



## Aromatic Plant Research Center

We provide uncompromising  
quality control for your products.

**Customer** : doTERRA International  
**Lot Number** : 232722  
**Date Filled** : 09/29/2023

**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 Grapefruit lot revealed no contaminants or adulteration.  
The sample meets the expected chemical profile for authentic essential oils of Citrus x paradisi.

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



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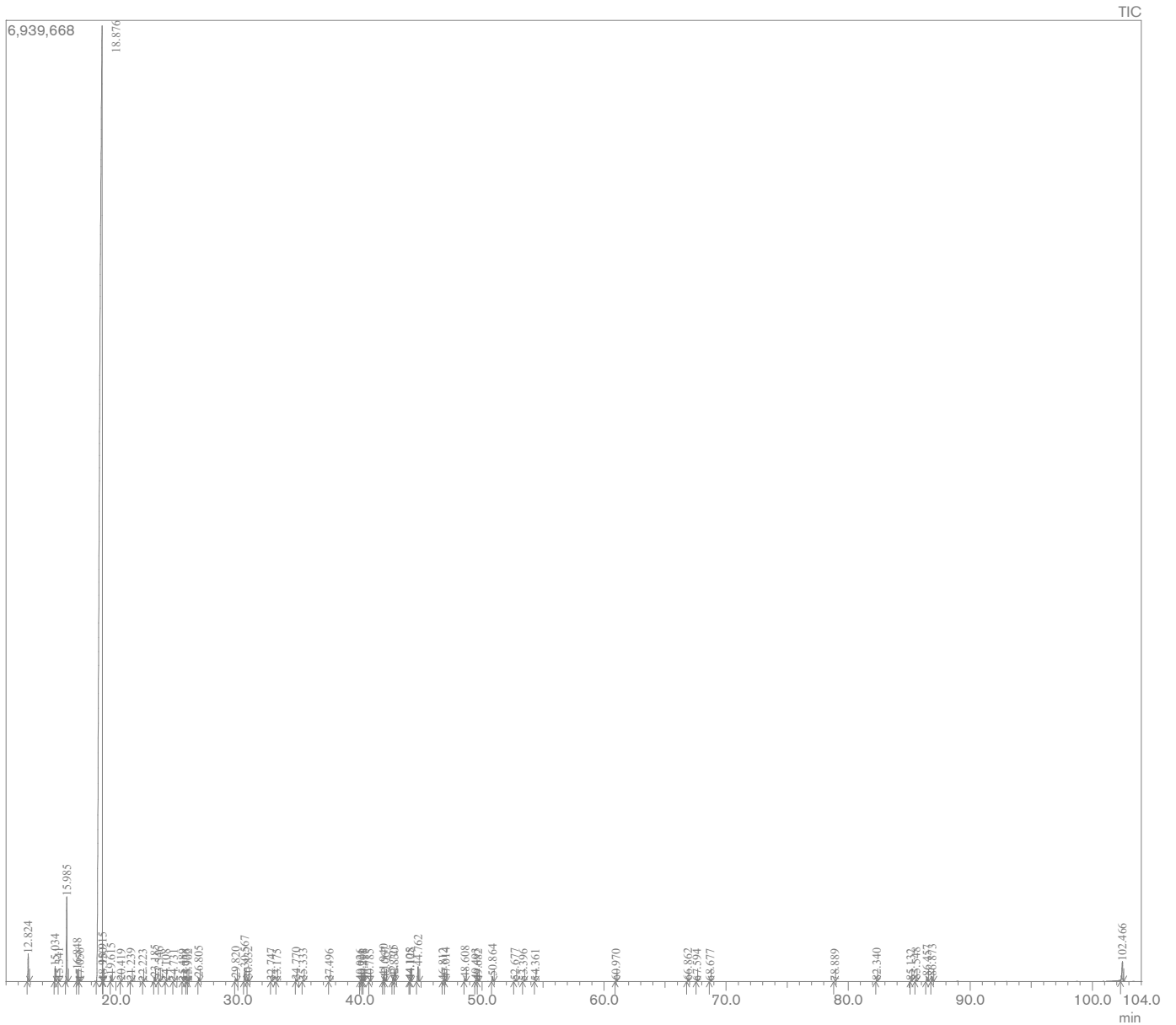
# Grapefruit Essential Oil

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## Chromatogram



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## Peak Report

Peak#	R.Time	Name	Area%
1	12.824	alpha-Pinene	0.55
2	15.034	Sabinene	0.33
3	15.341	beta-Pinene	0.04
4	15.985	Myrcene	2.02
5	16.848	n-Octanal	0.27
6	17.056	alpha-Phellandrene	0.03
7	18.876	Limonene	92.93
8	18.915	beta-Phellandrene	0.08
9	18.950	cis-beta-Ocimene	0.01
10	19.615	trans-beta-Ocimene	0.14
11	20.419	gamma-Terpinene	0.01
12	21.239	n-Octanol	0.03
13	22.223	Terpinolene	0.00
14	23.185	Linalool	0.11
15	23.546	n-Nonanal	0.07
16	24.108	4,8-Dimethyl-nona-1,3,7-triene	0.01
17	24.731	cis-para-Mentha-2,8-dien-1-ol	0.01
18	25.489	cis-Limonene oxide	0.01
19	25.776	trans-Limonene oxide	0.01
20	25.902	cis-Myroxide	0.01
21	26.805	Citronellal	0.10
22	29.820	alpha-Terpineol	0.09
23	30.567	n-Decanal	0.36
24	30.832	Octyl acetate	0.06
25	32.747	Neral	0.03
26	33.175	Carvone	0.01
27	34.770	Geranial	0.05
28	35.333	Perilla aldehyde	0.02
29	37.496	Undecanal	0.01
30	40.026	alpha-Terpinyl acetate	0.01
31	40.201	Citronellyl acetate	0.01
32	40.316	trans-Carvyl acetate	0.02
33	40.785	Neryl acetate	0.01
34	41.940	alpha-Copaene	0.14
35	42.067	Geranyl acetate	0.08
36	42.725	beta-Cubebene	0.13
37	42.830	beta-Elemene	0.04
38	44.105	Decyl acetate	0.02
39	44.128	Dodecanal	0.04
40	44.762	beta-Caryophyllene	0.44
41	46.812	trans-beta-Farnesene	0.02
42	47.014	alpha-Humulene	0.06
43	48.608	Germacrene D	0.10
44	49.493	Bicyclogermacrene	0.04
45	49.682	alpha-Murolene	0.01
46	50.864	delta-Cadinene	0.15
47	52.677	alpha-Elemol	0.04
48	53.396	trans-Nerolidol	0.01
49	54.361	Germacrene D-4-ol	0.01
50	60.970	beta-Sinensal	0.02
51	66.862	Nootkatone	0.03
52	67.594	Hexadecanal	0.01
53	68.677	7-Hydroxy coumarin	0.01
54	78.889	Bergaptene	0.01
55	82.340	Osthole	0.03
56	85.132	Bergaptol	0.02
57	85.548	Suberosin epoxide	0.05
58	86.457	Geigerin	0.14
59	86.873	Meranzin	0.16
60	102.466	Auraptene	0.72
			100.00

