

Analysis Nutmeg Essential Oil

Laboratoire
PhytoChemia





Date : May 11, 2017

SAMPLE IDENTIFICATION

Internal code : 17E05-FSE7-1-DM

Customer identification : Nutmeg CO2 - Lot #451422

Type : Essential oil

Source : *Myristica fragrans*

Customer : Flowers Shining Everywhere Inc.



ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-05-09



Checked and approved by :

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.	
Tricyclene	3.22	917	0.01	0.01	920	1.01	Monoterpene
α -Thujene	3.31	922	0.96	1.28	957	1.16	Monoterpene
α -Pinene	3.44	930	12.00	12.21	951	1.13	Monoterpene
Camphene	3.70*	945	0.18	0.16	1000	1.38	Monoterpene
α -Fenchene	3.70*	945	[0.18]	0.02	994	1.33	Monoterpene
Sabinene	4.18	974	20.68	21.46	1061	1.95	Monoterpene
β -Pinene	4.23	977	9.67	10.04	1043	1.76	Monoterpene
Myrcene	4.47	991	1.71	1.73	1117	2.46	Monoterpene
α -Phellandrene	4.74*	1007	0.68	0.26	1110	2.36	Monoterpene
2-Carene	4.74*	1007	[0.68]	0.43	1082	2.19	Monoterpene
α -Terpinene	4.92	1017	0.47	0.48	1124	2.53	Monoterpene
para-Cymene	5.11	1027	0.64	0.73	1208	3.64	Monoterpene
Limonene	5.16	1030	2.58	2.50	1142	2.78	Monoterpene
β -Phellandrene	5.19	1031	1.19	1.50	1147	2.85*	Monoterpene
1,8-Cineole	5.22	1033	0.07	[1.50]	1147	2.85*	Monoterp. ether
cis- β -Ocimene	5.33	1039	0.01	0.77	1188	3.37*	Monoterpene
trans- β -Ocimene	5.51	1049	0.01	0.01	1201	3.55	Monoterpene
γ -Terpinene	5.70	1059	0.73	[0.77]	1188	3.37*	Monoterpene
cis-Sabinene hydrate	6.00	1076	0.59	0.88	1404	6.62*	Monoterp. alcohol
Terpinolene	6.17	1085	0.40	0.41	1223	3.85	Monoterpene
trans-Sabinene hydrate	6.61*	1106	0.79	0.62	1478	8.27	Monoterp. alcohol
Linalool	6.61*	1106	[0.79]	0.30	1491	8.59*	Monoterp. alcohol
cis-para-Menth-2-en-1-ol	7.13	1125	0.09	[0.30]	1491	8.59*	Monoterp. alcohol
trans-para-Menth-2-en-1-ol	7.63	1143	0.05	0.05	1554	10.55	Monoterp. alcohol
Terpinen-4-ol	8.70	1182	1.31	1.36	1528	9.61	Monoterp. alcohol
α -Terpineol	9.29	1203	0.23	0.25	1625	13.18	Monoterp. alcohol
trans-Piperitol	9.80*	1214	0.15	0.03	1667	15.39	Monoterp. alcohol
cis-Piperitol	9.80*	1214	[0.15]				Monoterp. alcohol
Bornyl acetate	12.81	1281	0.07	0.08	1502	8.83	Monoterp. ester
Safrole	13.40	1294	1.40	1.45	1763	20.87	Phenylpropanoid
Terpinen-4-yl acetate	13.93	1304	0.05				Monoterp. ester
α -Cubebene	15.88	1333	0.10	[0.88]	1404	6.62*	Sesquiterpene
α -Terpinyl acetate	16.49	1343	0.12	0.15	1615	12.81	Monoterp. ester
Eugenol	17.24	1354	0.30	0.31	2058	37.99	Phenylpropanoid
α -Copaene	17.57	1359	0.33	0.37	1430	7.13	Sesquiterpene
β -Cubebene	18.53	1374	0.02	0.02	1472	8.11	Sesquiterpene
Geranyl acetate	19.18	1383	0.16	0.20	1690	16.54*	Monoterp. ester
β -Caryophyllene	20.41	1402	0.03	0.03	1519	9.26	Sesquiterpene
Methyleugenol	21.29	1412	0.61	0.61	1930	32.55	Phenylpropanoid
trans- α -Bergamotene	22.00	1421	0.07	0.07	1526	9.50	Sesquiterpene
trans- β -Farnesene	24.33	1449	0.03	0.06	1620	12.99*	Sesquiterpene

(E)-Isoeugenol	24.57	1452	0.75	0.88	2232	42.84	Phenylpropanoid
Germacrene D	25.36	1461	0.04	[0.06]	1620	12.99*	Sesquiterpene
β-Bisabolene	28.61	1500	0.05	0.04	1655	14.80	Sesquiterpene
(E,E)-α-Farnesene	28.85	1504	0.03	[0.20]	1690	16.54*	Sesquiterpene
δ-Cadinene	29.07	1507	0.10	0.09	1671	15.57	Sesquiterpene
Methyl (E)-isoeugenol	29.50	1513	0.15	0.14	2096	39.11	Phenylpropanoid
Myristicin	31.17	1536	10.07	11.31	2145	40.63*	Phenylpropanoid
Elemicin	33.58	1570	0.52	[11.31]	2145	40.63*	Phenylpropanoid
Methoxyeugenol	36.06	1607	0.96	1.12	2431	47.29	Phenylpropanoid
Myristic acid	42.82	1794	0.75	1.10	2629	51.13	Fatty acid
Licarin B	62.87*	2727	3.00				Lignan
Licarin A	62.87*	2727	[3.00]				Lignan
5-Allyl-1,3-dimethoxy-2-((1-(3,4,5-trimethoxyphenyl)propan-2-yl)oxy)benzene	63.28	2751	0.55				Lignan
Unknown (m/z = 194, 195 (12), 151 (6), 91 (6)... 281 (t))	64.27	2809	2.14				Lignan
2-(4-Allyl-2,6-dimethoxyphenoxy)-1-(3,4-dimethoxyphenyl)propyl acetate	64.81	2842	9.00				Lignan
Unknown (m/z = 194, 195 (13), 165 (12), 167 (6), 153 (6), 91 (6), 179 (5)... 370 (t))	65.25	2868	1.13				Lignan
Unknown (m/z = 354, 165 (27), 355 (22), 194 (16), 177 (15))	66.45	2941	0.87				Lignan
Rhaphidecursinol B	66.98	2974	2.09				Lignan
Total identified			87.42%	75.52%			

*: 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 : Light yellow liquid

Refractive index : 1.4895 ± 0.0003 (20 °C)

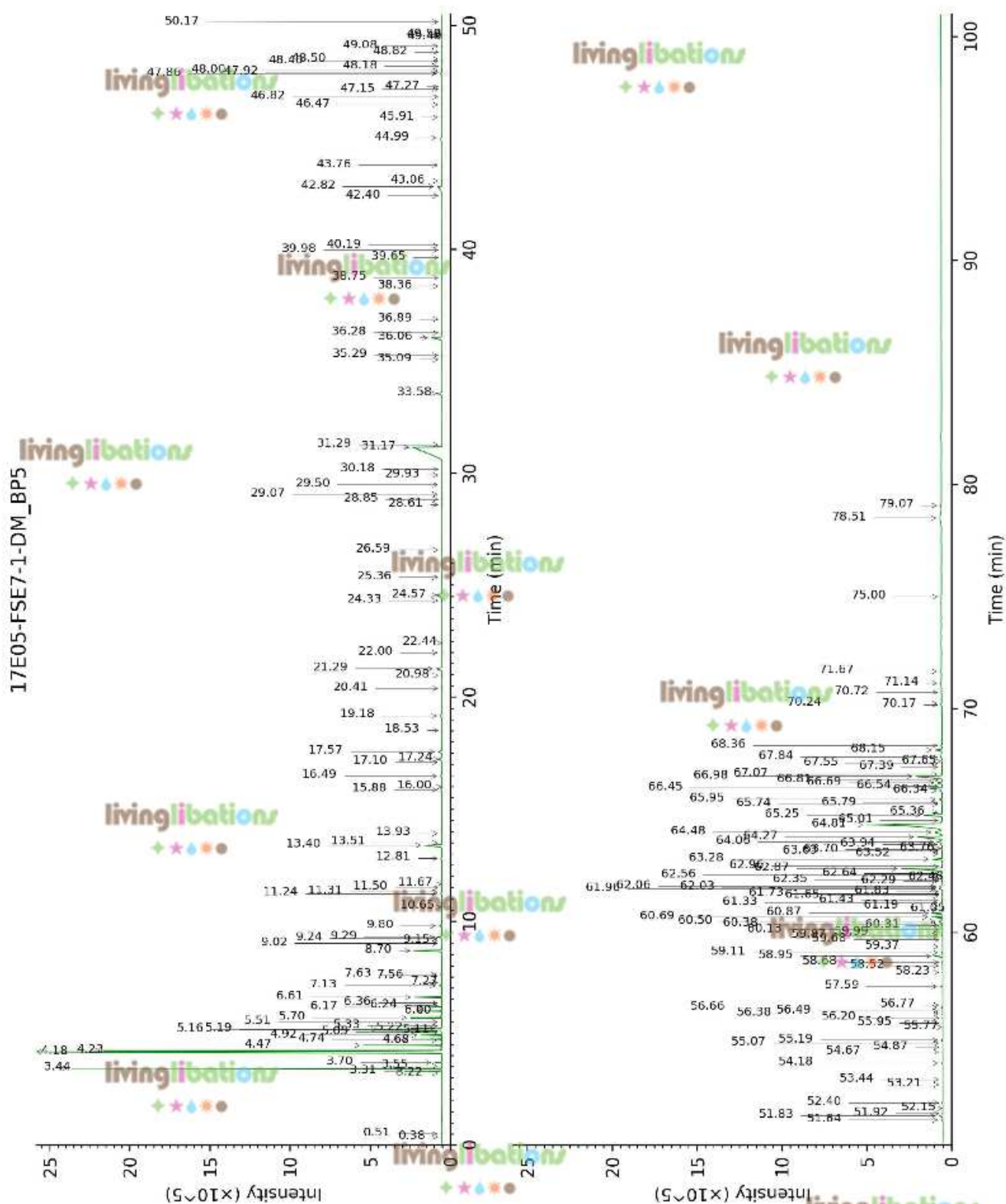
CONCLUSION

No adulterant, contaminant or diluent were detected using this method. The unknowns are mostly lignans (dimers of phenylpropanoids) that are expected in phenylpropanoid-rich plants.

Essential oil, *Myristica fragrans*
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Report prepared for
Flowers Shining Everywhere Inc.



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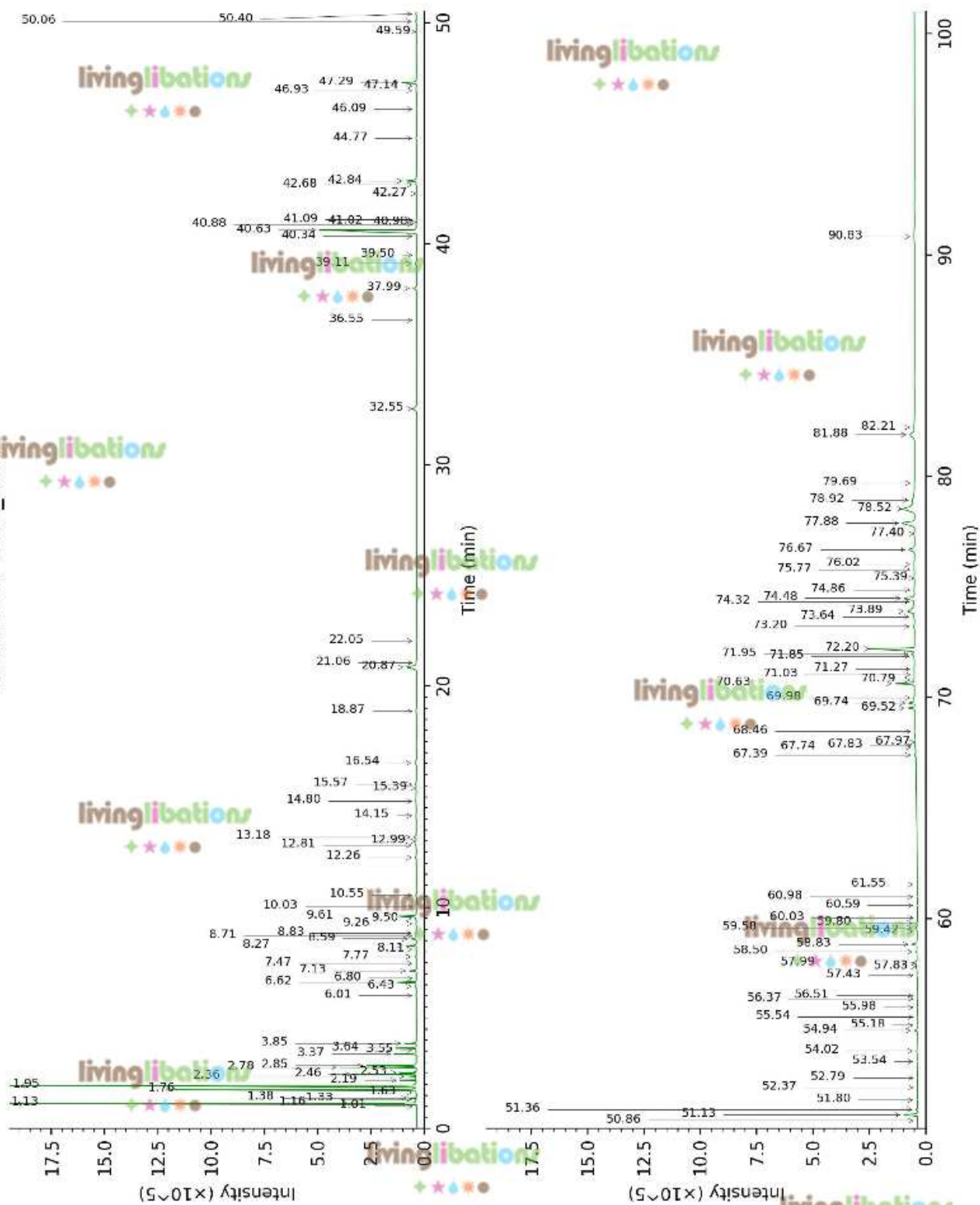
Plus que des analyses... des conseils

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17E05-FSE7-1-DM_WAX



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