Carene	0.19
16.938	Hexyl acetate	0.85
17.301	alpha-Terpinene	0.04
17.456	meta-Cymene	0.05
17.782	para-Cymene	0.18
18.079	Limonene	0.53
18.186	beta-Phellandrene	0.26
18.269	1,8-Cineole	0.97
18.479	(Z)-beta-Ocimene	4.53
19.163	(E)-beta-Ocimene	2.71
19.954	gamma-Terpinene	0.15
20.755	cis-Linalool oxide (furanoid)	0.11
21.758	Terpinolene	0.10
21.835	trans-Linalool oxide (furanoid)	0.04
22.756	Linalool	32.81
22.943	Hotrienol	0.08
23.075	Hexyl propionate	0.09
23.232	1-Octen-3-yl acetate	1.02
24.060	3-Octyl acetate	0.08
24.651	allo-Ocimene	0.22
25.981	Hexyl isobutyrate	0.43
27.091	Lavandulol	0.75
27.679	Borneol	0.60
27.930	Unidentified	0.02
28.285	Terpinen-4-ol	3.65
28.695	Cryptone	0.20
29.057	Hexyl butyrate	0.39
29.283	alpha-Terpineol	1.09
31.270	Nerol	0.06
31.581	Unidentified	0.03
32.087	Hexyl 2-methylbutyrate	0.02
32.515	Cuminal	0.06
33.042	Linalyl acetate	32.58
35.310	Lavandulyl acetate	4.34
39.494	alpha-Terpinyl acetate	0.03
40.271	Neryl acetate	0.25
41.554	Geranyl acetate	0.44
42.077	Hexyl hexanoate	0.40
42.195	7-epi-Sesquithujene	0.05
44.218	trans-beta-Caryophyllene	3.60
45.069	trans-alpha-Bergamotene	0.10
46.308	(E)-beta-Farnesene	2.10
46.463	alpha-Humulene	0.09
48.053	Germacrene D	0.26
48.236	(E,E)-alpha-Farnesene	0.02

Comments:

The analysis of this Lavender batch sample meets the expected chemical profile for authentic essential oil of *Lavandula angustifolia.* No contamination or adulteration was detected. The results provided in this GCMS quality analysis reflect the chemical composition of the oil and lot referenced above on the date of analysis.

R.Time	Name	Area%
50.013	gamma-Cadinene	0.07
54.077	Caryophyllene oxide	0.15
55.295	Unidentified	0.02
		100.00