

Date : 2025-08-22

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25F11-PTH02

Customer Identification : Australian Sandalwood - Australia - S20114R

Type : Essential Oil

Source : *Santalum spicatum*

Customer : Plant Therapy

Checked and approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia. This report is digitally signed, it is only considered valid if the digital signature is intact. The results only describe the samples that were submitted to the assays.

This report is an update from the version issued on 2025-06-18 to correct the customer identification.

GAS CHROMATOGRAPHIC ANALYSIS

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID

✖ISO

Results : See analysis summary (next page)

Analyst : Sylvain Mercier, M. Sc., Chimiste 2014-005

Date : 2025-06-17

PHYSICOCHEMICAL DATA

Refractive index : 1.5062 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2025-06-12

CONCLUSION

No adulterant, contaminant or diluent has been detected using this method.

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
Furfural	0.01	Furan
Santene	0.01	Normonoterpene
Limonene	0.01	Monoterpene
<i>meta</i> -Cresol	0.01	Simple phenolic
1-Methyl-4-(1-methylpropyl)benzene	0.01	Terpene derivative
Limona ketone	0.01	Normonoterpene ketone
4-Methylacetophenone	0.02	Simple phenolic
Unknown	0.02	Terpene derivative
Teresantalic acid	0.22	Monoterpenic acid
Unknown	0.04	Terpenic aldehyde
Tricycloekasantalal	0.07	Terpenic aldehyde
(1S,5S,6R)-2,6-Dimethylbicyclo[3.1.1]hept-2-ene-6-propanal?	0.05	Terpenic aldehyde
γ -4-Dimethylbenzenebutyral	0.06	Simple phenolic
Sesquithujene	0.06	Sesquiterpene
α -Cedrene	0.12	Sesquiterpene
β -Cedrene	0.02	Sesquiterpene
<i>cis</i> - α -Bergamotene	0.03	Sesquiterpene
α -Santalene	0.32	Sesquiterpene
<i>trans</i> - α -Bergamotene	0.13	Sesquiterpene
Unknown	0.01	Sesquiterpene
<i>epi</i> - β -Santalene	0.22	Sesquiterpene
Geranylacetone	0.04	Monoterpenic ketone
α -Acoradiene	0.06	Sesquiterpene
β -Santalene	0.34	Sesquiterpene
(<i>E</i>)- β -Farnesene	0.09	Sesquiterpene
β -Acoradiene	0.05	Sesquiterpene
10- <i>epi</i> - β -Acoradiene	0.01	Sesquiterpene
γ -Curcumene	0.18	Sesquiterpene
Unknown	0.17	Sesquiterpene
β -Selinene	0.03	Sesquiterpene
α -Curcumene	0.33	Sesquiterpene
α -Selinene	0.04	Sesquiterpene
Unknown	0.06	Sesquiterpene
Unknown	0.14	Sesquiterpene
Unknown	0.11	Sesquiterpene
α -Alaskene	0.09	Sesquiterpene
β -Bisabolene	0.13	Sesquiterpene
β -Curcumene	0.42	Sesquiterpene
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	0.04	Sesquiterpene

Sesquicineole	0.01	Sesquiterpenic ether
β-Sesquiphellandrene	0.13	Sesquiterpene
(E)-γ-Bisabolene	0.03	Sesquiterpene
8,14-Cedranoxide	0.06	Sesquiterpenic ether
(E)-α-Bisabolene	0.07	Sesquiterpene
(E)-Nerolidol	2.14	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.10	Oxygenated sesquiterpene
Dendrolasin	1.11	Sesquiterpenic ether
Unknown	0.05	Oxygenated sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Helifolen-12-al A	0.07	Sesquiterpenic aldehyde
α-Cedrol	0.02	Sesquiterpenic alcohol
Guaïol	0.32	Sesquiterpenic alcohol
Helifolen-12-al B	0.09	Sesquiterpenic aldehyde
Unknown	0.17	Oxygenated sesquiterpene
Rosifoliol	0.06	Sesquiterpenic alcohol
Unknown	0.22	Oxygenated sesquiterpene
α-Acorenol	0.25	Sesquiterpenic alcohol
γ-Eudesmol	0.12	Sesquiterpenic alcohol
β-Acorenol	0.08	Sesquiterpenic alcohol
10-epi-β-Acorenol?	0.10	Sesquiterpenic alcohol
β-Eudesmol	0.19	Sesquiterpenic alcohol
Unknown	0.41	Oxygenated sesquiterpene
α-Bisabolol oxide B, epimer 2	0.13	Sesquiterpenic alcohol
α-Bisabolol oxide B, epimer 1	0.29	Sesquiterpenic alcohol
Unknown	0.23	Oxygenated sesquiterpene
epi-β-Bisabolol	0.16	Sesquiterpenic alcohol
Bulnesol	0.73	Sesquiterpenic alcohol
Unknown	0.63	Oxygenated sesquiterpene
Unknown	0.59	Oxygenated sesquiterpene
β-Bisabolol	0.31	Sesquiterpenic alcohol
(E)-α-Santalal	2.31	Sesquiterpenic aldehyde
epi-Cyclosantalal	0.21	Sesquiterpenic aldehyde
(Z)-α-Santalol	15.35	Sesquiterpenic alcohol
Cedr-8-en-13-ol	0.09	Sesquiterpenic alcohol
epi-α-Bisabolol	6.88	Sesquiterpenic alcohol
(Z)-α-trans-Bergamotol	3.60	Sesquiterpenic alcohol
(E)-α-Santalol	0.51	Sesquiterpenic alcohol
Unknown	0.27	Oxygenated sesquiterpene
(Z)-epi-β-Santalol	1.30	Sesquiterpenic alcohol
Lanceoloxide isomer I	0.14	Sesquiterpenic ether
(E)-α-trans-Bergamotol	0.91	Sesquiterpenic alcohol
(Z)-β-Santalol	5.48	Sesquiterpenic alcohol
Unknown	0.39	Oxygenated sesquiterpene

(Z)-Nuciferol	9.32	Sesquiterpenic alcohol
(2E,6E)-Farnesol	11.53	Sesquiterpenic alcohol
(Z)-γ-Curcumen-12-ol	5.31	Sesquiterpenic alcohol
Unknown	0.66	Oxygenated sesquiterpene
(2E,6E)-Farnesal	0.32	Sesquiterpenic aldehyde
(E)-β-Santalol	0.49	Sesquiterpenic alcohol
Unknown	1.09	Oxygenated sesquiterpene
Curcumen-12-ol analog	0.88	Sesquiterpenic alcohol
Unknown	0.95	Oxygenated sesquiterpene
(Z)-β-Curcumen-12-ol	6.42	Sesquiterpenic alcohol
(Z)-Lanceol	2.93	Sesquiterpenic alcohol
12-Hydroxy-(Z)-sesquicineole	0.14	Sesquiterpenic alcohol
Unknown	0.97	Oxygenated sesquiterpene
Unknown	0.93	Oxygenated sesquiterpene
Unknown	0.39	Oxygenated sesquiterpene
Bisabola-2,7(Z),10(Z)-trien-13-ol?	0.75	Oxygenated sesquiterpene
Unknown	0.30	Oxygenated sesquiterpene
Unknown	0.12	Oxygenated sesquiterpene
Unknown	0.14	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
(2E,6E)-Farnesyl acetate	0.14	Sesquiterpenic ester
Unknown	0.24	Oxygenated sesquiterpene
Unknown	0.06	Oxygenated sesquiterpene
Unknown	0.09	Oxygenated sesquiterpene
Unknown	0.09	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Consolidated total	94.47	

tr: The compound has been detected below 0.005% of the total signal

Note: no correction factor was applied

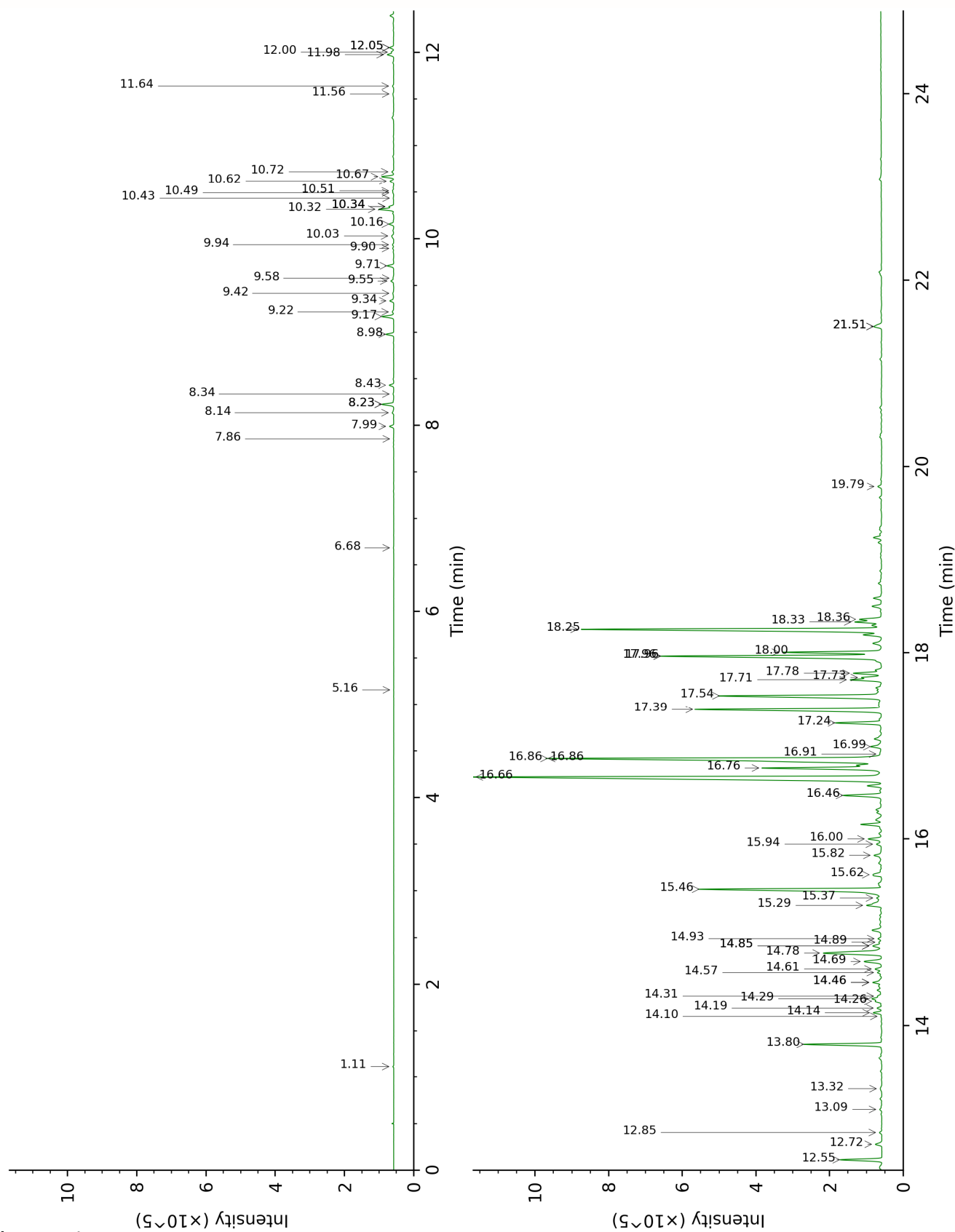
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm is set to prioritize data from the most standard DB-5 column, and smallest values so as to avoid overestimating individual content. This process is semi-automatic. Advanced users are invited to consult the "Full analysis data" table after the chromatograms in this report to access the full untreated data and perform their own calculations if needed.

Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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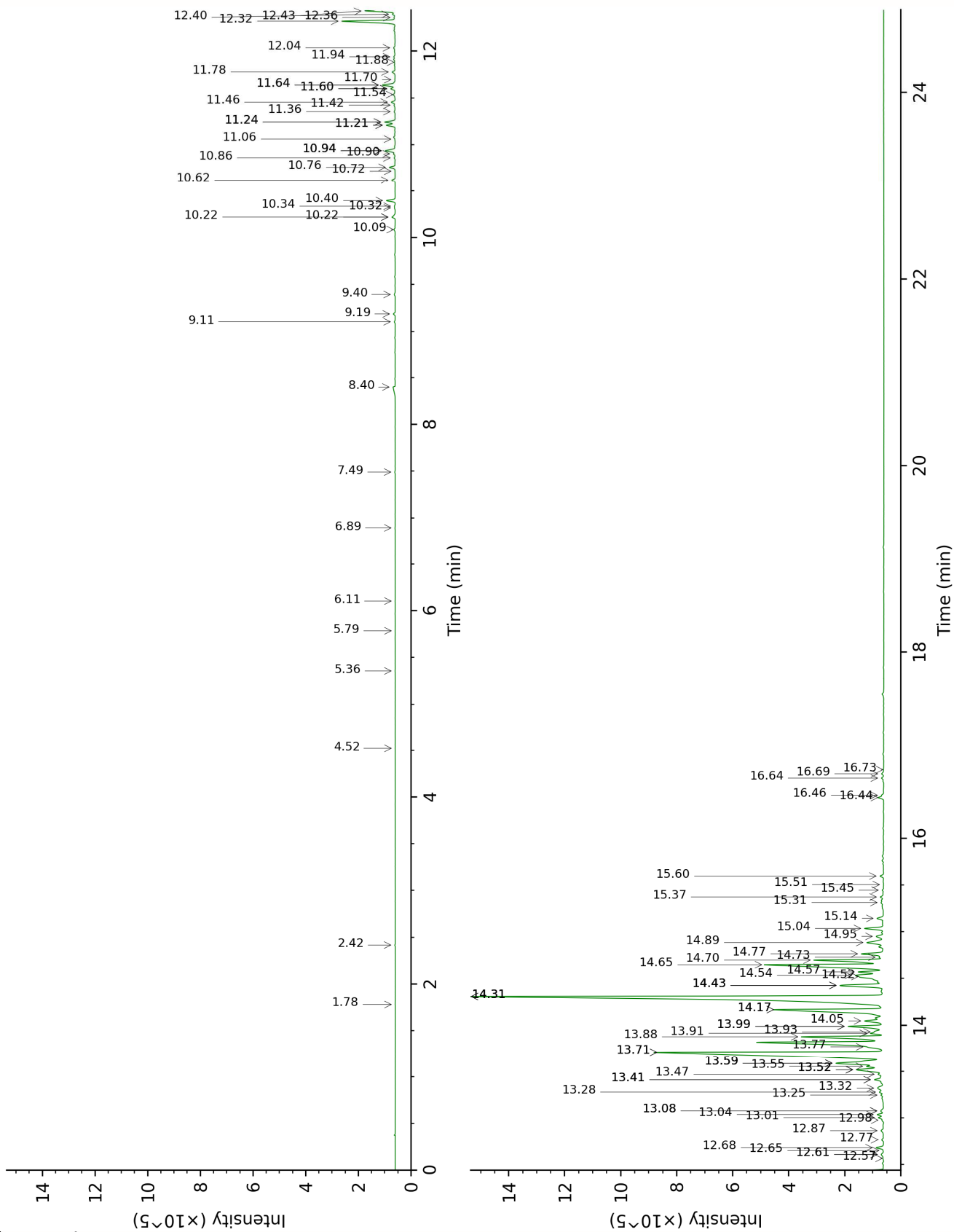
DB-WAX



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DB-5



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PhytoChemia

Plus que des analyses... des conseils

FULL ANALYSIS DATA

Furfural	Column DB-WAX			Column DB-5		
	6.68	1411.0	0.01	1.78	830.1	0.01
Santene	1.11	946.9	0.02	2.42	883.8	0.01
Limonene				4.52	1027.5	0.01
meta-Cresol	14.10	2028.9	0.03	5.36	1080.2	0.01
1-Methyl-4-(1-methylpropyl)benzene	5.16	1301.8	0.01	5.79	1107.3	0.01
Limona ketone	7.86	1497.9	0.01	6.10	1127.7	0.01
4-Methylacetophenone	10.49	1706.9	0.02	6.90	1178.4	0.02
Unknown SASP II [m/z 93, 91 (89), 94 (85), 105 (60)... 176? (10)]	9.22	1603.6	0.05	7.49	1217.4	0.02
Teresantallic acid				8.40	1278.4	0.22
Unknown SASP III [m/z 121, 93 (77), 79 (43), 91 (43), 145 (35)... 178 (8)]				9.11	1326.8	0.04
Tricycloekasantalal	10.34*	1694.3	[0.12]	9.19	1332.7	0.07
(1S,5S,6R)-2,6-Dimethylbicyclo[3.1.1]hept-2-ene-6-propanal?	10.34*	1694.3	[0.12]	9.40	1347.4	0.05
γ-4-Dimethylbenzenebutyral				10.09	1396.3	0.06
Sesquithujene	8.14	1519.5	0.06	10.22*	1405.8	[0.16]
α-Cedrene	7.99	1508.2	0.12	10.22*	1405.8	[0.16]
β-Cedrene	8.34	1534.9	0.02	10.32	1413.1	0.02
cis-α-Bergamotene	8.23*	1526.5	[0.34]	10.34	1414.5	0.03
α-Santalene	8.23*	1526.5	[0.34]	10.40	1419.0	0.32
trans-α-Bergamotene	8.43	1542.3	0.12	10.62	1435.6	0.13
Unknown SASP IV [m/z 93, 91 (80), 79 (68), 123 (68), 121 (56)... 204 (3)]				10.72	1442.9	0.01
epi-β-Santalene	8.98	1584.8	0.21	10.76	1446.0	0.22
Geranylacetone	11.64	1804.5	0.04	10.86	1453.5	0.04
α-Acoradiene	9.34	1613.2	0.12	10.90	1456.7	0.06
β-Santalene	9.17	1599.7	0.34	10.94*	1459.2	[0.45]
(E)-β-Farnesene	9.55	1630.2	0.09	10.94*	1459.2	[0.45]
β-Acoradiene	9.42	1619.6	0.05	10.94*	1459.2	[0.45]
10-epi-β-Acoradiene	9.58	1632.7	0.03	11.06	1468.5	0.01
γ-Curcumene	9.71	1643.3	0.18	11.21*	1479.6	[0.35]
Unknown SASP V [m/z 119, 91 (24), 105 (16), 121 (16), 93 (15), 117 (15), 41 (14), 132 (14)... 204 (4)]				11.21*	1479.6	[0.35]
β-Selinene	9.90	1658.3	0.03	11.24*	1482.1	[0.40]

ar-Curcumene	10.67	1722.0	0.33	11.24*	1482.1	[0.40]
α-Selinene	9.94	1661.5	0.04	11.36	1490.5	0.04
Unknown SASP VI [m/z 119, 105 (51), 91 (31), 132 (30), 121 (26), 145 (23), 134 (20)... 204 (2)]	12.05*	1840.8	[0.12]	11.42	1495.6	0.06
Unknown SASP VII [m/z 119, 93 (52), 105 (38), 91 (33), 41 (31), 79 (25)... 204 (2)]	11.98	1834.2	0.20	11.46	1498.0	0.14
Unknown CULO XII [m/z 119, 91 (14), 120 (10), 117 (9)... 200? (2)]				11.54	1504.0	0.11
α-Alaskene	10.03	1669.0	0.09	11.60*	1508.9	[0.18]
β-Bisabolene	10.16	1679.3	0.13	11.60*	1508.9	[0.18]
β-Curcumene	10.32	1692.1	0.42	11.64*	1512.0	[0.57]
(3E,6E)-α-Farnesene	10.51	1708.6	0.04	11.64*	1512.0	[0.57]
Sesquicineole	10.34*	1694.3	[0.12]	11.70	1516.5	0.01
β-Sesquiphellandrene	10.62	1717.8	0.11	11.78	1523.0	0.13
(E)-γ-Bisabolene	10.43	1702.0	0.02	11.88	1531.2	0.03
8,14-Cedranoxide	11.56	1797.1	0.04	11.94	1535.8	0.06
(E)-α-Bisabolene	10.72	1726.4	0.05	12.04	1543.4	0.07
(E)-Nerolidol	13.80	2000.1	2.03	12.32	1565.8	2.14
Unknown SASP VIII [m/z 43, 125 (78), 107 (43), 132 (34), 67 (31)... 220 (3)]	12.00	1836.6	0.06	12.36	1568.9	0.04
Unknown SASP IX [m/z 43, 125 (91), 107 (39), 41 (24), 67 (24), 93 (21)... 220 (4)]	12.05*	1840.8	[0.12]	12.40	1571.7	0.10
Dendrolasin	12.56	1885.2	1.07	12.43	1574.6	1.11
Unknown COGU XII [m/z 93, 121 (68), 123 (45), 91 (41), 119 (32), 79 (30)... 220 (9)]				12.57	1585.2	0.05
Unknown SAUN II [m/z 119, 105 (38), 218 (37), 91 (35), 135 (34), 84 (31), 132 (29)]	13.09	1934.6	0.07	12.61*	1588.5	[0.15]
Helifolen-12-al A	12.85	1911.8	0.07	12.61*	1588.5	[0.15]
α-Cedrol	14.26	2044.5	0.19	12.65	1591.8	0.02
Guaïol	14.14	2032.7	0.24	12.68	1594.2	0.32
Helifolen-12-al B	13.32	1955.2	0.10	12.77	1600.9	0.09
Unknown SASP X [m/z 81, 41 (40), 69 (36), 138 (27), 43 (26), 110 (25)... 222 (1)]				12.86	1608.7	0.17
Rosifolol	14.32	2049.7	0.11	12.98	1618.0	0.06

Unknown SAUN IV [m/z 110, 68 (85), 109 971), 95 (67), 67 (56), 81 (53)... 220 (9)...	12.72	1900.2	0.21	13.00	1620.3	0.22
α -Acorenol	14.46*	2063.9	[0.33]	13.04	1623.0	0.25
γ -Eudesmol	14.93	2109.7	0.12	13.08*	1626.2	[0.17]
β -Acorenol	14.89	2105.8	0.08	13.08*	1626.2	[0.17]
10-epi- β -Acorenol?				13.25	1640.3	0.10
β -Eudesmol	15.37	2153.3	0.17	13.28	1643.0	0.19
Unknown SASP XI [m/z 91, 43 (89), 93 (84), 81 (81), 105 (79), 79 (70), 67 (68), 41 (68)...				13.32	1646.5	0.41
α -Bisabolol oxide B, epimer 2	14.57	2074.0	0.13	13.41*	1654.0	[0.42]
α -Bisabolol oxide B, epimer 1	14.46*	2063.9	[0.33]	13.41*	1654.0	[0.42]
Unknown SAAL V [m/z 121, 93 (96), 95 (96), 41 (65), 82 (63), 69 (62), 67 (59)... 222 (8)]	14.29	2047.1	0.33	13.47	1658.8	0.23
epi- β -Bisabolol	14.85*	2101.9	[0.34]	13.52*	1662.8	[1.53]
Bulnesol	15.29	2145.4	0.73	13.52*	1662.8	[1.53]
Unknown SAAL VI [m/z 67, 119 (70), 82 (42), 91 (37), 95 (36), 121 (34), 93 (32)...	14.69	2085.4	0.63	13.52*	1662.8	[1.53]
Unknown CILI II [m/z 69, 95 (100), 41 (89), 109 (68), 67 (61)...222]	16.00	2217.8	0.44	13.56	1665.9	0.59
β -Bisabolol	14.85*	2101.9	[0.34]	13.59*	1668.6	[2.83]
(E)- α -Santalal	14.78	2094.3	2.31	13.59*	1668.6	[2.83]
epi-Cyclosantalal	14.61	2077.7	0.21	13.59*	1668.6	[2.83]
(Z)- α -Santalol	16.66	2286.9	15.35	13.71*	1678.8	[16.21]
Cedr-8-en-13-ol	16.91	2313.3	0.09	13.71*	1678.8	[16.21]
epi- α -Bisabolol	15.46	2162.8	5.94	13.77†	1683.7	0.49
(Z)- α -trans-Bergamotol	16.76	2297.2	3.43	13.88	1692.6	3.60
(E)- α -Santalol	16.99	2321.8	0.43	13.92	1695.7	0.51
Unknown SASP XII [m/z 43, 93 (68), 41 (61), 69 (58), 125 (54), 107 (50)...				13.93	1696.9	0.27
(Z)-epi- β -Santalol	17.24	2349.3	1.30	13.99*	1701.8	[1.52]
Lanceoloxide isomer I	14.19	2037.5	0.14	13.99*	1701.8	[1.52]
(E)- α -trans-Bergamotol	17.78	2408.3	0.82	14.05	1706.7	0.91
(Z)- β -Santalol	17.39	2365.1	5.48	14.17*	1717.3	[6.14]
Unknown SASP XIV [m/z 43,	15.62	2178.3	0.39	14.17*	1717.3	[6.14]

189 (94), 81 (65), 93 (62), 95 (53), 119 (49)... 207 (43)...						
(Z)-Nuciferol	18.25	2461.0	9.32	14.31*	1729.4	[26.15]
(2E,6E)-Farnesol	16.86*	2308.2	[12.59]	14.31*	1729.4	[26.15]
(Z)-γ-Curcumen-12-ol	17.54	2381.4	5.31	14.31*	1729.4	[26.15]
Unknown SAAL X [m/z 91, 93 (65), 79 (57), 105 (49), 119 (47), 121 (44)...218 (1)]	18.36	2473.0	0.66	14.43*	1739.8	[2.05]
(2E,6E)-Farnesal	15.82	2199.4	0.32	14.43*	1739.8	[2.05]
(E)-β-Santalol	17.73	2403.1	0.49	14.43*	1739.8	[2.05]
Unknown SAUN VII [m/z 119, 93 (73), 110 (64), 111 (62), 95 (50), 81 (45), 109 (943), 105 (43)... 220 (17), 238 (20)]	16.86*	2308.2	[12.59]	14.52*†	1748.1	[0.81]
Curcumen-12-ol analog	17.71	2400.5	0.88	14.54*†	1749.1	[1.17]
Unknown SAUN VIII [m/z 119, 93 (70), 111 (61), 110 (60), 109 (45), 95 (43)... 220 (17), 238 (16)]	16.46	2266.3	1.18	14.57	1752.3	0.95
(Z)-β-Curcumen-12-ol	17.96*	2428.9	[7.10]	14.65	1759.0	6.42
(Z)-Lanceol	18.00	2433.4	2.51	14.70	1763.4	2.93
12-Hydroxy-(Z)-sesquicineole				14.73	1766.0	0.14
Unknown SASP XV [m/z 93, 107 (80), 43 (74), 91 (55), 41 (49), 79 (48), 119 (48)... 236 (3)]				14.76	1769.1	0.97
Unknown SASP XVI [m/z 93, 119 (89), 91 (63), 79 (63), 132 (53), 41 (52)... 236 (3)]	17.96*	2428.9	[7.10]	14.89	1779.7	0.93
Unknown SASP XVII [m/z 107, 93 (96), 79 (90), 55 (78), 41 (76)... 236 (6)]				14.95	1785.4	0.39
Bisabola-2,7(Z),10(Z)-trien-13-ol?	18.33	2469.9	0.72	15.04	1792.8	0.75
Unknown SASP XIX [m/z 119, 105 (78), 145 (60), 91 (50), 121 (44), 93 (38)... 216 (7)]	19.79	2640.4	0.12	15.14	1802.1	0.30
Unknown SASP XX [m/z 119, 145 (62), 105 (52), 91 (52), 121 (38)...				15.31	1817.4	0.12
Unknown SASP XXI [m/z 43, 81 (61), 41 (49), 93 (47),				15.37	1822.8	0.14

119 (39), 141 (35)...						
Unknown SASP XXII [m/z 119, 43 (61), 132 (49), 105 (35), 141 (32)...				15.45	1829.5	0.05
Unknown SASP XXIII [m/z 141, 43 (87), 123 (55), 81 (37)... 236 (t)]				15.50	1834.9	0.01
(2E,6E)-Farnesyl acetate	15.94	2211.9	0.19	15.60	1843.2	0.14
Unknown SAAU III [m/z 93, 43 (99), 109 (95), 68 (80), 95 (77), 81 (69), 110 (68)...220 (7)]	21.51*	2854.7	[0.33]	16.44	1920.3	0.24
Unknown SAAU II [m/z 93, 109 (98), 43 (97), 68 (83), 95 (74), 110 (72), 81 (71)...220 (8)]	21.51*	2854.7	[0.33]	16.46	1922.6	0.06
Unknown SAAU VI [m/z 43, 107 (24), 93 (23), 125 (23), 95 (23), 119 (23)...220 (1)]				16.64	1940.2	0.09
Unknown SAAU VII [m/z 43, 107 (23), 119 (23), 93 (22), 125 (22), 132 (22)...220 (1)]				16.69	1944.6	0.09
Unknown SAAU VIII [m/z 93, 94 (86), 91 (48), 121 (42), 79 (42), 107 (37)...218 (2)]				16.73	1948.8	0.02
Total reported	88.66%			96.24%		

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is taken into account in the consolidated total

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

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index