

Analysis Sandalwood Nut Carrier Oil

Laboratoire
Phto**Ch**emia



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Date : January 26, 2017

SAMPLE IDENTIFICATION

Internal code : 17A12-FSE1-1-DM

Customer identification : Sandalwood - Lot #13-1016

Type : Essential Oil

Source : Santalum album

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).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-01-20

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.	
Santalone	8.82	1186	0.02	0.02	1465	8.74	Terpenic ketone
Teresantalic acid	14.40	1309	0.02	0.02	2120	41.24	Monoterp. acid
Tricycloekasantalal	15.73	1329	0.13				Terpenic aldehyde
α -Cedrene	19.84	1391	0.02	0.02	1484	9.18	Sesquiterpene
α -Santalene	20.59	1401	0.48	0.40	1502	9.82	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.76	1415	0.09	0.08	1515	10.34	Sesquiterpene
(<i>Z</i>)- <i>epi</i> - β -Santalene	22.81	1427	0.45	0.40	1554	11.82	Sesquiterpene
(<i>Z</i>)- β -Santalene	23.81	1439	0.63	0.66	1570	12.42	Sesquiterpene
γ -Curcumene	25.62	1461	0.04	0.04	1611	14.33	Sesquiterpene
α -Curcumene	26.18	1468	0.13	0.12	1687	18.39	Sesquiterpene
β -Bisabolene	28.40	1495	0.05	0.07	1650	16.37	Sesquiterpene
β -Curcumene	28.56	1497	0.11	0.08	1659	16.88	Sesquiterpene
(<i>E</i>)-Nerolidol	33.67	1567	0.18	0.25	1989	37.22	Sesquiterp. alcohol
α -Spathulenol	33.81	1569	0.08	0.08	2019	38.20	Sesquiterp. alcohol
α -Cedrol	34.66	1581	0.08	0.10	1985	37.05	Sesquiterp. alcohol
Unknown (m/z = 91, 188 (59), 160 (49), 77 (46), 93 (45), 105 (44), 79 (42)... 216 (9))	37.53	1639	0.95				Oxygenated sesquiterpene
α -Eudesmol	37.80*	1646	0.37	0.06	2124	41.35	Sesquiterp. alcohol
β -Eudesmol	37.80*	1646	[0.37]	0.26	2110	40.97	Sesquiterp. alcohol
Unknown santalol analog (m/z = 93, 91 (59), 121 (57), 79 (52), 152 (49), 107 (44), 77 (40)... 218 (6))	38.11	1654	1.84				Oxygenated sesquiterpene
(<i>E</i>)- α -Santalal	38.22	1656	0.58				Sesquiterp. aldehyde
Unknown santalol analog (m/z = 95, 123 (77), 94 (77), 151 (61), 121 (56), 93 (51)... 220 (5))	38.32	1659	0.44	0.41	2012	37.96	Sesquiterp. alcohol
Unknown santalol analog (m/z = 95, 94 (78), 123 (75), 93 (62), 151 (60)... 220 (0))	38.63	1666	2.76	2.35	2027	38.44	Oxygenated sesquiterpene
β -Bisabolol	38.67	1667	0.36	0.86	2057	39.43	Sesquiterp. alcohol
(<i>Z</i>)- α -Santalol	39.29	1682	45.02	46.58	2256	44.63	Sesquiterp. alcohol
Unknown santalol analog (m/z = 93, 94 (71), 43 (67), 91 (63), 79 (56), 107 (53), 41 (44)...)	39.38	1684	0.25				Oxygenated sesquiterpene
(<i>Z</i>)- α - <i>trans</i> -Bergamotol	39.65	1691	4.10	4.05	2264	44.82	Sesquiterp. alcohol
(<i>E</i>)- α -Santalol	39.78	1694	0.74	0.42	2281	45.23	Sesquiterp. alcohol

Unknown (m/z = 81, 136 (75), 121 (63), 109 (58), 41 (57), 93 (44), 107 (34)... 238 (1))	39.92	1698	0.37				Sesquiterp. ester
(Z)-epi-β-Santalol	40.12	1704	4.57	4.33	2312	45.92	Sesquiterp. alcohol
Unknown santalol analog (m/z = 93, 94 (70), 91 (59), 77 (52), 105 (44), 79 (42), 41 (40)...)	40.23	1708	0.49				Oxygenated sesquiterpene
(Z)-β-Santalol	40.70	1722	17.69	18.01	2332	46.33	Sesquiterp. alcohol
(Z)-Nuciferol	40.95	1729	2.11	1.51	2424	48.27	Sesquiterp. alcohol
(E)-β-Santalol	41.27	1739	1.27	1.11	2364	47.02	Sesquiterp. alcohol
Drimenol	41.70	1753	0.29	0.18	2379	47.35	Sesquiterp. alcohol
(Z)-β-Curcumen-12-ol	41.84	1757	0.70	0.58	2392	47.63	Sesquiterp. alcohol
(Z)-Lanceol	42.11	1766	2.80	2.45	2398	47.76	Sesquiterp. alcohol
(Z)-α-Santalyl acetate	42.43	1776	0.11				Sesquiterp. ester
Unknown bergamotol analog (m/z = 119, 91 (59), 93 (56), 79 (56), 107 (52)...)	43.01	1794	0.39				Oxygenated sesquiterpene
Octadecanol?	48.27	1994	0.26				Aliphatic alcohol
Total identified			83.48%	82.74%			

*: 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 : 1.5065 ± 0.0003 (20 °C)

CONCLUSION

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