

Analysis Basil, Holy Essential Oil

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Date : May 26, 2017

SAMPLE IDENTIFICATION

Internal code : 17E19-FSE7-1-DM

Customer identification : Holy Basil/Tulsi - Lot #SA-131016

Type : Essential oil

Source : Ocimum tenuiflorum

Customer : Flowers Shining Everywhere Inc.



ANALYSIS



Method : PC-PA-001-1SE06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Analyst : Benoit Roger Ph. D.

Analysis date : 2017-05-25

Checked and approved by :



Alexis St-Gelais

Alexis St-Gelais, M. Sc., chimiste 2013-174



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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
α -Pinene	3.42	929	1.36	1.31	937	1.08	Monoterpene
Camphene	3.70	946	0.07	0.07	995	1.34	Monoterpene
Sabinene	4.13	971	0.01	0.01	1060	1.94	Monoterpene
β -Pinene	4.19	975	0.03	0.02	1033	1.67	Monoterpene
Myrcene	4.47	991	0.06	0.06	1111	2.38	Monoterpene
Δ^3 -Carene	4.75*	1007	1.34	0.04	1090	2.30	Monoterpene
α -Phellandrene	4.75*	1007	[1.34]	1.23	1077	2.13	Monoterpene
<i>cis</i> -Hex-3-en-1-yl acetate	4.86	1013	0.04	0.21	1248	4.22	Aliphatic ester
α -Terpinene	4.93	1017	0.13	0.12	1117	2.46	Monoterpene
<i>para</i> -Cymene	5.11	1027	0.08	0.08	1202	3.56	Monoterpene
Limonene	5.16*	1030	1.36	1.26	1136	2.70	Monoterpene
β -Phellandrene	5.16*	1030	[1.36]	1.14	1140	2.76*	Monoterpene
1,8-Cineole	5.22	1033	1.09	[1.14]	1140	2.76*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.34	1039	0.18	0.19	1179	3.27*	Monoterpene
<i>trans</i> - β -Ocimene	5.52	1049	0.01	0.01	1196	3.48	Monoterpene
γ -Terpinene	5.66	1057	0.21	[0.19]	1179	3.27*	Monoterpene
Terpinolene	6.18	1086	0.83	0.79	1218	3.78	Monoterpene
Linalool	6.63	1107	0.04	0.04	1484	8.42	Monoterp. alcohol
Menthone	7.97	1156	0.07	0.07	1380	6.23	Monoterp. ketone
Isoborneol	8.21	1165	0.52	3.15	1575	11.31*	Monoterp. alcohol
Terpinen-4-ol	8.71	1183	0.17	36.19	1524	9.43*	Monoterp. alcohol
α -Terpineol	9.32	1203	0.04	0.08	1619	12.96*	Monoterp. alcohol
Geraniol	11.71	1256	0.56	0.54	1773	21.59	Monoterp. alcohol
α -Cubebene	15.91	1334	0.24	0.25	1399	6.53	Sesquiterpene
α -Terpinyl acetate	16.55	1343	0.08	0.06	1601	12.27	Monoterp. ester
Eugenol	17.66*	1360	14.61	13.84	2049	37.70	Phenylpropanoid
α -Copaene	17.66*	1360	[14.61]	0.78	1426	7.04	Sesquiterpene
Geranyl acetate	19.48*	1388	0.38	0.06	1682	16.19	Monoterp. ester
Isocaryophyllene	19.48*	1388	[0.38]	0.48	1494	8.67	Sesquiterpene
β -Caryophyllene	20.86	1407	35.48	[36.19]	1524	9.43*	Sesquiterpene
Methyleugenol	21.98	1421	34.98	35.01	1929	32.48	Phenylpropanoid
<i>cis</i> - β -Farnesene	23.06	1434	0.12	[3.15]	1575	11.31*	Sesquiterpene
α -Humulene	23.39	1438	2.54	[3.15]	1575	11.31*	Sesquiterpene
Germacrene D	25.33	1461	0.05	[0.08]	1619	12.96*	Sesquiterpene
α -Selinene	26.71	1477	0.09	0.14	1627	13.29	Sesquiterpene
γ -Cadinene	28.49	1499	0.02	0.06	1660	14.99	Sesquiterpene
δ -Cadinene	29.15	1508	0.32	0.35	1665	15.28	Sesquiterpene
<i>trans</i> -Calamenene	29.49	1513	0.22	0.18	1728	18.60	Sesquiterpene
α -Elemol	32.30	1552	0.11	0.14	1989	35.23*	Sesquiterp. alcohol
(<i>E</i>)-Nerolidol	33.63*	1570	0.62	[0.14]	1989	35.23*	Sesquiterp. alcohol
Caryophyllene oxide	33.63*	1570	[0.62]	0.56	1841	26.11	Sesquiterp. ether

Essential oil, *Ocimum tenuiflorum*
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Holy Basil/Tulsi - Lot #5A-131016

Report prepared for
Flowers Shining Everywhere Inc.

Coniferaldehyde methyl ether	43.09	1802	0.11	livinglibations	Phenylpropanoid
Total Identified	98.17%			98.52%	+

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

OTHER DATA

Physical aspect : Yellow liquid

Refractive index : 1.5135 ± 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method. This sample belongs to a mixed eugenol/methyleugenol chemotype of tulsi.

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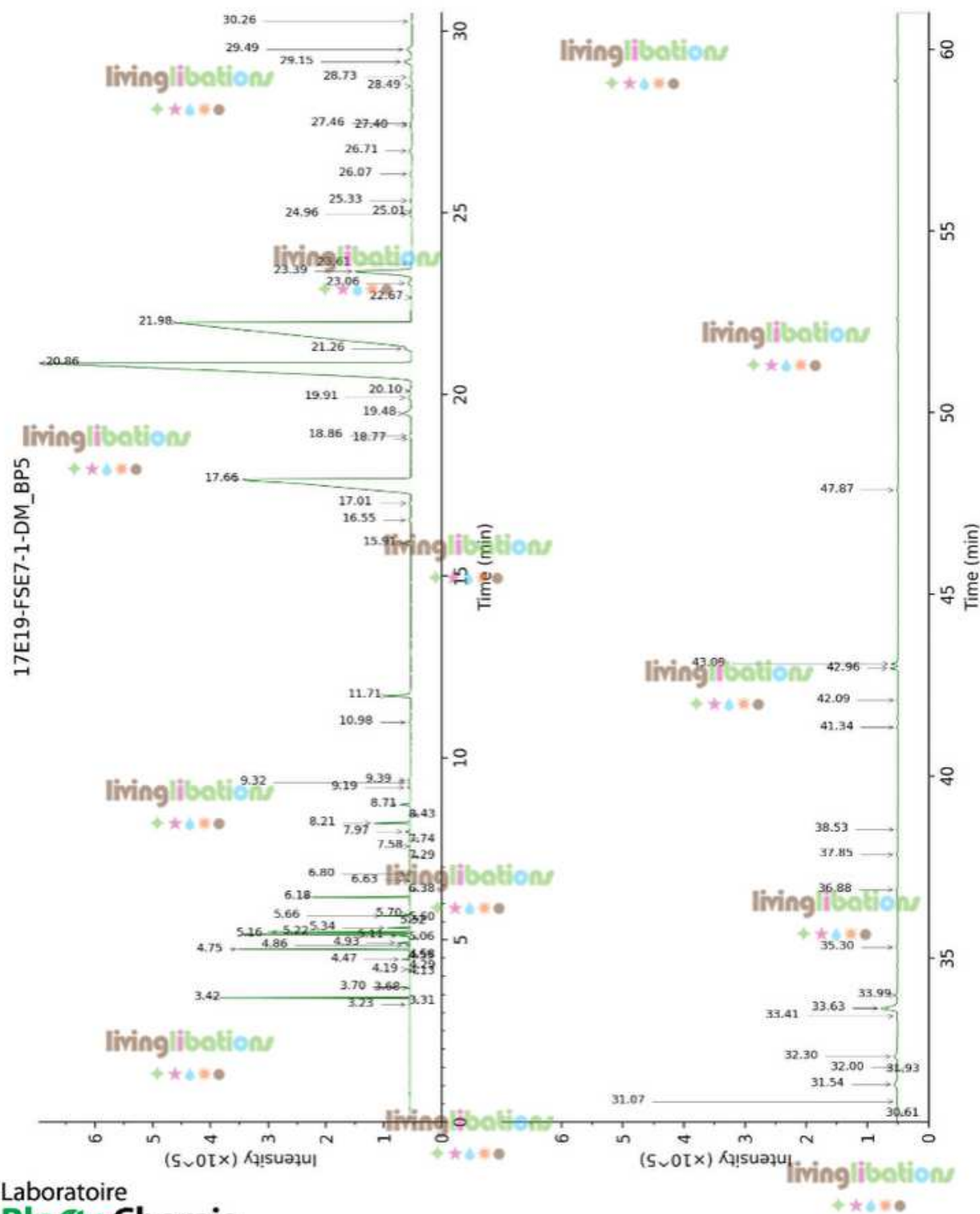
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