

Date : 2025-07-24

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25G10-PTH02

Customer Identification : Lavender - Bulgaria - L40122R

Type : Essential Oil

Source : *Lavandula angustifolia*

Customer : Plant Therapy

Checked and approved by:

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

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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 : Jean-Christophe Fortin, M. Sc.

Date : 2025-07-22

PHYSICOCHEMICAL DATA

Refractive index : 1.4612 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-07-14

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
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	0.01	Aliphatic aldehyde
2-Ethylfuran	tr	Furan
Isoamyl alcohol	0.01	Aliphatic alcohol
2-Methylbutanol	0.01	Aliphatic alcohol
Toluene	0.01	Simple phenolic
Hexanal	0.01	Aliphatic aldehyde
Butyl acetate	0.03	Aliphatic ester
Methyl hexyl ether	0.12	Aliphatic ether
(3Z)-Hexenol	0.04	Aliphatic alcohol
Hexanol	0.10	Aliphatic alcohol
Tricyclene	0.02	Monoterpene
α -Thujene	0.10	Monoterpene
α -Pinene	0.18	Monoterpene
Camphene	0.13	Monoterpene
Butyl isobutyrate	0.02	Aliphatic ester
Sabinene	0.06	Monoterpene
β -Pinene	0.04	Monoterpene
Octen-3-ol	0.19	Aliphatic alcohol
6-Methyl-5-hepten-2-one	tr	Aliphatic ketone
Octan-3-one	1.30	Aliphatic ketone
Myrcene	0.53	Monoterpene
Butyl butyrate	0.11	Aliphatic ester
Octan-3-ol	0.23	Aliphatic alcohol
α -Phellandrene	0.04	Monoterpene
Pseudolimonene	0.01	Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	0.01	Monoterpenic ether
Δ^3 -Carene	0.10	Monoterpene
(3Z)-Hexenyl acetate	0.01	Aliphatic ester
α -Terpinene	0.04	Monoterpene
Hexyl acetate	0.63	Aliphatic ester
<i>meta</i> -Cymene	0.03	Monoterpene
<i>para</i> -Cymene	0.13	Monoterpene
β -Phellandrene	[0.85]	Monoterpene
Limonene	0.30	Monoterpene
1,8-Cineole	[0.85]	Monoterpenic ether
Lavender lactone	0.01	Aliphatic lactone
(Z)- β -Ocimene	4.55	Monoterpene
(E)- β -Ocimene	2.73	Monoterpene
γ -Terpinene	0.15	Monoterpene

<i>cis</i> -Sabinene hydrate	0.08	Monoterpenic alcohol
<i>cis</i> -Linalool oxide (fur.)	0.11	Monoterpenic alcohol
Octanol	0.01	Aliphatic alcohol
α -Pinene oxide analog	0.02	Monoterpenic ether
<i>trans</i> -Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Terpinolene	0.06	Monoterpene
Rosefuran	0.02	Monoterpenic ether
Linalool	31.41	Monoterpenic alcohol
(<i>Z</i>)-6-Methyl-3,5-heptadien-2-one	0.03	Aliphatic ketone
β -Thujone	0.04	Monoterpenic ketone
Octen-3-yl acetate	0.81	Aliphatic ester
Unknown	0.04	Unknown
Octan-3-yl acetate	0.13	Aliphatic ester
allo-Ocimene	0.08	Monoterpene
<i>trans</i> -Pinocarveol	0.03	Monoterpenic alcohol
(<i>Z</i>)-Myroxide	0.02	Monoterpenic ether
Camphor	0.17	Monoterpenic ketone
(<i>E</i>)-Myroxide	0.02	Monoterpenic ether
Hexyl isobutyrate	0.08	Aliphatic ester
Nerol oxide	0.01	Aliphatic ether
Borneol	0.46	Monoterpenic alcohol
<i>cis</i> -Linalool oxide (pyr.)	0.02	Monoterpenic alcohol
Lavandulol	0.97	Monoterpenic alcohol
(3 <i>E</i> ,5 <i>Z</i>)-Undeca-1,3,5-triene	0.07	Alkene
Terpinen-4-ol	4.00	Monoterpenic alcohol
<i>meta</i> -Cymen-8-ol	0.06	Monoterpenic alcohol
Cryptone	0.19	Normoterpenic ketone
<i>para</i> -Cymen-8-ol	0.07	Monoterpenic alcohol
α -Terpineol	0.89	Monoterpenic alcohol
Hexyl butyrate	0.41	Aliphatic ester
Verbenone	0.02	Monoterpenic ketone
Unknown	0.04	Unknown
(3 <i>E</i> ,5 <i>E</i>)-2,6-Dimethylocta-3,5,7-trien-2-ol	0.03	Monoterpenic alcohol
<i>trans</i> -Carveol	0.02	Monoterpenic alcohol
Nerol	0.15	Monoterpenic alcohol
Cuminal	0.07	Monoterpenic aldehyde
Hexyl 2-methylbutyrate	0.03	Aliphatic ester
Carvone	0.04	Monoterpenic ketone
Neral	0.04	Monoterpenic aldehyde
Hexyl isovalerate	0.01	Aliphatic ester
Linalyl acetate	30.45	Monoterpenic ester
Geraniol	0.36	Monoterpenic alcohol
Geranial	0.03	Monoterpenic aldehyde
iso-Isopulegyl acetate	0.03	Monoterpenic ester
2,6-Dimethyl-1,7-octadiene-3,6-diol	0.01	Monoterpenic alcohol

Bornyl acetate	0.03	Monoterpenic ester
Unknown	0.11	Unknown
Lavandulyl acetate	3.17	Monoterpenic ester
Thymol	0.02	Monoterpenic alcohol
Hexyl tiglate	0.05	Aliphatic ester
Hodiendiol derivative	0.02	Oxygenated monoterpene
Unknown	0.02	Oxygenated monoterpene
Unknown	0.02	Oxygenated monoterpene
Neryl acetate	0.25	Monoterpenic ester
α -Copaene	0.02	Sesquiterpene
β -Bourbonene	0.05	Sesquiterpene
Geranyl acetate	0.40	Monoterpenic ester
7-epi-Sesquithujene	0.08	Sesquiterpene
Hexyl hexanoate	0.08	Aliphatic ester
α -Funebrene	0.01	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
Sesquithujene	0.01	Sesquiterpene
Dodecanal	0.04	Aliphatic aldehyde
<i>cis</i> - α -Bergamotene	0.01	Sesquiterpene
β -Caryophyllene	3.88	Sesquiterpene
α -Santalene	0.42	Sesquiterpene
Coumarin	0.04	Coumarin
<i>trans</i> - α -Bergamotene	0.15	Sesquiterpene
Sesquisabinene A	0.03	Sesquiterpene
<i>cis</i> - β -Bergamotene?	0.04	Sesquiterpene
epi- β -Santalene	0.02	Sesquiterpene
α -Humulene	0.13	Sesquiterpene
Lavandulyl butyrate?	0.13	Monoterpenic ester
β -Santalene	0.19	Sesquiterpene
(<i>E</i>)- β -Farnesene	3.75	Sesquiterpene
Germacrene D	0.58	Sesquiterpene
<i>trans</i> - β -Bergamotene	0.06	Sesquiterpene
Isodaucene	0.02	Sesquiterpene
γ -Cadinene	0.13	Sesquiterpene
Lavandulyl isovalerate	0.01	Monoterpenic ester
β -Bisabolene	0.03	Sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
β -Sesquiphellandrene	0.04	Sesquiterpene
Isocaryophyllene epoxide B	0.03	Sesquiterpenic ether
<i>cis</i> -Sesquisabinene hydrate	0.03	Sesquiterpenic alcohol
(<i>E</i>)-Nerolidol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide	0.21	Sesquiterpenic ether
Caryophyllene oxide isomer	0.03	Sesquiterpenic ether
Humulene epoxide II	0.01	Sesquiterpenic ether
τ -Cadinol	0.06	Sesquiterpenic alcohol

(3Z)-Caryophylla-3,8(13)-dien-5 β -ol	0.02	Sesquiterpenic alcohol
(2Z,6Z)-Farnesol	0.01	Sesquiterpenic alcohol
<i>cis</i> -14-nor-Muurolo-5-en-4-one?	0.01	Norsesquiterpenic ketone
Herniarin	0.02	Coumarin
Hexahydrofarnesyl acetone	0.01	Terpene derivative
Pentylcurcumene?	0.02	Diterpene
Unknown UNKN CDIV [m/z 99, 69 (61), 71 (34), 43 (30), 81 (27)...]	0.03	Unknown
Consolidated total	99.12	

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

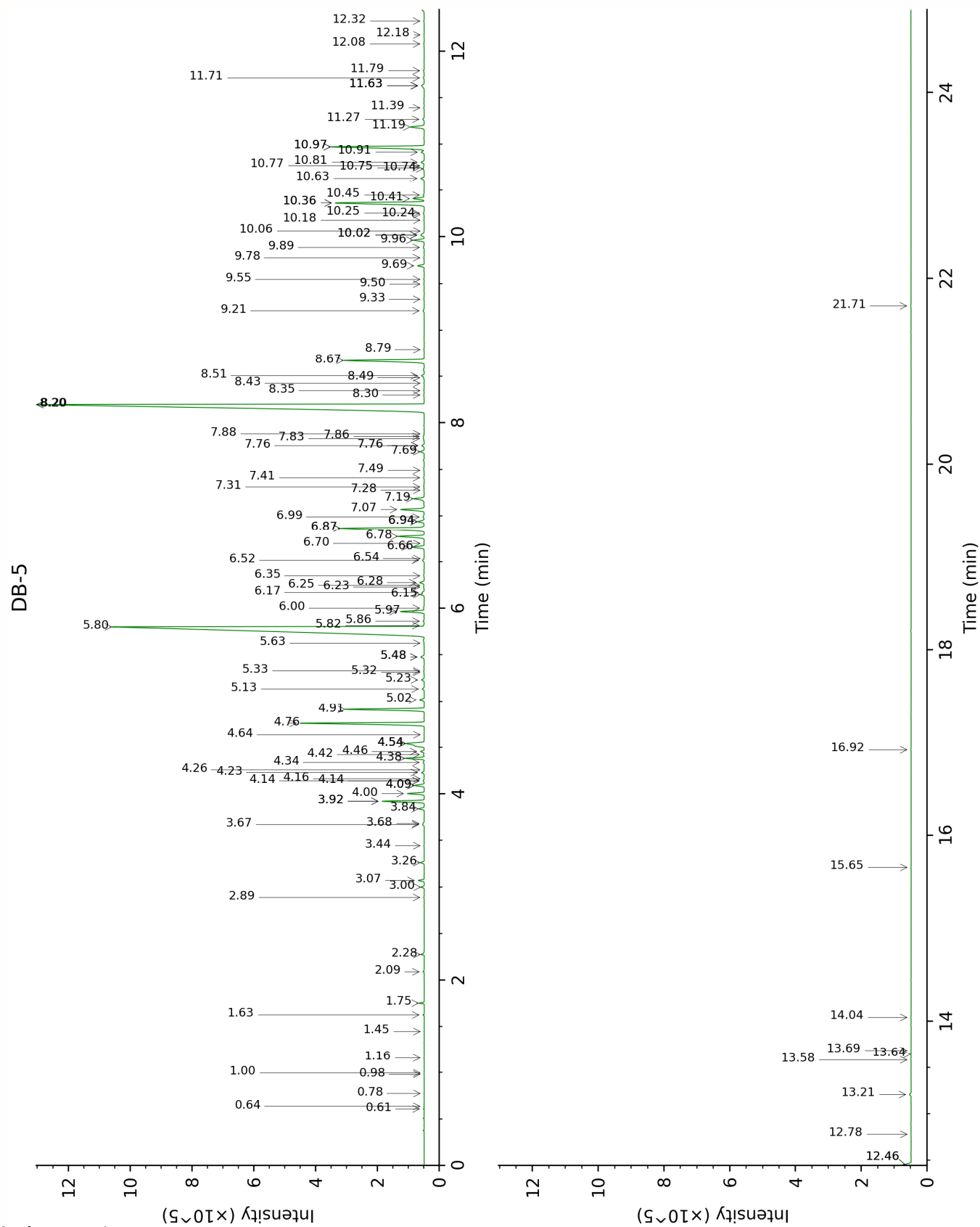
Note: no correction factor was applied

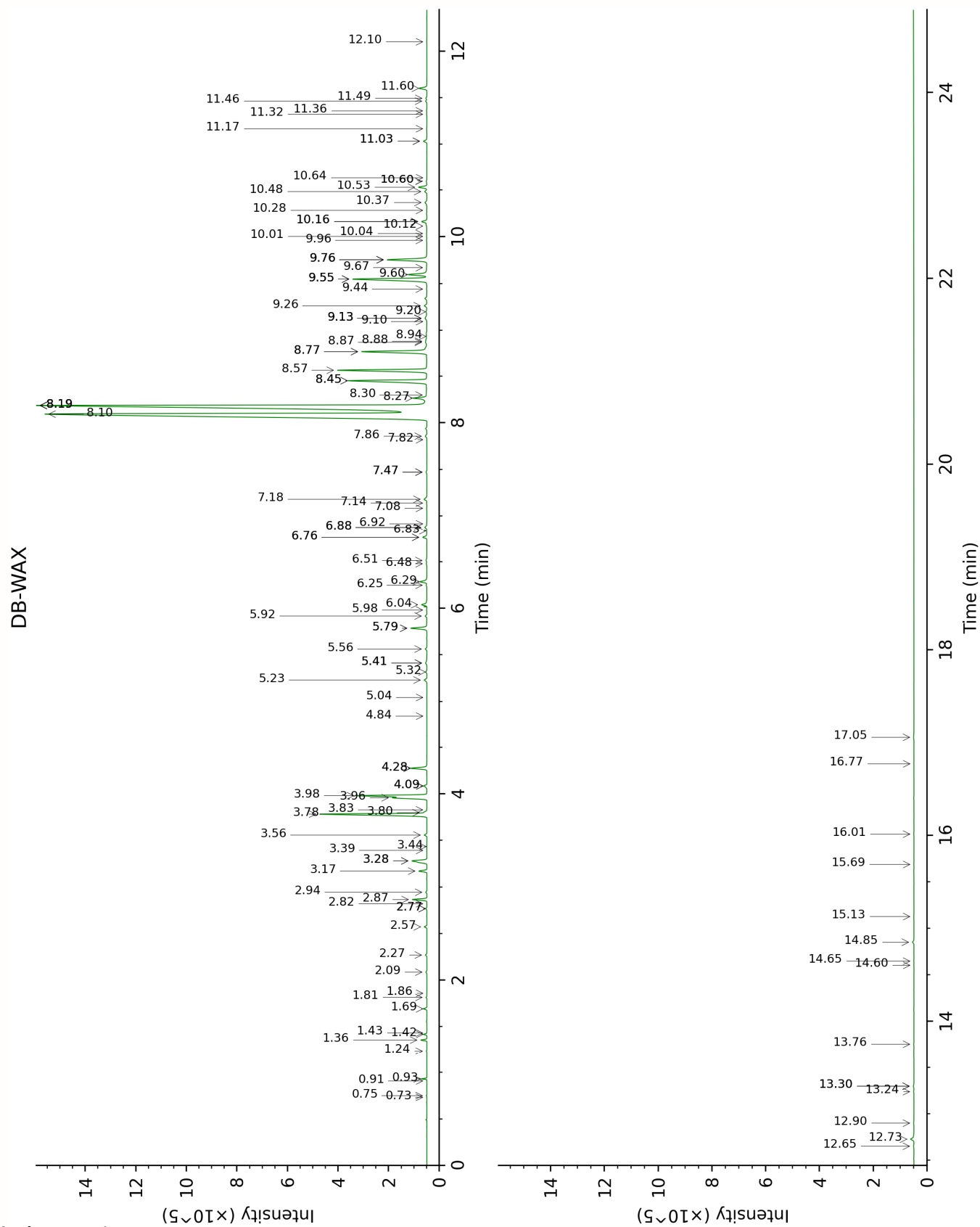
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

Isovaleral	Column DB-5			Column DB-WAX		
	0.61	641.8	0.01	0.75	882.3	0.01
2-Methylbutyral	0.64	651.9	0.01	0.73	875.7	tr
2-Ethylfuran	0.78	700.9	tr	0.91	916.4	tr
Isoamyl alcohol	0.98	732.6	0.01	3.39	1174.0	0.01
2-Methylbutanol	1.00	734.8	0.01	3.44	1177.3	0.01
Toluene	1.16	758.2	0.01	1.43	999.3	tr
Hexanal	1.45	799.5	0.01	1.86	1041.4	0.01
Butyl acetate	1.63	816.3	0.03	1.82	1037.0	0.03
Methyl hexyl ether	1.75	826.9	0.12	0.93	920.0	0.12
(3Z)-Hexenol	2.09	855.2	0.04	5.79*	1347.5	[0.70]
Hexanol	2.28	870.9	0.10	5.41*	1320.6	[0.10]
Tricyclene	2.89	918.6	0.02	1.24	969.0	0.02
α -Thujene	3.00	926.0	0.10	1.42	997.9	0.10
α -Pinene	3.07	930.8	0.18	1.36	988.4	0.18
Camphene	3.26	943.6	0.13	1.69	1024.9	0.12
Butyl isobutyrate	3.44	955.8	0.02	2.77*	1124.6	[0.03]
Sabinene	3.67	971.0	0.06	2.27	1082.2	0.05
β -Pinene	3.68	971.7	0.04	2.09	1064.0	0.04
Octen-3-ol	3.84	982.4	0.19	6.76*	1418.4	[0.18]
6-Methyl-5-hepten-2-one	3.92*	987.8	[1.35]	5.04	1297.8	tr
Octan-3-one	3.92*	987.8	[1.35]	3.96	1217.4	1.30
Myrcene	4.00	993.3	0.53	2.87	1132.3	0.52
Butyl butyrate	4.09*	999.1	[0.35]	3.56	1187.0	0.11
Octan-3-ol	4.09*	999.1	[0.35]	6.04	1365.7	0.23
α -Phellandrene	4.14*	1002.5	[0.04]	2.77*	1124.6	[0.03]
Pseudolimonene	4.14*	1002.5	[0.04]	2.82	1128.7	0.01
cis-Dehydroxylinalool oxide	4.16	1004.0	0.01	3.83	1207.9	0.01
Δ 3-Carene	4.23	1008.2	0.10	2.57	1109.1	0.09
(3Z)-Hexenyl acetate	4.26	1010.1	0.01	4.84	1282.4	tr
α -Terpinene	4.34	1015.1	0.04	2.94	1138.4	0.04
Hexyl acetate	4.38	1017.9	0.63	4.28*	1240.8	[0.69]
meta-Cymene	4.42	1020.4	0.03	4.09*	1226.8	[0.16]
para-Cymene	4.46	1022.5	0.13	4.09*	1226.8	[0.16]
β -Phellandrene	4.54*	1027.9	[1.15]	3.28*	1165.0	[0.87]
Limonene	4.54*	1027.9	[1.15]	3.17	1156.4	0.30
1,8-Cineole	4.54*	1027.9	[1.15]	3.28*	1165.0	[0.87]
Lavender lactone	4.64	1033.9	0.01	9.20	1604.1	0.06
(Z)- β -Ocimene	4.76	1041.8	4.55	3.78	1204.5	4.59
(E)- β -Ocimene	4.91	1051.3	2.73	3.98	1219.0	2.71

γ-Terpinene	5.02	1058.1	0.15	3.80	1205.6	0.10
cis-Sabinene hydrate	5.13	1065.5	0.08	6.88*	1426.8	[0.11]
cis-Linalool oxide (fur.)	5.23	1071.7	0.11	6.52	1399.9	0.06
Octanol	5.32	1077.0	0.01	8.19*†	1525.3	[29.71]
α-Pinene oxide analog	5.33	1077.9	0.02	5.41*	1320.6	[0.10]
trans-Linalool oxide (fur.)	5.48*	1087.4	[0.16]	6.88*	1426.8	[0.11]
Terpinolene	5.48*	1087.4	[0.16]	4.28*	1240.8	[0.69]
Rosefuran	5.63	1096.8	0.02	5.98	1361.6	0.02
Linalool	5.80	1108.0	31.41	8.10*†	1518.2	[33.11]
(Z)-6-Methyl-3,5-heptadien-2-one	5.82	1108.9	0.03	8.19*†	1525.3	[29.71]
β-Thujone	5.86	1112.0	0.04	6.25	1380.7	0.03
Octen-3-yl acetate	5.97	1118.7	0.81	5.79*	1347.5	[0.70]
Unknown LAAN I [m/z 82, 81 (72), 43 (64), 54 (32), 41 (20)...	6.00	1121.1	0.04	9.67	1642.4	0.03
Octan-3-yl acetate	6.15	1130.6	0.13	5.23	1307.4	0.14
allo-Ocimene	6.17	1131.9	0.08	5.56	1331.4	0.07
trans-Pinocarveol	6.23	1135.7	0.03	9.13*	1598.4	[0.15]
(Z)-Myroxide	6.25	1136.9	0.02	6.84	1423.7	0.02
Camphor	6.28	1138.8	0.17	7.18	1449.3	0.15
(E)-Myroxide	6.35	1143.5	0.02	7.08	1442.1	0.02
Hexyl isobutyrate	6.52	1154.4	0.08	5.32	1313.7	0.06
Nerol oxide	6.54	1155.6	0.01	6.92	1429.7	0.01
Borneol	6.66	1163.6	0.46	9.76*	1649.3	[1.98]
cis-Linalool oxide (pyr.)	6.70	1166.1	0.02	10.28	1692.1	0.02
Lavandulol	6.78	1171.1	0.97	9.60	1636.4	0.92
(3E,5Z)-Undeca-1,3,5-triene	6.87*	1177.0	[3.86]	5.92	1356.9	0.07
Terpinen-4-ol	6.87*	1177.0	[3.86]	8.57	1554.7	4.00
meta-Cymen-8-ol	6.94*	1181.8	[0.25]	11.46	1791.9	0.06
Cryptone	6.94*	1181.8	[0.25]	9.13*	1598.4	[0.15]
para-Cymen-8-ol	6.99	1185.0	0.07	11.49	1794.5	0.05
α-Terpineol	7.07	1190.3	0.89	9.76*	1649.3	[1.98]
Hexyl butyrate	7.19	1197.8	0.41	6.29	1383.4	0.33
Verbenone	7.28	1203.7	0.02	9.55*	1632.5	[3.84]
Unknown SASC VII [m/z 43, 71 (66), 59 (52), 41 (47), 68	7.31	1206.1	0.04	7.47*	1471.0	[0.04]

(46)...						
(3E,5E)-2,6-Dimethylocta-3,5,7-trien-2-ol	7.41	1212.8	0.03	11.32	1780.0	0.02
trans-Carveol	7.49	1218.2	0.02	11.36	1783.1	0.02
Nerol	7.69	1231.8	0.15	11.03*	1755.5	[0.17]
Cuminal	7.76*	1236.3	[0.10]	10.60*	1718.5	[0.05]
Hexyl 2-methylbutyrate	7.76*	1236.3	[0.10]	6.48	1397.3	0.03
Carvone	7.83	1241.4	0.04	9.96	1666.1	0.02
Neral	7.86	1243.0	0.04	9.44	1623.8	0.02
Hexyl isovalerate	7.88	1245.0	0.01	6.76*	1418.4	[0.18]
Linalyl acetate	8.20*	1266.3	[30.81]	8.19*†	1525.3	[29.71]
Geraniol	8.20*	1266.3	[30.81]	11.60	1804.0	0.36
Geranial	8.30	1273.4	0.03	10.12	1678.4	0.02
iso-Isopulegyl acetate	8.35	1276.6	0.03			
2,6-Dimethyl-1,7-octadiene-3,6-diol	8.43	1282.0	0.01	14.65	2085.4	0.01
Bornyl acetate	8.49	1286.1	0.03	8.30	1534.1	0.08
Unknown LAST II [m/z 43, 68 (68), 93 (50), 107 (38), 121 (36), 67 (33)...	8.51	1287.5	0.11	8.77*	1570.8	[3.07]
Lavandulyl acetate	8.67	1298.8	3.17	8.77*	1570.8	[3.07]
Thymol	8.79	1307.1	0.02	15.13	2133.1	0.01
Hexyl tiglate	9.21	1333.1	0.05	8.88	1579.4	0.07
Hodiendiol derivative	9.33	1341.9	0.02	12.90	1920.1	0.03
Unknown SASC II [m/z 43, 79 (47), 71 (31), 94 (27), 81 (23), 41 (22)... 197 (0)]	9.50	1353.4	0.02	11.03*	1755.5	[0.17]
Unknown SASC III [m/z 43, 79 (46), 71 (30), 94 (25), 41 (23), 81 (21)... 197 (0)]	9.55	1357.0	0.02	11.17	1766.8	0.02
Neryl acetate	9.69	1367.3	0.25	10.16*	1682.4	[0.23]
α-Copaene	9.78	1373.4	0.02	7.14	1446.3	0.02
β-Bourbonene	9.89	1381.3	0.05	7.47*	1471.0	[0.04]
Geranyl acetate	9.96	1386.8	0.40	10.53	1712.9	0.37
7-epi-Sesquithujene	10.02*	1390.7	[0.20]	7.86	1499.8	0.08
Hexyl hexanoate	10.02*	1390.7	[0.20]	8.87	1578.5	0.08
α-Funebrene	10.06	1393.7	0.01	7.82	1496.9	tr

Isocaryophyllene	10.18	1402.0	0.02	8.19*†	1525.3	[29.71]
Sesquithujene	10.24	1406.3	0.01	8.19*†	1525.3	[29.71]
Dodecanal	10.25	1407.5	0.04	10.04	1672.0	0.02
cis- α -Bergamotene	10.36*	1415.7	[3.89]	8.19*†	1525.3	[29.71]
β -Caryophyllene	10.36*	1415.7	[3.89]	8.45*	1546.0	[4.03]
α -Santalene	10.41	1419.2	0.42	8.27	1531.5	0.70
Coumarin	10.45	1422.0	0.04	17.05	2332.8	0.03
trans- α -Bergamotene	10.63	1435.8	0.15	8.45*	1546.0	[4.03]
Sesquisabinene A	10.74	1443.6	0.03	9.10	1595.7	0.01
cis- β -Bergamotene?	10.75	1444.3	0.04			
epi- β -Santalene	10.77	1446.1	0.02	8.94	1583.4	0.03
α -Humulene	10.81	1449.0	0.13	9.26	1609.4	0.14
Lavandulyl butyrate?	10.92	1457.0	0.13	10.48	1709.0	0.11
β -Santalene	10.97*	1461.3	[3.94]	9.13*	1598.4	[0.15]
(E)- β -Farnesene	10.97*	1461.3	[3.94]	9.55*	1632.5	[3.84]
Germacrene D	11.19	1477.3	0.58	9.76*	1649.3	[1.98]
trans- β -Bergamotene	11.27	1483.5	0.06	9.55*	1632.5	[3.84]
Isodaucene	11.39	1492.7	0.02	10.01	1669.5	0.02
γ -Cadinene	11.63*	1510.8	[0.17]	10.37	1699.1	0.13
Lavandulyl isovalerate	11.63*	1510.8	[0.17]	10.64	1722.2	0.01
β -Bisabolene	11.63*	1510.8	[0.17]	10.16*	1682.4	[0.23]
Unknown CULO LIV [m/z 121, 93 (56), 91 (12), 94 (11), 122 (10)...220]	11.71	1517.4	0.04	13.30*	1956.8	[0.04]
β -Sesquiphellandrene	11.79	1523.6	0.04	10.60*	1718.5	[0.05]
Isocaryophyllene epoxide B	12.08	1546.3	0.03	12.10	1848.2	0.02
cis-Sesquisabinene hydrate	12.18	1553.9	0.03	13.24	1951.4	0.02
(E)-Nerolidol	12.32	1565.6	0.03	13.76	1999.4	0.01
Caryophyllene oxide	12.46*	1576.1	[0.27]	12.73	1904.1	0.21
Caryophyllene oxide isomer	12.46*	1576.1	[0.27]	12.65	1897.1	0.03
Humulene epoxide II	12.78	1601.7	0.01	13.30*	1956.8	[0.04]
τ -Cadinol	13.21	1637.0	0.06	14.85	2105.5	0.08
(3Z)-Caryophylla-3,8(13)-dien-5 β -ol	13.58	1668.1	0.02	16.77	2302.1	0.01

(2Z,6Z)-Farnesol	13.64	1673.2	0.01	16.01	2223.0	0.01
cis-14-nor-Muurool-5-en-4-one?	13.69	1676.7	0.01	15.69	2189.2	0.01
Herniarin	14.04	1706.4	0.02			
Hexahydrofarnesyl acetone	15.66	1848.6	0.01	14.60	2081.2	0.01
Pentylcurcumene?	16.92	1966.4	0.02			
Unknown UNKN CDIV [m/z 99, 69 (61), 71 (34), 43 (30), 81 (27)...]	21.71	2472.9	0.03			
Total reported	99.10%			98.97%		

*: 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