

Date : 2025-12-15

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25K12-PTH04

Customer Identification : Lavandin - France - L20113R

Type : Essential Oil

Source : *Lavandula angustifolia x latifolia* cv. Grosso

Customer : Plant Therapy

Checked and approved by:

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

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

This report is an update of the version first issued on 2025-11-14 to make a correction in the sample identification section.

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 : 2025-11-13

PHYSICOCHEMICAL DATA

Refractive index : 1.4611 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-11-13

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
Isobutylal	tr	Aliphatic aldehyde
Methacrolein	tr	Aliphatic aldehyde
2-Methyl-3-buten-2-ol	0.01	Aliphatic alcohol
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutylal	tr	Aliphatic aldehyde
Toluene	tr	Simple phenolic
Hexanal	0.01	Aliphatic aldehyde
Methyl hexyl ether	0.03	Aliphatic ether
(2E)-Hexenal	0.01	Aliphatic aldehyde
(3Z)-Hexenol	0.07	Aliphatic alcohol
Hexanol	0.14	Aliphatic alcohol
Tricyclene	0.02	Monoterpene
α -Thujene	0.08	Monoterpene
α -Pinene	0.43	Monoterpene
α -Fenchene	0.01	Monoterpene
Camphene	0.29	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
Butyl isobutyrate	0.01	Aliphatic ester
Sabinene	0.14	Monoterpene
β -Pinene	0.39	Monoterpene
Octen-3-ol	0.24	Aliphatic alcohol
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Octan-3-one	0.13	Aliphatic ketone
Myrcene	0.57	Monoterpene
Octan-3-ol	0.02	Aliphatic alcohol
Butyl butyrate	0.03	Aliphatic ester
α -Phellandrene	0.02	Monoterpene
Pseudolimonene	0.01	Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	0.02	Monoterpenic ether
Δ^3 -Carene	0.08	Monoterpene
(3Z)-Hexenyl acetate	0.01	Aliphatic ester
α -Terpinene	0.04	Monoterpene
Hexyl acetate	0.12	Aliphatic ester
<i>meta</i> -Cymene	0.02	Monoterpene
<i>para</i> -Cymene	0.15	Monoterpene
1,8-Cineole	5.74	Monoterpenic ether
Limonene	0.74	Monoterpene
Lavender lactone	0.02	Aliphatic lactone
(Z)- β -Ocimene	0.78	Monoterpene
(E)- β -Ocimene	0.39	Monoterpene

γ -Terpinene	0.11	Monoterpene
<i>cis</i> -Sabinene hydrate	0.16	Monoterpenic alcohol
<i>cis</i> -Linalool oxide (fur.)	0.15	Monoterpenic alcohol
Octanol	0.03	Aliphatic alcohol
α -Pinene oxide analog	0.07	Monoterpenic ether
Terpinolene	0.23	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	0.13	Monoterpenic alcohol
<i>trans</i> -Sabinene hydrate	0.05	Monoterpenic alcohol
Linalool	31.68	Monoterpenic alcohol
(<i>Z</i>)-6-Methyl-3,5-heptadien-2-one	0.03	Aliphatic ketone
β -Thujone	0.05	Monoterpenic ketone
Octen-3-yl acetate	0.24	Aliphatic ester
Unknown	0.02	Unknown
α -Campholenal	0.02	Monoterpenic aldehyde
Octan-3-yl acetate	0.04	Aliphatic ester
(<i>Z</i>)-Myroxide	0.03	Monoterpenic ether
Camphor	7.20	Monoterpenic ketone
Camphene hydrate	0.06	Monoterpenic alcohol
Hexyl isobutyrate	0.15	Aliphatic ester
Nerol oxide	0.02	Aliphatic ether
Borneol	3.44	Monoterpenic alcohol
δ -Terpineol	0.10	Monoterpenic alcohol
Lavandulol	0.62	Monoterpenic alcohol
Terpinen-4-ol	3.52	Monoterpenic alcohol
(3 <i>E</i> ,5 <i>Z</i>)-Undeca-1,3,5-triene	0.01	Alkene
Cryptone	0.02	Normoterpenic ketone
<i>meta</i> -Cymen-8-ol	0.02	Monoterpenic alcohol
<i>para</i> -Cymen-8-ol	0.06	Monoterpenic alcohol
α -Terpineol	0.88	Monoterpenic alcohol
Myrtenal	0.03	Monoterpenic aldehyde
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	0.03	Monoterpenic alcohol
Hexyl butyrate	0.35	Aliphatic ester
Verbenone	0.05	Monoterpenic ketone
(3 <i>E</i> ,5 <i>E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.02	Monoterpenic alcohol
Octyl acetate	0.04	Aliphatic ester
Bornyl formate	0.06	Monoterpenic ester
Nerol	0.13	Monoterpenic alcohol
Hexyl 2-methylbutyrate	0.03	Aliphatic ester
Carvone	0.02	Monoterpenic ketone
Neral	0.08	Monoterpenic aldehyde
Hexyl isovalerate	0.16	Aliphatic ester
Geraniol	0.32	Monoterpenic alcohol
Linalyl acetate	28.81	Monoterpenic ester
<i>trans</i> -Ascaridole glycol	0.01	Monoterpenic alcohol

Geranial	0.01	Monoterpenic aldehyde
Bornyl acetate	0.02	Monoterpenic ester
Lavandulyl acetate	2.18	Monoterpenic ester
Hexyl tiglate	0.18	Aliphatic ester
Hodiendiol derivative	0.03	Oxygenated monoterpene
Unknown	0.04	Oxygenated monoterpene
Unknown	0.03	Oxygenated monoterpene
Neryl acetate	0.22	Monoterpenic ester
α -Copaene	0.01	Sesquiterpene
Daucene	0.06	Sesquiterpene
7-Cubebene epimer?	0.02	Aliphatic alcohol
β -Bourbonene	0.06	Sesquiterpene
Unknown	0.01	Sesquiterpene
Geranyl acetate	0.43	Monoterpenic ester
Hexyl hexanoate	0.02	Aliphatic ester
7-epi-Sesquithujene	0.08	Sesquiterpene
α -Funebrene	0.01	Sesquiterpene
Sesquithujene	0.13	Sesquiterpene
<i>cis</i> - α -Bergamotene	0.04	Sesquiterpene
β -Caryophyllene	1.35	Sesquiterpene
α -Santalene	0.18	Sesquiterpene
Lavandulyl isobutyrate	0.10	Monoterpenic ester
Coumarin	0.06	Coumarin
<i>trans</i> - α -Bergamotene	0.14	Sesquiterpene
<i>cis</i> - β -Bergamotene?	0.09	Sesquiterpene
α -Humulene	0.05	Sesquiterpene
Lavandulyl butyrate?	0.08	Monoterpenic ester
(<i>E</i>)- β -Farnesene	1.09	Sesquiterpene
Dauca-5,8-diene?	0.06	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.09	Sesquiterpene
Germacrene D	0.60	Sesquiterpene
<i>trans</i> - β -Bergamotene	0.05	Sesquiterpene
Isodaucene	0.08	Sesquiterpene
α -Murolene	0.01	Sesquiterpene
Cubebol	0.02	Sesquiterpenic alcohol
β -Bisabolene	0.14	Sesquiterpene
γ -Cadinene	0.26	Sesquiterpene
Lavandulyl isovalerate	0.29	Monoterpenic ester
β -Sesquiphellandrene	0.14	Sesquiterpene
(<i>E</i>)- α -Bisabolene	0.02	Sesquiterpene
Isocaryophyllene epoxide B	0.01	Sesquiterpenic ether
<i>cis</i> -Sesquisabinene hydrate	0.01	Sesquiterpenic alcohol
(<i>E</i>)-Nerolidol	0.01	Sesquiterpenic alcohol
Germacrene D-4-ol	0.01	Sesquiterpenic alcohol
Caryophyllene oxide isomer	0.02	Sesquiterpenic ether

Caryophyllene oxide	0.13	Sesquiterpenic ether
Neryl valerate?	0.03	Aliphatic ester
τ -Cadinol	0.15	Sesquiterpenic alcohol
<i>cis</i> -14-nor-Muuro-5-en-4-one?	0.01	Norsesquiterpenic ketone
α -Bisabolol	0.34	Sesquiterpenic alcohol
Consolidated total	99.32	

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

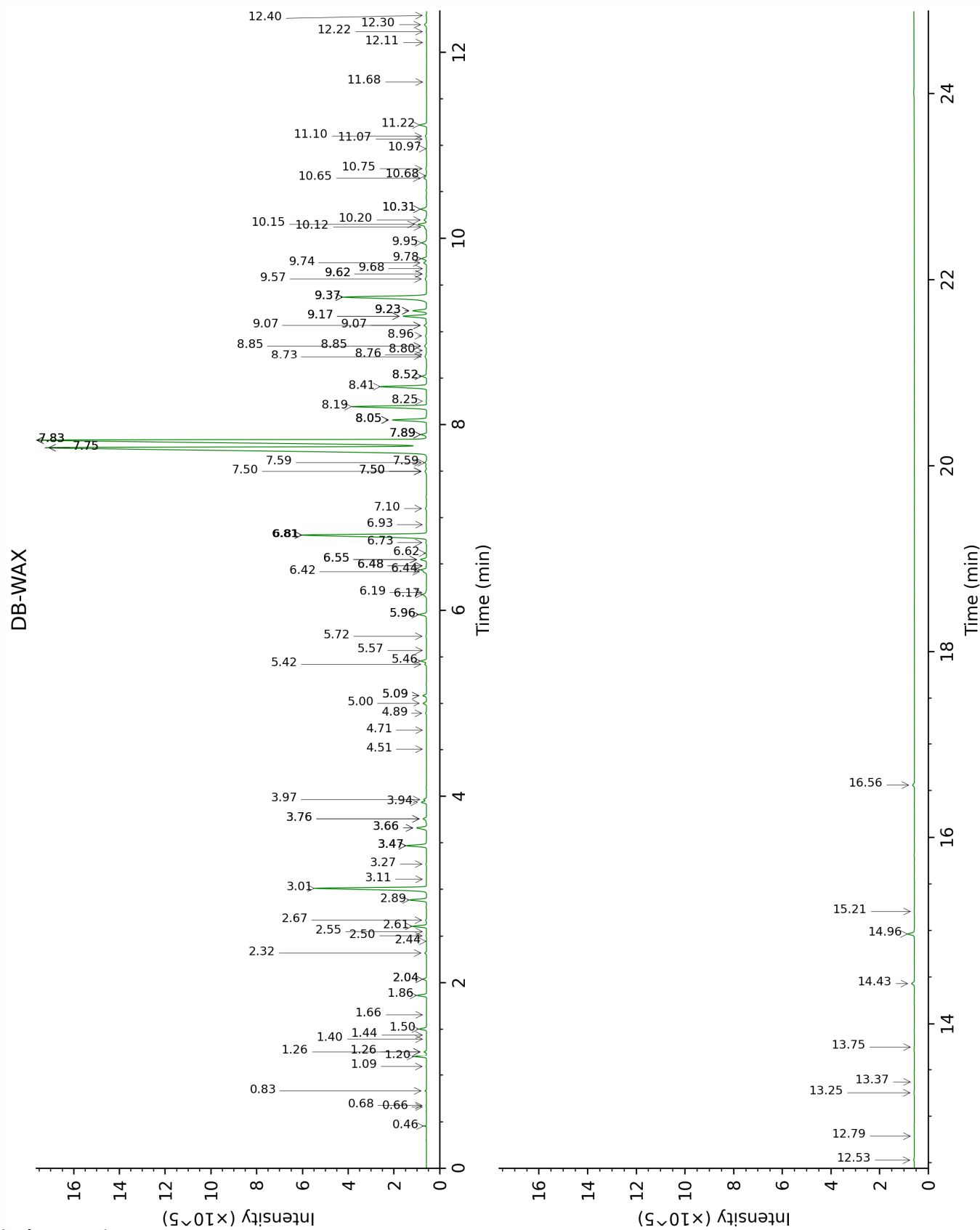
Note: no correction factor was applied

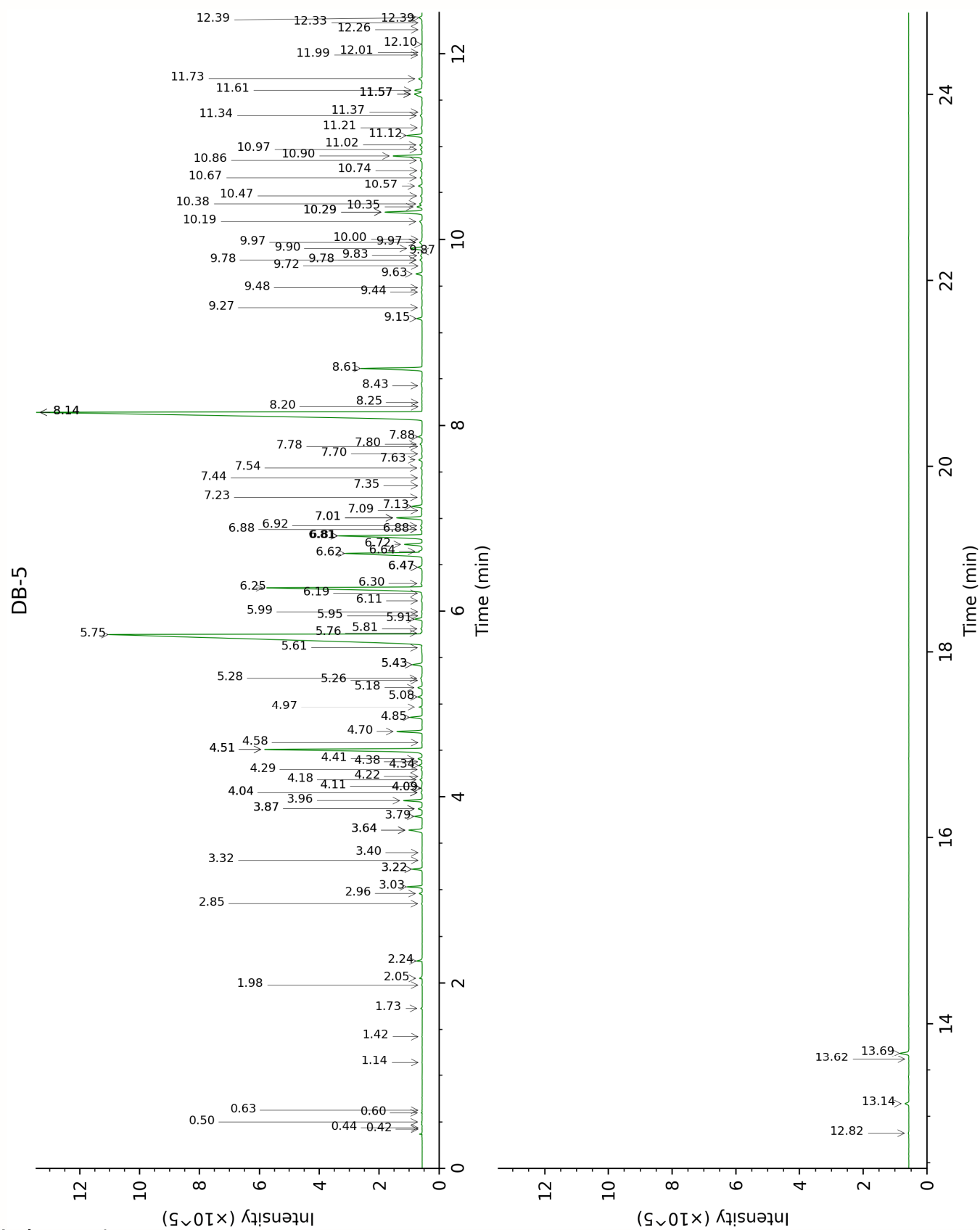
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

Isobutyral	Column DB-WAX			Column DB-5		
	0.46	780.8	0.04	0.42	539.3	tr
Methacrolein				0.44	551.6	tr
2-Methyl-3-buten-2-ol	1.40	1016.8	0.01	0.50	606.3	0.01
Isovaleral	0.68	885.5	0.01	0.60	642.3	0.01
2-Methylbutyral	0.66	878.9	tr	0.63	652.6	tr
Toluene	1.26*	999.9	[0.08]	1.14	758.7	tr
Hexanal	1.66	1043.5	0.01	1.42	799.7	0.01
Methyl hexyl ether	0.83	925.6	0.03	1.73	827.6	0.03
(2E)-Hexenal	3.11	1173.8	0.01	1.98	848.7	0.01
(3Z)-Hexenol	5.42	1345.3	0.07	2.05	854.8	0.07
Hexanol	5.09*	1320.6	[0.15]	2.24	870.5	0.14
Tricyclene	1.10	971.2	0.01	2.85	918.8	0.02
α -Thujene	1.26*	999.9	[0.08]	2.96	926.1	0.08
α -Pinene	1.20	990.0	0.42	3.03	930.9	0.43
α -Fenchene	1.44	1021.3	0.01	3.22*	943.6	[0.30]
Camphene	1.50	1027.8	0.29	3.22*	943.6	[0.30]
Thuja-2,4(10)-diene	2.04*	1082.8	[0.14]	3.32	949.9	0.01
Butyl isobutyrate	2.44	1120.5	0.01	3.40	955.4	0.01
Sabinene	2.04*	1082.8	[0.14]	3.64*	971.6	[0.53]
β -Pinene	1.86	1065.0	0.39	3.64*	971.6	[0.53]
Octen-3-ol	6.44	1420.3	0.26	3.79	981.6	0.24
6-Methyl-5-hepten-2-one	4.71	1294.6	0.01	3.87*	987.0	[0.14]
Octan-3-one	3.66*	1217.0	[0.48]	3.87*	987.0	[0.14]
Myrcene	2.61	1133.4	0.56	3.96	992.9	0.57
Octan-3-ol	5.72	1367.5	0.02	4.04*	998.7	[0.05]
Butyl butyrate	3.27	1186.9	0.03	4.04*	998.7	[0.05]
α -Phellandrene	2.50	1125.3	0.02	4.09*	1001.9	[0.03]
Pseudolimonene	2.55	1128.9	0.01	4.09*	1001.9	[0.03]
cis-Dehydroxylinalool oxide	3.47*	1202.7	[0.90]	4.11	1003.3	0.02
Δ^3 -Carene	2.32	1110.5	0.07	4.18	1007.8	0.08
(3Z)-Hexenyl acetate	4.51	1279.5	0.01	4.22	1010.0	0.01
α -Terpinene	2.67	1138.7	0.04	4.29	1014.7	0.04
Hexyl acetate	3.97	1239.5	0.12	4.34	1017.5	0.12
meta-Cymene	3.76*	1224.2	[0.17]	4.38	1020.0	0.02
para-Cymene	3.76*	1224.2	[0.17]	4.41	1022.0	0.15
1,8-Cineole	3.01	1166.0	5.74	4.51*	1028.4	[6.37]
Limonene	2.89	1156.0	0.74	4.51*	1028.4	[6.37]
Lavender lactone	8.80	1603.8	0.02	4.58	1033.0	0.02

(Z)- β -Ocimene	3.47*	1202.7	[0.90]	4.70	1040.6	0.78
(E)- β -Ocimene	3.66*	1217.0	[0.48]	4.85	1050.2	0.39
γ -Terpinene	3.47*	1202.7	[0.90]	4.97	1057.5	0.11
cis-Sabinene hydrate	6.55*	1428.7	[0.28]	5.08	1064.7	0.16
cis-Linalool oxide (fur.)	6.17	1400.4	0.22	5.18	1071.0	0.15
Octanol	7.83*†	1527.2	[28.74]	5.26	1075.9	0.03
α -Pinene oxide analog	5.09*	1320.6	[0.15]	5.28	1077.3	0.07
Terpinolene	3.94	1237.3	0.23	5.43*	1086.7	[0.36]
trans-Linalool oxide (fur.)	6.55*	1428.7	[0.28]	5.43*	1086.7	[0.36]
trans-Sabinene hydrate	7.59*	1508.1	[0.07]	5.61	1098.2	0.05
Linalool	7.75*†	1520.8	[31.91]	5.75	1107.3	31.68
(Z)-6-Methyl-3,5-heptadien-2-one	7.83*†	1527.2	[28.74]	5.76	1108.2	0.03
β -Thujone	5.96*	1384.6	[0.35]	5.81	1111.3	0.05
Octen-3-yl acetate	5.46	1347.9	0.24	5.91	1118.0	0.24
Unknown LAAN I [m/z 82, 81 (72), 43 (64), 54 (32), 41 (20)...]	9.23*	1638.6	[0.61]	5.95	1120.3	0.02
α -Campholenal	6.62	1433.9	0.02	5.99	1123.1	0.02
Octan-3-yl acetate	4.89	1306.1	0.03	6.11	1130.8	0.04
(Z)-Myroxide	6.48*	1423.6	[0.03]	6.19	1136.0	0.03
Camphor	6.81*	1448.6	[7.38]	6.25	1139.8	7.20
Camphene hydrate	8.05*	1544.3	[1.55]	6.30	1142.8	0.06
Hexyl isobutyrate	5.00	1314.5	0.15	6.47*	1154.1	[0.17]
Nerol oxide	6.48*	1423.6	[0.03]	6.47*	1154.1	[0.17]
Borneol	9.37*	1650.7	[4.96]	6.62	1163.8	3.44
δ -Terpineol	9.07*	1625.7	[0.11]	6.64	1165.2	0.10
Lavandulol	9.23*	1638.6	[0.61]	6.72	1170.1	0.62
Terpinen-4-ol	8.19	1555.6	3.52	6.81*	1176.1	[3.56]
(3E,5Z)-Undeca-1,3,5-triene	5.57	1356.3	0.01	6.81*	1176.1	[3.56]
Cryptone	8.76	1600.2	0.02	6.88*	1181.0	[0.07]
meta-Cymen-8-ol	11.07	1794.5	0.02	6.88*	1181.0	[0.07]
para-Cymen-8-ol	11.10	1797.3	0.06	6.92	1183.6	0.06
α -Terpineol	9.37*	1650.7	[4.96]	7.01*	1189.2	[0.90]
Myrtenal	8.25	1560.2	0.03	7.01*	1189.2	[0.90]
Hodiendiol (2,6-dimethylocta-3,7-diene-2,6-diol)	12.40	1913.6	0.03	7.09	1194.3	0.03

Hexyl butyrate	5.96*	1384.6	[0.35]	7.13	1197.2	0.35
Verbenone	9.23*	1638.6	[0.61]	7.23	1203.5	0.05
(3E,5E)-2,6-Dimethylocta-3,5,7-trien-2-ol	10.97	1785.6	0.03	7.35	1211.8	0.02
Octyl acetate	6.73	1442.5	0.03	7.44	1217.5	0.04
Bornyl formate	7.59*	1508.1	[0.07]	7.54	1224.8	0.06
Nerol	10.65	1758.4	0.14	7.63	1230.8	0.13
Hexyl 2-methylbutyrate	6.19	1402.0	0.03	7.70	1235.1	0.03
Carvone	9.62*	1671.1	[0.03]	7.78	1240.5	0.02
Neral	9.07*	1625.7	[0.11]	7.80	1242.2	0.08
Hexyl isovalerate	6.42	1418.8	0.12	7.88	1247.6	0.16
Geraniol	11.22	1807.5	0.32	8.14*	1265.6	[29.13]
Linalyl acetate	7.83*†	1527.2	[28.74]	8.14*	1265.6	[29.13]
trans-Ascaridole glycol	13.75	2041.9	0.01	8.20	1269.7	0.01
Geranial	9.68	1675.8	0.01	8.25	1272.9	0.01
Bornyl acetate	7.89*	1531.9	[0.24]	8.43	1285.1	0.02
Lavandulyl acetate	8.41	1572.6	2.19	8.61	1297.8	2.18
Hexyl tiglate	8.52*	1581.4	[0.20]	9.16	1332.7	0.18
Hodiendiol derivative	12.53	1926.0	0.03	9.27	1341.0	0.03
Unknown SASC II [m/z 43, 79 (47), 71 (31), 94 (27), 81 (23), 41 (22)... 197 (0)]	10.68	1760.7	0.02	9.44	1352.9	0.04
Unknown SASC III [m/z 43, 79 (46), 71 (30), 94 (25), 41 (23), 81 (21)... 197 (0)]	10.75	1767.1	0.04	9.48	1356.2	0.03
Neryl acetate	9.78	1684.6	0.22	9.63	1366.8	0.22
α-Copaene	6.81*	1448.6	[7.38]	9.72	1372.8	0.01
Daucene	6.81*	1448.6	[7.38]	9.78*	1377.3	[0.08]
7-Cubebene epimer?	6.93	1457.7	0.02	9.78*	1377.3	[0.08]
β-Bourbonene	7.10	1470.8	0.06	9.83	1380.6	0.06
Unknown DACA I [m/z 161, 91 (40), 105 (38), 79 (31), 93 (29), 119 (29)... 204 (1)]	7.50*	1501.0	[0.11]	9.87	1383.8	0.01
Geranyl acetate	10.15	1715.1	0.45	9.90	1386.1	0.43
Hexyl hexanoate	8.52*	1581.4	[0.20]	9.97*	1390.7	[0.12]
7-epi-	7.50*	1501.0	[0.11]	9.97*	1390.7	[0.12]

Sesquithujene						
α -Funebrene	7.50*	1501.0	[0.11]	10.00	1393.1	0.01
Sesquithujene	7.75*†	1520.8	[31.91]	10.19	1406.5	0.13
<i>cis</i> - α -Bergamotene	7.89*	1531.9	[0.24]	10.29*	1414.1	[1.45]
β -Caryophyllene	8.05*	1544.3	[1.55]	10.29*	1414.1	[1.45]
α -Santalene	7.89*	1531.9	[0.24]	10.35	1418.3	0.18
Lavandulyl isobutyrate	8.96	1616.6	0.06	10.38	1420.7	0.10
Coumarin	16.56	2328.9	0.10	10.47	1427.1	0.06
<i>trans</i> - α -Bergamotene	8.05*	1544.3	[1.55]	10.57	1435.0	0.14
<i>cis</i> - β -Bergamotene?				10.67	1442.2	0.09
α -Humulene	8.85*	1607.5	[0.11]	10.74	1448.0	0.05
Lavandulyl butyrate?	10.12	1712.6	0.09	10.86	1456.2	0.08
(<i>E</i>)- β -Farnesene	9.17*	1633.8	[1.10]	10.90	1459.8	1.09
Dauca-5,8-diene?	8.74	1598.4	0.13	10.97	1464.9	0.06
<i>trans</i> -Cadina-1(6),4-diene	8.85*	1607.5	[0.11]	11.02	1468.6	0.09
Germacrene D	9.37*	1650.7	[4.96]	11.12	1476.2	0.60
<i>trans</i> - β -Bergamotene	9.17*	1633.8	[1.10]	11.20	1482.4	0.05
Isodaucene	9.57	1666.6	0.08	11.34	1492.2	0.08
α -Muurolene	9.62*	1671.1	[0.03]	11.37	1495.0	0.01
Cubebol	12.11	1887.1	0.02	11.57*	1509.7	[0.44]
β -Bisabolene	9.74	1680.9	0.14	11.57*	1509.7	[0.44]
γ -Cadinene	9.95	1698.5	0.26	11.57*	1509.7	[0.44]
Lavandulyl isovalerate	10.31*	1729.1	[0.29]	11.61	1512.9	0.29
β -Sesquiphellandrene	10.20	1719.1	0.13	11.73	1522.6	0.14
(<i>E</i>)- α -Bisabolene	10.31*	1729.1	[0.29]	11.99	1542.8	0.02
Isocaryophyllene epoxide B	11.68	1849.0	0.01	12.01	1545.0	0.01
<i>cis</i> -Sesquisabinene hydrate	12.79	1950.2	0.01	12.10	1552.0	0.01
(<i>E</i>)-Nerolidol	13.37	2004.9	0.01	12.26	1564.2	0.01
Germacrene D-4-ol	13.25	1993.9	0.03	12.33	1570.1	0.01
Caryophyllene oxide isomer	12.22	1897.7	0.02	12.39*	1574.5	[0.14]
Caryophyllene oxide	12.30	1904.4	0.13	12.39*	1574.5	[0.14]
Neryl valerate?				12.82	1608.7	0.03
τ -Cadinol	14.43	2108.4	0.14	13.14	1635.1	0.15
<i>cis</i> -14-nor-Muurolo-	15.21	2186.9	0.01	13.62	1674.9	0.01

5-en-4-one?						
α -Bisabolol	14.96	2162.3	0.33	13.69	1680.7	0.34
Total reported	99.02%			99.36%		

*: 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