



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: F10106

ESSENTIAL OIL: FENNEL

BOTANICAL NAME: FOENICULUM VULGARE

ORIGIN: TASMANIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FENNEL OIL	%
(E)-ANETHOLE	66.4
FENCHONE	17.8
α -PINENE	5.9
α -PHELLANDRENE	2.1
METHYL CHAVICOL (ESTRAGOLE)	1.7
LIMONENE	1.3

Comments from Robert Tisserand: Very good fresh, herbaceous odor quality. Ten of eleven constituents are within range of the ISO standard, with estragole slightly low - not a concern.

Date : February 28, 2017

SAMPLE IDENTIFICATION

Internal code : 17B13-PTH4-1-DM

Customer identification : Fennel - Tasmania - F1010665R

Type : Essential oil

Source : *Foeniculum vulgare dulce*

Customer : Plant Therapy

ANALYSIS

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

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-02-28

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.	
<i>cis</i> -Hex-3-en-1-ol	2.55	863	0.01	18.36	1326	5.78*	Aliphatic alcohol
Tricyclene	3.31	914	tr	0.01	931	1.16	Monoterpene
α -Thujene	3.39	919	0.02	5.82	959	1.28*	Monoterpene
α -Pinene	3.51	926	5.90	[5.82]	959	1.28*	Monoterpene
α -Fenchene	3.77	942	0.01	0.01	991	1.52	Monoterpene
Camphene	3.78	943	0.18	0.17	998	1.58	Monoterpene
Sabinene	4.21	968	0.11	0.11	1059	2.13	Monoterpene
β -Pinene	4.27	972	0.50	0.48	1040	1.96	Monoterpene
Myrcene	4.55	988	0.90	0.88	1118	2.73	Monoterpene
α -Phellandrene	4.83	1004	2.07	2.02	1112	2.65	Monoterpene
α -Terpinene	5.01	1014	0.02	0.02	1125	2.82	Monoterpene
para-Cymene	5.19	1023	0.23	0.23	1211	4.00	Monoterpene
Limonene	5.24	1026	1.31	1.27	1143	3.07	Monoterpene
β -Phellandrene	5.27	1028	0.39	0.41	1149	3.15*	Monoterpene
1,8-Cineole	5.32	1030	0.03	[0.41]	1149	3.15*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.41	1036	0.10	0.07	1189	3.68	Monoterpene
<i>trans</i> - β -Ocimene	5.59	1046	0.01	0.01	1203	3.89	Monoterpene
γ -Terpinene	5.78	1056	0.25	0.26	1191	3.71	Monoterpene
<i>cis</i> -Sabinene hydrate	6.11	1074	0.08	0.08	1405	7.17	Monoterp. alcohol
Terpinolene	6.27	1082	0.10	0.10	1225	4.22	Monoterpene
Fenchone	6.47	1093	17.82	[18.36]	1326	5.78*	Monoterp. ketone
Linalool	6.74	1103	0.01	0.01	1496	9.44	Monoterp. alcohol
Camphor	7.84	1143	0.40	0.39	1424	7.62	Monoterp. ketone
Terpinen-4-ol	8.83	1179	0.05	0.04	1526	10.59	Monoterp. alcohol
Methylchavicol	9.54	1200	1.69	1.65	1586	12.83	Phenylpropanoid
(<i>Z</i>)-Anethole	11.83	1251	0.15	0.14	1663	16.86	Phenylpropanoid
para-Anisaldehyde	12.37	1263	0.29	0.27	1892	32.47	Simple phenolic
(<i>E</i>)-Anethole	14.06	1298	66.44	66.56	1735	21.30	Phenylpropanoid
α -Copaene	17.97	1357	0.02	0.02	1426	7.68	Sesquiterpene
Unknown (m/z = 121, 91 (85), 120 (57), 164 (51), 77 (46), 135 (28))	19.56	1381	0.17				
para-Acetonylanisole	19.98	1388	0.03	0.04	2032	38.42	Phenylpropanoid
β -Caryophyllene	20.83	1399	0.06	0.06	1514	10.14	Sesquiterpene
<i>trans</i> - α -Bergamotene	22.45	1418	0.06	0.05	1521	10.38	Sesquiterpene
Germacrene D	25.81	1459	0.10	0.09	1616	14.37	Sesquiterpene
Total identified			99.34%	99.63%			

*: 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 : Faintly yellow liquid

Refractive index : 1.5275 ± 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.



