



Aromatic Plant Research Center

We provide uncompromising
quality control for your products.

Customer : doTERRA International
Lot Number : 231442
Date Filled : 05/24/2023

Column : ZB5 (60 m length × 0.25 mm inner diameter × 0.25 µm film thickness)
Instrument : Shimadzu GCMS-QP2010 Ultra
Carrier gas : Helium 80 psi
Temperature ramp : 2 degrees celsius per minute up to 260-degrees celsius
Split ratio : 30:1
Sample preparation : 5%w/v solution with Dichloromethane.



Comments:

The analysis of this Clove lot revealed no contaminants or adulteration.
The sample meets the expected chemical profile for authentic essential oils of *Eugenia caryophyllata*.

Analysied by : Ambika Poudel
Reviewed by : Dr. Prabodh Satyal



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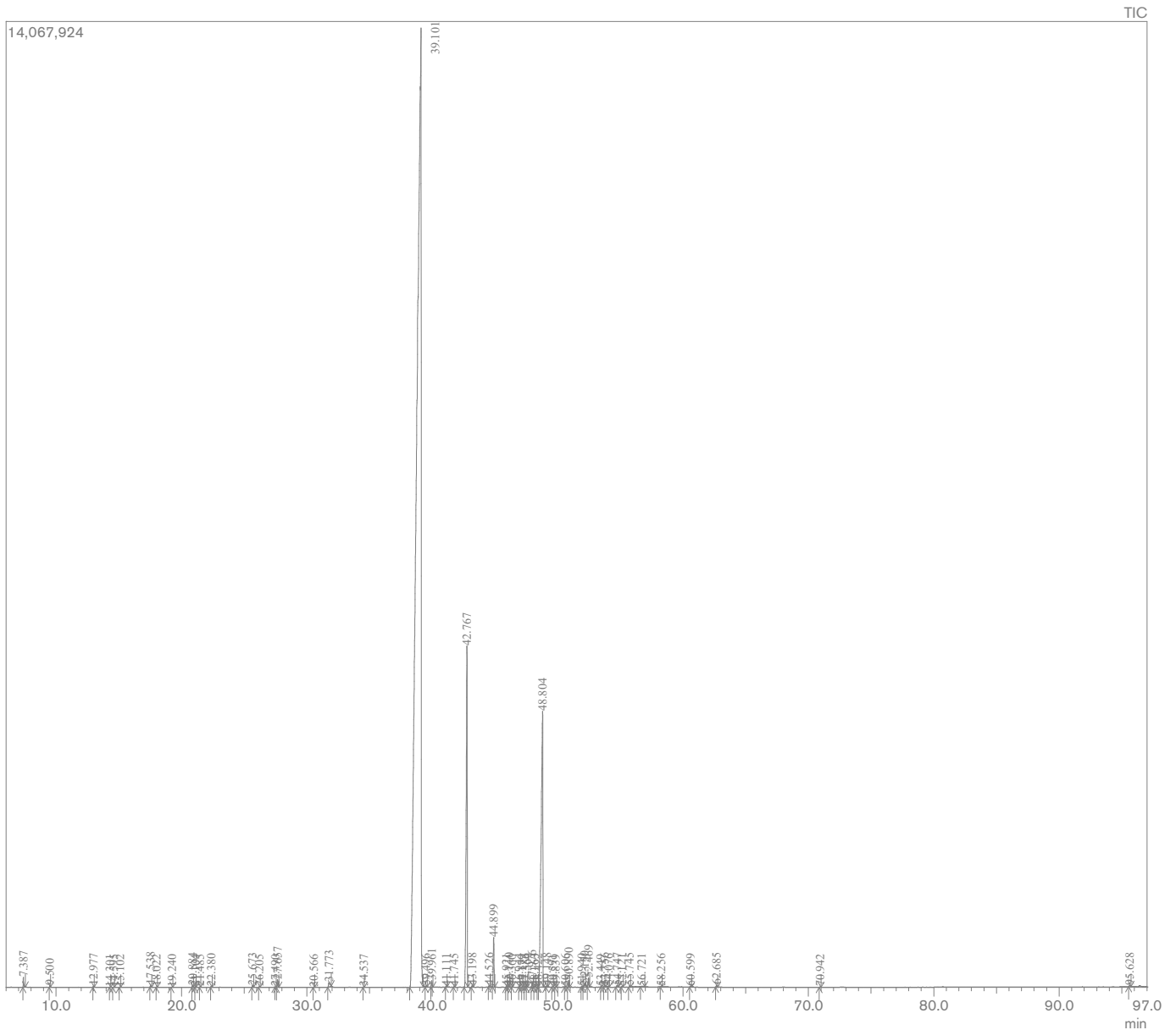
Clove Essential Oil

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Chromatogram



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Peak Report

Peak#	R.Time	Name	Area%
1	7.387	Furfural	0.09
2	9.500	2-Heptanone	0.01
3	12.977	5-Methyl furfural	0.01
4	14.301	6-Methyl-5-hepten-2-one	0.00
5	14.595	Myrcene	0.00
6	15.102	Ethyl hexanoate	0.00
7	17.538	2-Heptyl acetate	0.03
8	18.022	trans-beta-Ocimene	0.01
9	19.240	Acetophenone	0.00
10	20.884	2-Nonanone	0.02
11	21.104	Methyl benzoate	0.01
12	21.485	Linalool	0.01
13	22.380	2-Methyl-6-methylen-octa-1,7-dien-3-one	0.01
14	25.673	Benzyl acetate	0.02
15	26.205	Ethyl benzoate	0.01
16	27.490	Gardenol	0.00
17	27.657	Methyl salicylate	0.10
18	30.566	2-Nonyl acetate	0.00
19	31.773	Chavicol	0.12
20	34.537	2-Undecanone	0.01
21	39.101	Eugenol	82.24
22	39.496	neo-Caryophyllene	0.02
23	39.961	alpha-Copaene	0.09
24	41.111	Vanillin	0.01
25	41.745	cis-Caryophyllene	0.01
26	42.767	beta-Caryophyllene	6.60
27	43.198	beta-Ylangene	0.02
28	44.526	Spirolepechinene	0.02
29	44.899	alpha-Humulene	0.74
30	45.921	cis-Cadina-1(6),4-diene	0.02
31	46.110	trans-Cadina-1(6),4-diene	0.03
32	46.360	alpha-Amorphene	0.01
33	46.944	beta-Selinene	0.01
34	47.179	gamma-Amorphene	0.01
35	47.386	alpha-Selinene	0.01
36	47.564	alpha-Murolene	0.01
37	47.976	trans-trans-alpha-Farnesene	0.06
38	48.163	Bicyclogermacrene	0.01
39	48.422	gamma-Cadinene	0.01
40	48.804	Eugenyl acetate	8.98
41	49.148	Clove bud sesquiterpenoid 1	0.03
42	49.591	trans-Cadina-1,4-diene	0.01
43	49.839	alpha-Cadinene	0.01
44	50.606	Clove bud sesquiterpenoid 2	0.01
45	50.890	(2R-5-trans)-Caryophyll-5-en-12-al	0.11
46	51.940	Clove bud sesquiterpenoid 3	0.01
47	52.150	Caryophyllene alcohol	0.09
48	52.469	Caryophyllene oxide	0.15
49	53.449	cis-Bisabol-11-ol	0.00
50	53.756	Viridiflorol	0.04
51	54.076	Humulene epoxide II	0.01
52	54.747	Widdrol isomer	0.03
53	55.121	1-epi-Cubenol	0.01
54	55.745	Caryophylla-4(12),8(13)-dien-5-alpha-ol	0.02
55	56.721	alpha-Cadinol	0.02
56	58.256	2',3',4'-Trimethoxy acetophenone	0.01
57	60.599	4-Hydroxy-3-methoxy cinnamaldehyde	0.01
58	62.685	Benzyl benzoate	0.03
59	70.942	Methyl palmitate	0.01
60	95.628	Dehydro dieugenol	0.02
			100.00

