



Aromatic Plant Research Center

We provide uncompromising quality control for your products.

Customer: doTERRA International

Lot Number: 160434

Date Filled: 2/12/2016

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 Marjoram lot revealed no contaminants or adulteration.

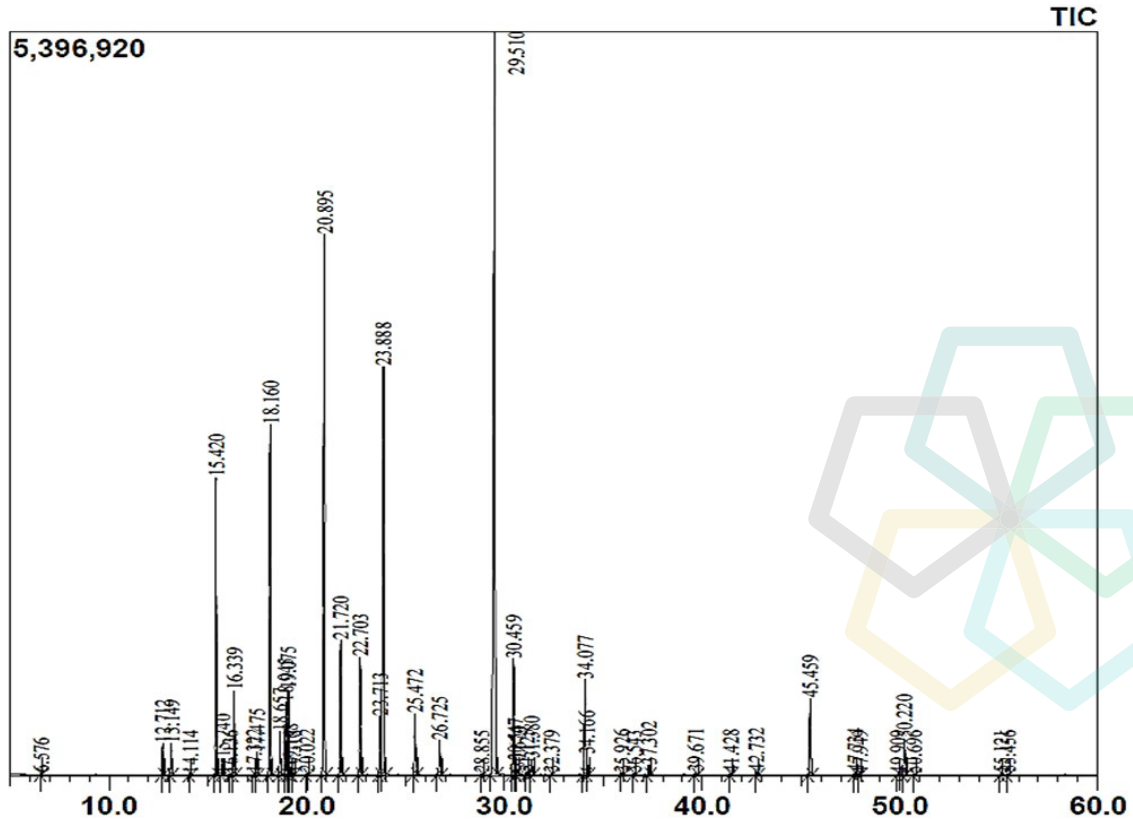
The sample meets the expected chemical profile for authentic essential oils of *Origanum majorana*.



Marjoram Essential Oil

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Chromatogram



Peak Report

Ret.Time	Compound Name	Area %
6.576	Methyl-alpha-methyl butyrate	0.02
12.712	alpha-Thujene	0.63
13.149	alpha-Pinene	0.65
14.114	Camphene	0.03
15.42	Sabinene	6.5
15.74	beta-Pinene	0.38
16.136	3-Octanone	0.03
16.339	Myrcene	1.84
17.322	Pseudolimonene	0.06
17.475	alpha-Phellandrene	0.52
18.16	alpha-Terpinene	8.31
18.657	para-Cymene	1.01
18.945	Limonene	1.77
19.075	beta-Phellandrene	2.01
19.168	1,8-Cineole	0.17
19.318	cis-beta-Ocimene	0.03
20.022	trans-beta-Ocimene	0.06
20.895	gamma-Terpinene	13.97
21.72	cis-Sabinene hydrate	3.38
22.703	Terpinolene	3
23.713	Linalool	1.39
23.888	trans-Sabinene hydrate	12.91
25.472	cis-para-Menth-2-en-1-ol	1.63
26.725	trans-para-Menth-2-en-1-ol	0.95
28.855	Borneol	0.03
29.51	Terpinen-4-ol	26.94
30.459	alpha-Terpineol	3.38
30.547	cis-Piperitol	0.26
30.67	cis-Dihydro carvone	0.14
31.125	trans-Dihydro carvone	0.07
31.38	trans-Piperitol	0.42
32.379	Nerol	0.04
34.077	Linalyl acetate	2.79
34.166	trans-Sabinene hydrate acetate	0.46
35.926	trans-Carvone oxide	0.04
36.543	Bornyl acetate	0.04
37.302	Isobornyl acetate	0.27
39.671	delta-Elemene	0.08
41.428	Neryl acetate	0.04
42.732	Geranyl acetate	0.09
45.459	beta-Caryophyllene	2.33
47.734	alpha-Humulene	0.09
47.949	4,6,8,10-tetramethyl Tridecane	0.03
49.909	Viridiflorene	0.02
50.22	Bicyclogermacrene	1.09
50.696	trans-trans-alpha-Farnesene	0.03
55.121	Spathulenol	0.04
55.456	Caryophyllene oxide	0.04

Area Total: 100

Comments:

The analysis of this Marjoram lot revealed no contaminants or adulteration. The sample meets the expected chemical profile for authentic essential oils of *Origanum majorana*.

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