

## GC/MS BATCH NUMBER: FA0100

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**ESSENTIAL OIL:** FRAGONIA  
**BOTANICAL NAME:** AGONIS FRAGRANS  
**ORIGIN:** AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF FRAGONIA OIL	%
1,8-CINEOLE	32.3
$\alpha$ -PINENE	26.4
LINALOOL	6.9
$\alpha$ -TERPINEOL	6.3
para-CYMENE	4.8
MYRTENOL	3.7
TERPINEN-4-OL	2.9
LIMONENE	2.3
$\beta$ -PINENE	1.6
MYRCENE	1.2
GERANIOL	1.0

Comments from Robert Tisserand: A classic Fragonia oil, with constituents in expected amounts.

**Date :** March 20, 2016

*SAMPLE IDENTIFICATION*

**Internal code :** 16C09-PTH5-1-HM

**Customer identification :** Fragonia - Australia - FA0100312R

**Type :** Essential oil

**Source :** *Agonis fragrans*

**Customer :** Plant Therapy


*ANALYSIS*

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

**Analyst :** Alexis St-Gelais, M. Sc., chimiste

**Analysis date :** 2016-03-19

Checked and approved by :



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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	2.29	861	0.04	0.03	1336	4.93	Aliphatic alcohol
Hashishene	2.97	914	0.01	26.28	959	0.94*	Monoterpene
$\alpha$ -Thujene	3.08	920	0.23	0.31	962	0.95	Monoterpene
$\alpha$ -Pinene	3.22	929	26.40	[26.28]	959	0.94*	Monoterpene
$\alpha$ -Fenchene	3.43	942	0.02	0.02	996	1.09	Monoterpene
Camphene	3.45	943	0.06	0.05	1005	1.14	Monoterpene
Thuja-2,4(10)-diene	3.53	948	0.02	0.34	1061	1.58*	Monoterpene
Sabinene	3.87	969	0.30	[0.34]	1061	1.58*	Monoterpene
$\beta$ -Pinene	3.93	972	1.62	1.60	1044	1.44	Monoterpene
Myrcene	4.21	990	1.19	1.10	1119	2.09	Monoterpene
Pseudolimonene	4.31	996	0.01	0.01	1111	2.00	Monoterpene
$\alpha$ -Phellandrene	4.41	1002	0.05	0.06	1113	2.03	Monoterpene
$\alpha$ -Terpinene	4.65	1016	0.04	0.04	1125	2.16	Monoterpene
<i>para</i> -Cymene	4.86†	1027	7.04	4.82	1215	3.22	Monoterpene
Limonene	4.89†	1029	[7.04]	2.27	1146	2.40	Monoterpene
1,8-Cineole	5.00*	1035	32.32	32.20	1157	2.53	Monoterp. ether
<i>cis</i> - $\beta$ -Ocimene	5.00*	1035	[32.32]	0.24	1192	2.94*	Monoterpene
<i>trans</i> - $\beta$ -Ocimene	5.24	1048	0.02	0.01	1208	3.12	Monoterpene
$\gamma$ -Terpinene	5.41	1058	0.21	[0.24]	1192	2.94*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.69	1074	0.11	0.11	1389	5.68	Monoterp. alcohol
Terpinolene	5.88	1084	0.07	0.07	1227	3.39	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	5.99	1091	0.09	0.09	1415	6.09	Monoterp. alcohol
<i>para</i> -Cymenene	6.04	1094	0.06	0.05	1375	5.48	Monoterpene
Linalool	6.32	1107	6.93	7.05	1509	7.87	Monoterp. alcohol
Hotrienol	6.37	1109	0.20	3.24	1538	8.69*	Monoterp. alcohol
<i>cis</i> -Rose oxide	6.45	1112	0.07	0.04	1301	4.40	Monoterp. ether
<i>trans</i> -Rose oxide	6.64*	1120	0.04	0.02	1312	4.57	Monoterp. ether
endo-Fenchol	6.64*	1120	[0.04]	0.43	1524	8.26*	Monoterp. alcohol
$\alpha$ -Campholenal	6.76	1125	0.05				Monoterp. aldehyde
<i>cis</i> - <i>para</i> -Menth-2-en-1-ol	6.82	1127	0.05	0.04	1511	7.92	Monoterp. alcohol
<i>trans</i> -Pinocarveol	7.07	1137	0.32	0.31	1577	9.88	Monoterp. alcohol
<i>trans</i> -Verbenol	7.29	1145	0.08	0.10	1607	10.79*	Monoterp. alcohol
neo-Isopulegol	7.40	1150	0.04	0.07	1516	8.02	Monoterp. alcohol
Camphene hydrate	7.45	1151	0.02	0.03	1529	8.41*	Monoterp. alcohol
iso-Isopulegol	7.62	1158	0.02	0.01	1493	7.56	Monoterp. alcohol
Pinocarvone	7.67	1160	0.05	0.03	1486	7.44	Monoterp. ketone
$\delta$ -Terpineol	7.96	1172	0.43	0.42	1611	10.88	Monoterp. alcohol
Borneol	8.04	1175	0.02	0.09	1629	11.62	Monoterp. alcohol
Terpinen-4-ol	8.18	1180	2.93	[3.24]	1538	8.69*	Monoterp. alcohol
<i>para</i> -Cymen-8-ol	8.62	1198	0.08	0.07	1777	19.13	Monoterp. alcohol
Myrtenal	8.66	1199	0.29	[3.24]	1538	8.69*	Monoterp. aldehyde

α-Terpineol	8.80*	1204	9.41	6.30	1636	11.94	Monoterp. alcohol
Myrtenol	8.80*	1204	[9.41]	3.68	1718	15.63*	Monoterp. alcohol
Verbenone	9.19	1213	0.06	0.76	1614	10.98*	Monoterp. ketone
Nerol	9.76	1226	0.38	0.38	1740	16.91	Monoterp. alcohol
Citronellol	9.97	1231	0.48	[3.68]	1718	15.63*	Monoterp. alcohol
Geraniol	10.95	1254	1.03	1.02	1793	20.03	Monoterp. alcohol
<i>trans</i> -Myrstanol	11.26	1262	0.42	0.40	1780	19.30	Monoterp. alcohol
Geranial	11.74	1273	0.09	0.07	1656	12.81	Monoterp. aldehyde
Geranyl formate	12.91	1300	0.11	0.08	1644	12.30	Monoterp. ester
Myrtenyl acetate	14.13	1320	0.66	[0.76]	1614	10.98*	Monoterp. ester
Methyl geranate	14.33	1325	0.22	0.22	1630	11.66	Monoterp. ester
Citronellyl acetate	16.11	1353	0.05	[0.10]	1607	10.79*	Monoterp. ester
α-Copaene	16.47	1359	0.05	0.04	1434	6.43	Sesquiterpene
β-Elemene	17.58	1377	0.01	[0.03]	1529	8.41*	Sesquiterpene
α-Gurjunene	17.82	1380	0.03	0.04	1464	7.01	Sesquiterpene
Geranyl acetate	18.07	1384	0.08	0.08	1696	14.67	Monoterp. ester
β-Caryophyllene	19.15	1402	0.39	[0.43]	1524	8.26*	Sesquiterpene
Aromadendrene	20.46	1418	0.25	0.28	1533	8.52	Sesquiterpene
Seychellene	20.62	1420	0.05	0.08	1539	8.73	Sesquiterpene
α-Humulene	21.79	1434	0.66	0.64	1584	10.09	Sesquiterpene
allo-Aromadendrene	22.04	1437	0.13	0.13	1562	9.42	Sesquiterpene
Viridiflorene	24.69	1470	0.28	0.25	1619	11.16	Sesquiterpene
Bicyclogermacrene	25.08	1474	0.13	0.07	1638	12.05	Sesquiterpene
δ-Cadinene	27.47	1504	0.05	0.03	1675	13.68	Sesquiterpene
<i>trans</i> -Calamenene	27.76	1508	0.17	0.15	1736	16.70	Sesquiterpene
Caryophyllene oxide	31.28	1554	0.10	0.15	1850	23.71	Sesquiterp. ether
Spathulenol	32.19	1566	0.39	0.31	2023	34.89	Sesquiterp. alcohol
Globulol	32.71	1572	0.24	0.25	1978	32.19	Sesquiterp. alcohol
Viridiflorol	33.24	1579	0.16	0.17	1985	32.63	Sesquiterp. alcohol
Humulene epoxide II	34.14	1591	0.23	0.19	1901	27.33	Sesquiterp. ether
β-Eudesmol	36.62	1640	0.27	0.17	2116	38.22	Sesquiterp. alcohol
<b>Total identified</b>			<b>98.11%</b>	<b>97.59%</b>			

\*: Two or more compounds are coeluting on this column

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

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

Note: no correction factor was applied

#### OTHER DATA

**Physical aspect :** Clear liquid

**Refractive index :** 1.4705 ± 0.0003 (20 °C)

#### CONCLUSION

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

