

GC/MS BATCH NUMBER: J10105

ESSENTIAL OIL: JASMINE ABSOLUTE
BOTANICAL NAME: JASMINUM SAMBAC
ORIGIN: INDIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF JASMINE ABSOLUTE OIL	%
(3E,6E)- α -FARNESENE	12.0
BENZYL ALCOHOL	11.3
BENZYL ACETATE	7.4
LINALOOL	6.7
(3Z)-HEXENYL BENZOATE	6.1
METHYL ANTHRANILATE	5.9
(9Z)-TRICOSENE	4.0
α -LINOLENIC ACID	2.5
INDOLE	1.9
BENZENEACETONITRILE	1.8
METHYL A-LINOLENATE	1.8
PALMITIC ACID	1.5
PHENYLETHYL ALCOHOL	1.4
SQUALENE	1.1
GERMACRENE D-4-OL	1.1
BENZYL α -LINOLENATE	1.1

Comments from Robert Tisserand: Sophisticated, fresh-green floral odor quality. Constituents are in expected amounts.

Date : February 07, 2018

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 18B01-PTH14-1-CC

Customer identification : Jasmine Absolute - India - J10105711R

Type : Essential oil

Source : *Jasminum sambac*

Customer : Plant Therapy

ANALYSIS

Method: PC-PA-014-17J19 - Analysis of the composition of an essential oil, or other volatile liquid, by FAST GC-FID (in French); identifications validated by GC-MS.

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

Analysis date : February 07, 2018

Checked and approved by :



Alexis St-Gelais, M. Sc., chimiste 2013-174

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PHYSICOCHEMICAL DATA

Physical aspect: Orange brownish liquid

Refractive index: 1.5073 ± 0.0003 (20 °C)

CONCLUSION

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

Please take note that since some compounds are fully retained on the DB-Wax column, a systematic deviation in the percentages between both columns is induced; prefer the percentage on the DB-5 column for reference.

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Ethanol	0.24	0.28	Aliphatic alcohol
Acetic acid	tr	0.01	Aliphatic acid
Ethyl acetate	0.01	0.01	Aliphatic ester
Hexan-3-ol	0.01	0.01	Aliphatic alcohol
Hexan-2-ol	0.01	0.01	Aliphatic alcohol
(3E)-Hexenol	tr	0.01	Aliphatic alcohol
(3Z)-Hexenol	0.58	0.68	Aliphatic alcohol
(2E)-Hexenol	0.11	0.14	Aliphatic alcohol
Hexanol	0.07	0.08	Aliphatic alcohol
(3Z)-Hexenyl formate	tr		Aliphatic ester
Prenyl acetate	tr	0.01	Aliphatic ester
Benzaldehyde	0.01	0.01	Simple phenolic
(3Z)-Hexenyl acetate	1.14	1.27	Aliphatic ester
Hexyl acetate	0.01	0.01	Aliphatic ester
(2E)-Hexenyl acetate	0.02	0.03	Aliphatic ester
Hexanoic acid	0.04	0.04	Aliphatic acid
Benzyl alcohol	9.57*	11.25	Simple phenolic
(Z)- β -Ocimene	[9.57]*	tr	Monoterpene
(E)- β -Ocimene	0.04	0.04	Monoterpene
cis-Linalool oxide (fur.)	0.02	0.02	Monoterpenic alcohol
Benzyl formate	0.03	0.02	Phenolic ester
trans-Linalool oxide (fur.)	0.13	0.15	Monoterpenic alcohol
Methyl benzoate	0.37	0.43	Phenolic ester
Linalool	6.74	7.68	Monoterpenic alcohol
Phenylethyl alcohol	1.44	1.76	Simple phenolic
Benzeneacetonitrile	1.80	2.00	Simple phenolic
Benzyl acetate	6.36	7.36*	Phenolic ester
Ethyl benzoate	[6.36]*	0.14*	Phenolic ester
cis-Linalool oxide (pyr.)	[6.36]*	0.01	Monoterpenic alcohol
Unknown	0.37	0.43	Unknown
trans-Linalool oxide (pyr.)	0.09	13.77*	Monoterpenic alcohol
(3Z)-Hexenyl butyrate	0.09	0.05	Aliphatic ester
Methyl salicylate	0.28	[13.77]*	Phenolic ester
Benzoic acid	0.31		Simple phenolic
(3Z)-Hexenyl 2-methylbutyrate	0.01	0.02	Aliphatic ester
(3Z)-Hexenyl isovalerate	0.02	0.01*	Aliphatic ester
Phenylethyl acetate	0.30	0.33	Phenolic ester
Unknown	0.33*	0.36	Unknown
Geraniol	[0.33]*	0.09	Monoterpenic alcohol
(E)-Isogeraniol?	0.03	0.08	Monoterpenic alcohol
Ethyl salicylate	0.15	0.02	Phenolic ester
Phenylacetic acid?	[0.15]		Phenolic acid
Unknown	0.21		Unknown
2,6-Dimethyl-1,7-octadiene-3,6-diol	0.08	0.08*	Monoterpenic alcohol
Indole	1.57*	1.87	Indole
1-Nitro-2-phenylethane	[1.57]*	0.22*	Simple phenolic
(E)-Cinnamyl alcohol	0.19	0.23	Phenylpropanoid
Methyl anthranilate	5.89	6.78*	Phenolic ester

Eugenol	0.04	0.05	Phenylpropanoid
8-Hydroxylinalool isomer	0.29*	0.26	Monoterpenic alcohol
Neryl acetate	[0.29]*	0.11	Monoterpenic ester
Butyl benzoate	0.04*	0.01	Phenolic ester
α -Copaene	[0.04]*	[0.01]*	Sesquiterpene
Methyl (<i>E</i>)-cinnamate	0.04	0.04	Phenylpropanoid ester
β -Cubebene	0.05*	0.01	Sesquiterpene
(3 <i>Z</i>)-Hexenyl hexanoate?	[0.05]*		Aliphatic ester
(3 <i>Z</i>)-Hexenyl (3 <i>Z</i>)-hexenoate	0.15*	0.10	Aliphatic ester
β -Elemene	[0.15]*	0.09	Sesquiterpene
(<i>Z</i>)-Jasmone	0.03	0.04	Jasmonate
Dimethyl anthranilate	0.03	2.81*	Phenolic ester
Ethyl anthranilate	0.02		Phenolic ester
β -Caryophyllene	0.05	0.05	Sesquiterpene
α -Humulene	0.07*	[0.14]*	Sesquiterpene
(<i>E</i>)-Cinnamyl acetate	[0.07]*	[0.08]*	Phenylpropanoid ester
(<i>E</i>)- β -Farnesene	0.02	0.04	Sesquiterpene
Oxindole?	0.03		Indole
γ -Murolene	0.06	0.06	Sesquiterpene
Germacrene D	0.34	0.40	Sesquiterpene
Bicyclogermacrene	0.16	[7.36]*	Sesquiterpene
epi-Cubebol	0.03	0.02	Sesquiterpenic alcohol
(3 <i>Z</i> ,6 <i>E</i>)- α -Farnesene	0.26*	0.15	Sesquiterpene
α -Murolene	[0.26]*	[7.36]*	Sesquiterpene
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	12.22*	[13.77]*	Sesquiterpene
γ -Cadinene	[12.22]*	0.26	Sesquiterpene
δ -Cadinene	0.58	0.69	Sesquiterpene
10-epi-Cubebol?	0.03		Sesquiterpenic alcohol
α -Cadinene	0.04	0.04	Sesquiterpene
Methyl N-formylanthranilate	0.03	0.09	Phenolic ester
Hexenyl benzoate isomer	0.05	[0.22]*	Phenolic ester
(<i>E</i>)-Nerolidol	0.13	0.40	Sesquiterpenic alcohol
(3 <i>Z</i>)-Hexenyl benzoate	6.14	5.79*	Phenolic ester
Hexyl benzoate	1.61*	0.11	Phenolic ester
Germacrene D-4-ol	[1.61]*	[2.81]*	Sesquiterpenic alcohol
(2 <i>E</i>)-Hexenyl benzoate	[1.61]*	0.41	Phenolic ester
Spathulenol	0.10	[5.79]*	Sesquiterpenic alcohol
Methyl N-acetylanthranilate	0.30	0.32	Phenolic ester
Ledol	0.02	0.02	Sesquiterpenic alcohol
τ -Cadinol	0.19*	0.12	Sesquiterpenic alcohol
τ -Murolol	[0.19]*	0.12	Sesquiterpenic alcohol
α -Murolol	0.03	0.03	Sesquiterpenic alcohol
α -Cadinol	0.27	0.31	Sesquiterpenic alcohol
Unknown	0.11		Unknown
(3 <i>E</i> ,5 <i>E</i>)-7-Hydroxyfarnesene	0.10		Sesquiterpenic alcohol
Shyobunol	0.05	0.18	Sesquiterpenic alcohol
Unknown	0.26	0.31	Unknown
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	0.17	0.35	Sesquiterpenic alcohol
(<i>E</i>)-Coniferyl alcohol	0.15		Phenylpropanoid
Oplopanone	0.10	0.47*	Sesquiterpenic alcohol
Unknown	0.37	[0.47]*	Unknown
Benzyl benzoate	0.45	0.54*	Phenolic ester

Unknown	0.14		Unknown
(2E,6E)-Farnesyl acetate	0.11	0.13	Sesquiterpenic ester
Phenylethyl benzoate	0.20	0.27	Phenolic ester
Methyl palmitate	0.37	0.44	Aliphatic ester
meta-Camphorene	0.04	[6.78]*	Diterpene
Palmitic acid	1.20*	1.51	Aliphatic acid
para-Camphorene	[1.20]*	0.01	Diterpene
(E,E)-Geranylinalool	1.13	1.43	Diterpenic alcohol
(E)-Cinnamyl benzoate	0.20		Phenylpropanoid ester
Methyl linoleate	0.23	0.33	Aliphatic ester
Methyl α -linolenate	1.77	1.85	Aliphatic ester
Methyl stearate	0.24	0.27	Aliphatic ester
α -Linolenic acid	2.51	1.89	Aliphatic acid
Ethyl α -linolenate?	0.10	[0.54]*	Aliphatic ester
Docosene isomer	0.21	0.18	Alkene
Unknown	0.16		Unknown
(9Z)-Eicosenol?	0.13		Aliphatic alcohol
(9Z)-Tricosene	4.02	4.51	Alkene
Methyl arachidate	0.34	0.09	Aliphatic ester
Tetracosene isomer	0.29		Alkene
Unknown	0.39		Unknown
Benzyl palmitate	0.22		Phenolic ester
Benzyl oleate	0.14*		Phenolic ester
Benzyl linoleate	[0.14]*		Phenolic ester
Benzyl α -linolenate	1.08		Phenolic ester
Squalene	1.10	1.20	Triterpene
2,3-Oxidosqualene	0.95		Triterpenic ether
α -Tocopherol?	0.06		Tocopherol
Unknown	1.67		Unknown
Unknown	4.01		Unknown
(3Z)-Hexenyl propionate?		0.01	Aliphatic ester
Total identified	79.15%	85.57%	

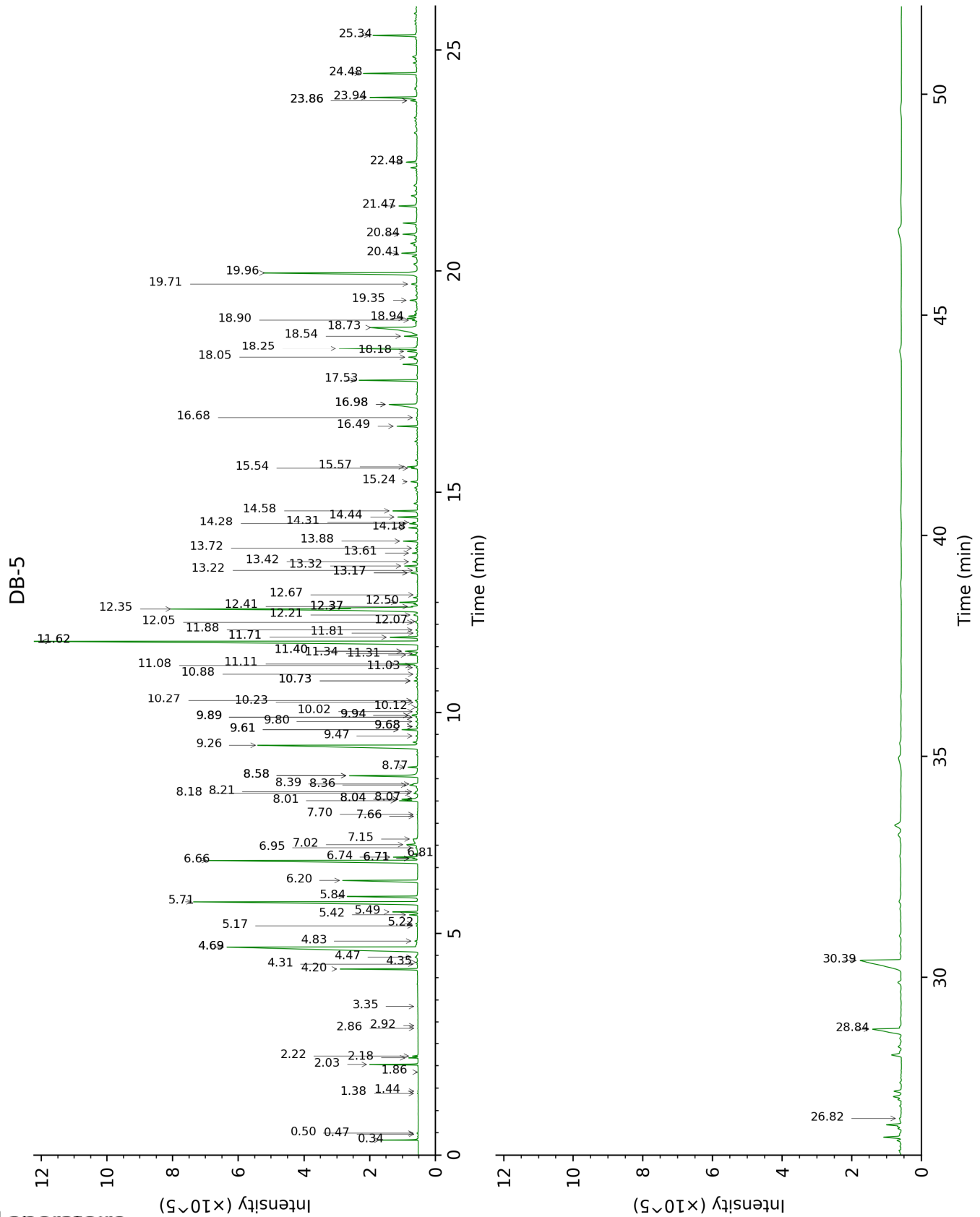
*: Two or more compounds are coeluting on this column

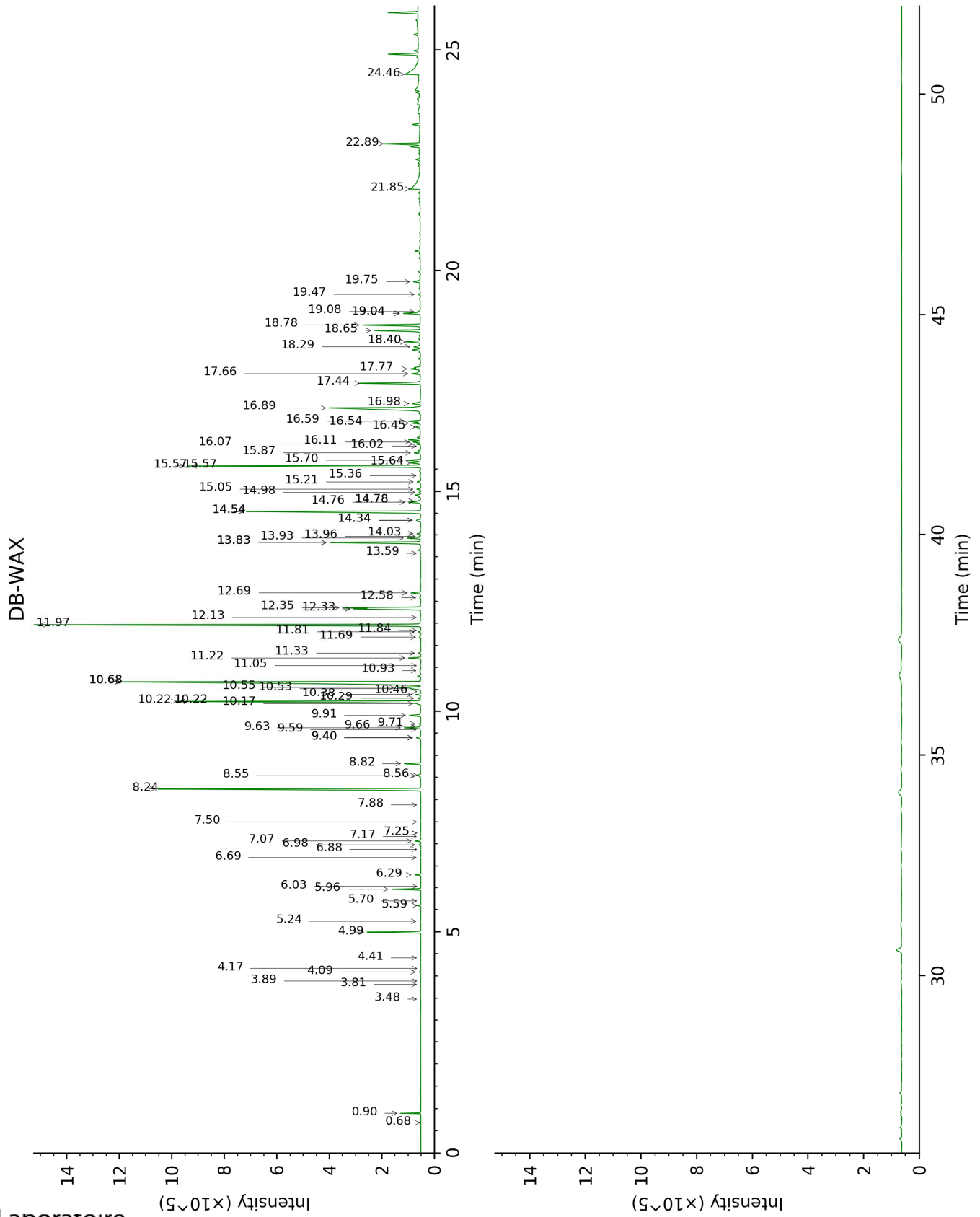
[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

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

Note: no correction factor was applied

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Ethanol	0.34	495	0.24	0.90	911	0.28
Acetic acid	0.47	593	tr	6.88	1419	0.01
Ethyl acetate	0.50	606	0.01	0.68	854	0.01
Hexan-3-ol	1.38	793	0.01	3.48	1174	0.01
Hexan-2-ol	1.44	801	0.01	3.81	1199	0.01
(3E)-Hexenol	1.86	837	tr	5.70	1334	0.01
(3Z)-Hexenol	2.03	852	0.58	5.96	1352	0.68
(2E)-Hexenol	2.18	864	0.11	6.29	1376	0.14
Hexanol	2.22	868	0.07	5.59	1326	0.08
(3Z)-Hexenyl formate	2.86	918	tr			
Prenyl acetate	2.92	922	tr	4.17	1224	0.01
Benzaldehyde	3.35	951	0.01	7.50	1465	0.01
(3Z)-Hexenyl acetate	4.20	1007	1.14	4.99	1283	1.27
Hexyl acetate	4.31	1014	0.01	4.41	1242	0.01
(2E)-Hexenyl acetate	4.35	1017	0.02	5.24	1301	0.03
Hexanoic acid	4.47	1024	0.04	11.69	1802	0.04
Benzyl alcohol	4.69*	1038	9.57	11.97	1826	11.25
(Z)-β-Ocimene	4.69*	1038	[9.57]	3.89	1204	tr
(E)-β-Ocimene	4.83	1047	0.04	4.09	1219	0.04
cis-Linalool oxide (fur.)	5.17	1068	0.02	6.69	1405	0.02
Benzyl formate	5.22	1072	0.03	9.58	1626	0.02
trans-Linalool oxide (fur.)	5.42	1084	0.13	7.07	1433	0.15
Methyl benzoate	5.49	1088	0.37	8.82	1566	0.43
Linalool	5.71	1103	6.74	8.24	1521	7.68
Phenylethyl alcohol	5.84	1111	1.44	12.33	1858	1.76
Benzeneacetonitrile	6.20	1134	1.80	12.35	1860	2.00
Benzyl acetate	6.66†	1164	6.36	10.22*	1678	7.36
Ethyl benzoate	6.71*†	1167	[6.36]	9.40*	1612	0.14
cis-Linalool oxide (pyr.)	6.71*†	1167	[6.36]	10.46	1698	0.01
Unknown [m/z 43, 69 (35), 41 (26), 83 (25), 57 (22)... 150 (1)]	6.74	1169	0.37	9.63	1630	0.43
trans-Linalool oxide (pyr.)	6.81	1173	0.09	10.68*	1716	13.77
(3Z)-Hexenyl butyrate	6.95	1182	0.09	6.98	1427	0.05
Methyl salicylate	7.02	1187	0.28	10.68*	1716	[13.77]
Benzoic acid	7.15	1195	0.31			
(3Z)-Hexenyl 2-methylbutyrate	7.66	1229	0.01	7.17	1441	0.02
(3Z)-Hexenyl	7.70	1232	0.02	7.25*	1446	0.01

isovalerate						
Phenylethyl acetate	8.01	1252	0.30	11.22	1761	0.33
Unknown [m/z 91, 117 (80), 90 (42), 118 (29)... 136 (5)]	8.04*	1255	0.33	16.59	2270	0.36
Geraniol	8.04*	1255	[0.33]	11.81	1812	0.09
(E)-Isogeraniol?	8.07	1256	0.03	11.33	1771	0.08
Ethyl salicylate	8.18†	1264	0.15	11.05	1747	0.02
Phenylacetic acid?	8.21†	1266	[0.15]			
Unknown [m/z 91, 117 (98), 90 (65), 89 (29), 65 (29), 118 (26), 135 (23)]	8.36	1276	0.21			
2,6-Dimethyl-1,7-octadiene-3,6-diol	8.39	1278	0.08	14.78*	2086	0.08
Indole	8.58*	1290	1.57	17.44	2362	1.87
1-Nitro-2-phenylethane	8.58*	1290	[1.57]	14.34*	2044	0.22
(E)-Cinnamyl alcohol	8.77	1303	0.19	16.12	2221	0.23
Methyl anthranilate	9.26	1338	5.89	15.57*	2166	6.78
Eugenol	9.47	1353	0.04	14.98	2106	0.05
8-Hydroxylinalool isomer	9.61*	1363	0.29	16.54	2265	0.26
Neryl acetate	9.61*	1363	[0.29]	10.29	1683	0.11
Butyl benzoate	9.68*	1368	0.04	11.84	1815	0.01
α-Copaene	9.68*	1368	[0.04]	7.25*	1446	[0.01]
Methyl (E)-cinnamate	9.80	1376	0.04	13.96	2008	0.04
β-Cubebene	9.89*	1383	0.05	7.88	1494	0.01
(3Z)-Hexenyl hexanoate?	9.89*	1383	[0.05]			
(3Z)-Hexenyl (3Z)-hexenoate	9.94*	1386	0.15	10.17	1674	0.10
β-Elemene	9.94*	1386	[0.15]	8.56	1546	0.09
(Z)-Jasmone	10.02	1392	0.03	12.58	1880	0.04
Dimethyl anthranilate	10.12	1399	0.03	13.83*	1995	2.81
Ethyl anthranilate	10.23	1407	0.02			
β-Caryophyllene	10.27	1410	0.05	8.55	1544	0.05
α-Humulene	10.73*	1444	0.07	9.40*	1612	[0.14]
(E)-Cinnamyl acetate	10.73*	1444	[0.07]	14.78*	2086	[0.08]
(E)-β-Farnesene	10.88	1456	0.02	9.66	1632	0.04
Oxindole?	11.03	1467	0.03			
γ-Murolene	11.08	1470	0.06	9.71	1637	0.06
Germacrene D	11.11	1473	0.34	9.91	1652	0.40
Bicyclogermacrene	11.32	1488	0.16	10.22*	1678	[7.36]
epi-Cubebol	11.34	1490	0.03	12.13	1841	0.02
(3Z,6E)-α-Farnesene	11.40*	1494	0.26	10.38	1691	0.15
α-Murolene	11.40*	1494	[0.26]	10.22*	1678	[7.36]
(3E,6E)-α-Farnesene	11.62*	1512	12.22	10.68*	1716	[13.77]

γ-Cadinene	11.62*	1512	[12.22]	10.53	1703	0.26
δ-Cadinene	11.71	1519	0.58	10.56	1705	0.69
10-epi-Cubebol?	11.81	1526	0.03			
α-Cadinene	11.88	1532	0.04	10.93	1737	0.04
Methyl N-formylanthranilate	12.05	1545	0.03	19.08	2546	0.09
Hexenyl benzoate isomer	12.07	1547	0.05	14.34*	2044	[0.22]
(E)-Nerolidol	12.22	1558	0.13	13.93	2005	0.40
(3Z)-Hexenyl benzoate	12.35	1569	6.14	14.54*	2064	5.79
Hexyl benzoate	12.37*	1570	1.61	14.03	2014	0.11
Germacrene D-4-ol	12.37*	1570	[1.61]	13.83*	1995	[2.81]
(2E)-Hexenyl benzoate	12.37*	1570	[1.61]	14.76	2084	0.41
Spathulenol	12.41	1573	0.10	14.54*	2064	[5.79]
Methyl N-acetylanthranilate	12.50	1581	0.30	17.77	2397	0.32
Ledol	12.67	1594	0.02	13.58	1972	0.02
τ-Cadinol	13.17*	1634	0.19	15.05	2113	0.12
τ-Muurolol	13.17*	1634	[0.19]	15.21	2130	0.12
α-Muurolol	13.22	1639	0.03	15.36	2144	0.03
α-Cadinol	13.32	1647	0.27	15.64	2172	0.31
Unknown [m/z 99, 161 (100), 43 (92), 204 (74), 71 (73), 121 (65)...]	13.42	1655	0.11			
(3E,5E)-7-Hydroxyfarnesene	13.61	1671	0.10			
Shyobunol	13.72	1680	0.05	16.45	2256	0.18
Unknown [m/z 99, 43 (47), 161 (42), 71 (39), 204 (31), 121 (28)...]	13.88	1694	0.26	12.69	1890	0.31
(2E,6E)-Farnesol	14.18	1719	0.17	16.98	2312	0.35
(E)-Coniferyl alcohol	14.28	1728	0.15			
Oplopanone	14.31	1730	0.10	18.40*	2467	0.47
Unknown [m/z 105, 77 (42), 69 (29), 161 (19), 83 (16)...]	14.44	1742	0.37	18.40*	2467	[0.47]
Benzyl benzoate	14.58	1754	0.45	19.04*	2541	0.54
Unknown [m/z 43, 159 (79), 93 (49), 119 (48), 161 (40), 187 (36)... 238? (2)]	15.24	1812	0.14			
(2E,6E)-Farnesyl acetate	15.54	1840	0.11	16.07	2216	0.13
Phenylethyl benzoate	15.57	1842	0.20	19.76	2626	0.27
Methyl palmitate	16.49	1927	0.37	15.70	2178	0.44
meta-Camphorene	16.68	1945	0.04	15.57*	2166	[6.78]

Palmitic acid	16.98*	1974	1.20	21.85	2886	1.51
para-Camphorene	16.98*	1974	[1.20]	16.02	2211	0.01
(<i>E,E</i>)-Geranylinalool	17.53	2026	1.13	18.65	2496	1.43
(<i>E</i>)-Cinnamyl benzoate	18.05	2078	0.20			
Methyl linoleate	18.18	2091	0.23	18.28	2455	0.33
Methyl α -linolenate	18.25	2098	1.77	18.78	2511	1.85
Methyl stearate	18.54	2128	0.24	17.66	2385	0.27
α -Linolenic acid	18.73	2148	2.51	24.46	3244	1.89
Ethyl α -linolenate?	18.90	2166	0.10	19.04*	2541	[0.54]
Docosene isomer	18.94	2170	0.21	15.87	2196	0.18
Unknown [m/z 190, 158 (100), 253 (68), 193 (58), 220 (51)]	19.35	2212	0.16			
(9 <i>Z</i>)-Eicosenol?	19.71	2252	0.13			
(9 <i>Z</i>)-Tricosene	19.96	2279	4.02	16.89	2302	4.51
Methyl arachidate	20.41	2328	0.34	19.47	2591	0.09
Tetracosene isomer	20.84	2376	0.29			
Unknown [m/z 219, 218 (99), 217 (50), 108 (31), 220 (17), 216 (14)]	21.47	2450	0.39			
Benzyl palmitate	22.48	2569	0.22			
Benzyl oleate	23.86*	2743	0.14			
Benzyl linoleate	23.86*	2743	[0.14]			
Benzyl α -linolenate	23.94	2753	1.08			
Squalene	24.48	2824	1.10	22.89	3024	1.20
2,3-Oxidosqualene	25.34	2940	0.95			
α -Tocopherol?	26.82	3135	0.06			
Unknown [m/z 322, 245 (66), 122 (37), 204 (34), 321 (30), 323 (26)...]	28.84	3323	1.67			
Unknown [m/z 245, 246 (20), 243 (14), 217 (12), 218 (9), 91 (7), 244 (6)]	30.39	3427	4.01			
(3 <i>Z</i>)-Hexenyl propionate?				6.03	1357	0.01
Total identified		79.15%			85.57%	
Total reported		86.84%			86.67%	

*: 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

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