



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: SA2100

ESSENTIAL OIL: SANDALWOOD INDIAN
BOTANICAL NAME: SANTALUM ALBUM
ORIGIN: AUSTRALIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF SANDALWOOD INDIAN OIL	%
(Z)- α -SANTALOL	46.5
(Z)- β -SANTALOL	17.7
(Z)-epi- β -SANTALOL	4.5
(Z)- α -trans-BERGAMOTOL	4.2
(Z)-LANCEOL	2.8
(Z)-NUCIFEROL	2.2
(E)- β -SANTALOL	1.2

Comments from Robert Tisserand: Excellent odor profile. This is from genuine *Santalum album* (Indian Sandalwood) trees grown in Australia. The two key constituents conform to the ISO standard.

Date : November 25, 2016

SAMPLE IDENTIFICATION

Internal code : 16K14-PTH21-1-DM

Customer identification : Sandalwood - SA210063R

Type : Essential oil

Source : *Santalum album*

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 : 2016-11-22

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	8.84	1189	0.03	0.02	1470	7.00	Terpenic ketone
Teresantalic acid	14.49	1311	0.03	0.05	2122	37.63	Monoterp. acid
Tricycloekasantalal	15.76	1330	0.14				Terpenic aldehyde
α -Cedrene	19.89	1394	0.02	0.02	1488	7.32	Sesquiterpene
α -Santalene	20.65	1403	0.49	0.42	1510	7.74	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.81	1417	0.09	0.08	1527	8.12	Sesquiterpene
(<i>Z</i>)- <i>epi</i> - β -Santalene	22.87	1430	0.47	0.43	1561	9.12	Sesquiterpene
(<i>Z</i>)- β -Santalene	23.88	1442	0.66	0.65	1575	9.55	Sesquiterpene
β -Chamigrene	24.28	1447	0.11	0.16	1616	10.77	Sesquiterpene
β -Acoradiene	24.75	1453	0.02	0.02	1608	10.56	Sesquiterpene
γ -Curcumene	25.67	1464	0.04	0.04	1622	10.95	Sesquiterpene
α -Curcumene	26.23	1470	0.15	0.14	1690	13.87	Sesquiterpene
β -Bisabolene	28.47	1497	0.06	0.05	1656	12.40	Sesquiterpene
β -Curcumene	28.62	1499	0.10	0.10	1667	12.86	Sesquiterpene
Spathulenol	33.62	1567	0.04	0.03	2017	33.42	Sesquiterp. alcohol
(<i>E</i>)-Nerolidol	33.70	1569	0.19	0.20	1996	32.17	Sesquiterp. alcohol
Dendrolasin	33.84	1571	0.09	0.07	1853	22.95	Sesquiterp. ether
γ -Eudesmol	36.66	1621	0.14	0.11	2069	35.84	Sesquiterp. alcohol
Unknown (m/z = 91, 188 (51), 79 (46), 93 (45), 77 (43), 160 (42)... 216 (8))	37.57*	1643	0.92				Oxygenated sesquiterp.
Unknown (m/z = 191, 43 (60), 119 (56), 121 (46), 105 (40), 109 (35)... 234 (6))	37.57*	1643	[0.92]				Oxygenated sesquiterp.
Unknown santalol analog (m/z = 95, 94 (78), 123 (75), 93 (62), 151 (60)... 220 (0))	38.16	1657	1.81	2.43	2032	34.25*	Oxygenated sesquiterpene
(<i>E</i>)- α -Santalal	38.38	1662	0.41				Sesquiterp. aldehyde
Unknown santalol analog (m/z = 95, 123 (77), 94 (77), 151 (61), 121 (56), 93 (51)... 220 (5))	38.70	1670	3.15	[2.43]	2032	34.25*	Oxygenated sesquiterp.
(<i>Z</i>)- α -Santalol	39.46*	1687	48.14	46.49	2263	41.53	Sesquiterp. alcohol
β -Bisabolol	39.46*	1687	[48.14]	0.51	2064	35.67	Sesquiterp. alcohol
(<i>Z</i>)- α - <i>trans</i> -Bergamotol	39.78	1696	4.16	4.13	2271	41.70	Sesquiterp. alcohol
(<i>E</i>)- α -Santalol	39.90	1699	0.46	0.40	2284	42.01	Sesquiterp. alcohol
(<i>Z</i>)- <i>epi</i> - β -Santalol	40.23	1710	4.54	4.37	2317	42.75	Sesquiterp. alcohol
Unknown santalol analog (m/z = 93, 94 (70), 91 (59), 77 (52), 105 (44), 79 (42), 41 (40)...))	40.31	1712	0.49				Oxygenated sesquiterpene

(Z)-β-Santalol	40.84	1729	17.73	17.75	2340	43.24	Sesquiterp. alcohol
(Z)-Nuciferol	41.06	1736	2.23	2.33	2428	45.10	Sesquiterp. alcohol
(E)-β-Santalol	41.36	1746	1.23	1.10	2366	43.84	Sesquiterp. alcohol
Drimenol	41.79	1759	0.31	0.27	2354	43.55	Sesquiterp. alcohol
(Z)-β-Curcumen-12-ol	41.90	1762	0.64	0.53	2399	44.50	Sesquiterp. alcohol
(Z)-Lanceol	42.19	1772	2.78	2.69	2408	44.68	Sesquiterp. alcohol
(Z)-α-Santalyl acetate	42.49	1781	0.08	0.09	2098	36.84	Sesquiterp. ester
Unknown bergamotol analog (m/z = 119, 91 (59), 93 (56), 79 (56), 107 (52)...)	43.06	1800	0.41				Oxygenated sesquiterpene
Total identified			86.07%	83.25%			

*: 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.



