

Date : 2025-05-14

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25D01-PTH05

Customer Identification : Organic Ylang Ylang Complete - Madagascar - Y80109R

Type : Essential Oil

Source : *Cananga odorata* var. *genuina* (Ylang-ylang)

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

This report is an update from the first version issued on 2025-04-09 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 : 2025-04-07

PHYSICOCHEMICAL DATA

Refractive index : 1.5013 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-04-02

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
2-Methyl-3-buten-2-ol	0.02	Aliphatic alcohol
Octane	tr	Alkane
Butyl acetate	tr	Aliphatic ester
Isoamyl acetate	0.02	Aliphatic ester
2-Methylbutyl acetate	0.01	Aliphatic ester
3-Methyl-3-butenyl acetate	0.05	Aliphatic ester
Prenyl acetate	0.12	Aliphatic ester
α -Pinene	0.21	Monoterpene
Camphene	0.01	Monoterpene
Benzaldehyde	0.03	Simple phenolic
Sabinene	0.01	Monoterpene
β -Pinene	0.07	Monoterpene
6-Methyl-5-hepten-2-one	0.02	Aliphatic ketone
Myrcene	0.09	Monoterpene
(3Z)-Hexenyl acetate	0.05	Aliphatic ester
<i>para</i> -Methylanisole	3.44	Simple phenolic
Hexyl acetate	0.03	Aliphatic ester
1,8-Cineole	0.22	Monoterpenic ether
Limonene	0.02	Monoterpene
(Z)- β -Ocimene	0.03	Monoterpene
(E)- β -Ocimene	0.02	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Terpinolene	0.01	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Methyl benzoate	1.96	Phenolic ester
Nonanal	0.01	Aliphatic aldehyde
Linalool	8.50	Monoterpenic alcohol
<i>ortho</i> -Dimethoxybenzene	0.02	Simple phenolic
Benzyl acetate	1.94	Phenolic ester
<i>para</i> -Cresyl acetate	0.03	Phenolic ester
Ethyl benzoate	0.06	Phenolic ester
α -Terpineol	0.16	Monoterpenic alcohol
Methyl salicylate	0.02	Phenolic ester
Methylchavicol	0.03	Phenylpropanoid
Nerol	0.03	Monoterpenic alcohol
Neral	0.03	Monoterpenic aldehyde
Phenylethyl acetate	0.03	Phenolic ester
Geraniol	1.37	Monoterpenic alcohol
Geranial	0.09	Monoterpenic aldehyde
(E)-Anethole	0.06	Phenylpropanoid

1-Nitro-2-phenylethane	0.09	Simple phenolic
Benzyl butyrate	0.12	Phenolic ester
α -Cubebene	0.17	Sesquiterpene
Eugenol	0.41	Phenylpropanoid
α -Ylangene	0.17	Sesquiterpene
α -Copaene	1.01	Sesquiterpene
β -Bourbonene	0.01	Sesquiterpene
Geranyl acetate	7.55	Monoterpenic ester
β -Elemene	0.44	Sesquiterpene
Cyperene	0.05	Sesquiterpene
Methyleugenol	0.03	Phenylpropanoid
β -Ylangene	0.45	Sesquiterpene
β -Caryophyllene	11.98	Sesquiterpene
Caryophylla-4(12),8(13)-diene	0.09	Sesquiterpene
β -Copaene	0.36	Sesquiterpene
Aromadendrene	0.06	Sesquiterpene
Isogermacrene D	0.03	Sesquiterpene
9-epi-Isocaryophyllene	0.02	Sesquiterpene
<i>trans</i> -Muuro-la-3,5-diene	0.18	Sesquiterpene
(<i>E</i>)-Cinnamyl acetate	0.70	Phenylpropanoid ester
ϵ -Muuro-lene?	0.12	Sesquiterpene
α -Humulene	3.23	Sesquiterpene
(<i>E</i>)-Isoeugenol	0.13	Phenylpropanoid
allo-Aromadendrene	0.02	Sesquiterpene
<i>cis</i> -Cadina-1(6),4-diene	0.17	Sesquiterpene
<i>cis</i> -Muuro-la-4(15),5-diene	0.10	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.22	Sesquiterpene
Germacrene D	17.60	Sesquiterpene
<i>trans</i> -Muuro-la-4(15),5-diene	0.03	Sesquiterpene
Prenyl benzoate	0.44	Phenolic ester
epi-Cubebol	0.05	Sesquiterpenic alcohol
Viridiflorene	0.08	Sesquiterpene
Bicyclogermacrene	0.96	Sesquiterpene
(3 <i>Z</i> ,6 <i>E</i>)- α -Farnesene	0.03	Sesquiterpene
α -Muuro-lene	0.91	Sesquiterpene
Unknown	1.51	Sesquiterpene
δ -Amorphene	0.46	Sesquiterpene
(<i>Z</i>)- γ -Bisabolene	0.45	Sesquiterpene
γ -Cadinene	0.77	Sesquiterpene
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	7.75	Sesquiterpene
Cubebol	0.06	Sesquiterpenic alcohol
<i>trans</i> -Calamenene	0.11	Sesquiterpene
δ -Cadinene	3.05	Sesquiterpene
Zonarene	0.20	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.20	Sesquiterpene

α -Cadinene	0.26	Sesquiterpene
α -Calacorene	0.05	Sesquiterpene
<i>cis</i> -Dracunculifolol	0.02	Sesquiterpenic alcohol
α -Elemol	0.09	Sesquiterpenic alcohol
Germacrene B	0.05	Sesquiterpene
(<i>E</i>)-Nerolidol	0.10	Sesquiterpenic alcohol
(3 <i>Z</i>)-Hexenyl benzoate	0.08	Phenolic ester
Spathulenol	0.05	Sesquiterpenic alcohol
Caryophyllene oxide	0.25	Sesquiterpenic ether
Caryophyllene oxide isomer	0.12	Sesquiterpenic ether
Unknown	0.10	Sesquiterpenic alcohol
Unknown	0.10	Oxygenated sesquiterpene
Viridiflorol	0.03	Sesquiterpenic alcohol
Humulene epoxide I	0.01	Sesquiterpenic ether
Guaiol	0.06	Sesquiterpenic alcohol
Copaborneol	0.06	Sesquiterpenic alcohol
Humulene epoxide II	0.07	Sesquiterpenic ether
1,10-diepi-Cubenol	0.09	Sesquiterpenic alcohol
(<i>E</i>)-Isoeugenyl acetate	0.02	Phenylpropanoid ester
Junenol	0.30	Sesquiterpenic alcohol
1-epi-Cubenol	0.24	Sesquiterpenic alcohol
γ -Eudesmol	0.13	Sesquiterpenic alcohol
τ -Muurolol	0.78	Sesquiterpenic alcohol
τ -Cadinol	0.39	Sesquiterpenic alcohol
Cubenol	0.18	Sesquiterpenic alcohol
α -Muurolol	0.39	Sesquiterpenic alcohol
Unknown	0.25	Sesquiterpenic alcohol
α -Cadinol	1.43	Sesquiterpenic alcohol
<i>cis</i> -Calamenen-10-ol	0.03	Sesquiterpenic alcohol
Bulnesol	0.04	Sesquiterpenic alcohol
Unknown	0.15	Oxygenated sesquiterpene
Eudesma-4(15),7-dien-1 β -ol	0.03	Sesquiterpenic alcohol
(2 <i>Z</i> ,6 <i>E</i>)-Farnesol	0.01	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	1.39	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesal	0.04	Sesquiterpenic aldehyde
Benzyl benzoate	6.15	Phenolic ester
Unknown	0.04	Unknown
(2 <i>E</i> ,6 <i>E</i>)-Farnesyl acetate	1.48	Sesquiterpenic ester
Benzyl salicylate	1.74	Phenolic ester
Unknown	0.02	Unknown
Unknown	0.01	Unknown
Unknown	0.02	Unknown
Geranyl benzoate	0.11	Phenolic ester
Unknown	0.12	Unknown
Unknown	0.04	Unknown

Consolidated total	98.54	
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tr: The compound has been detected below 0.005% of the total signal

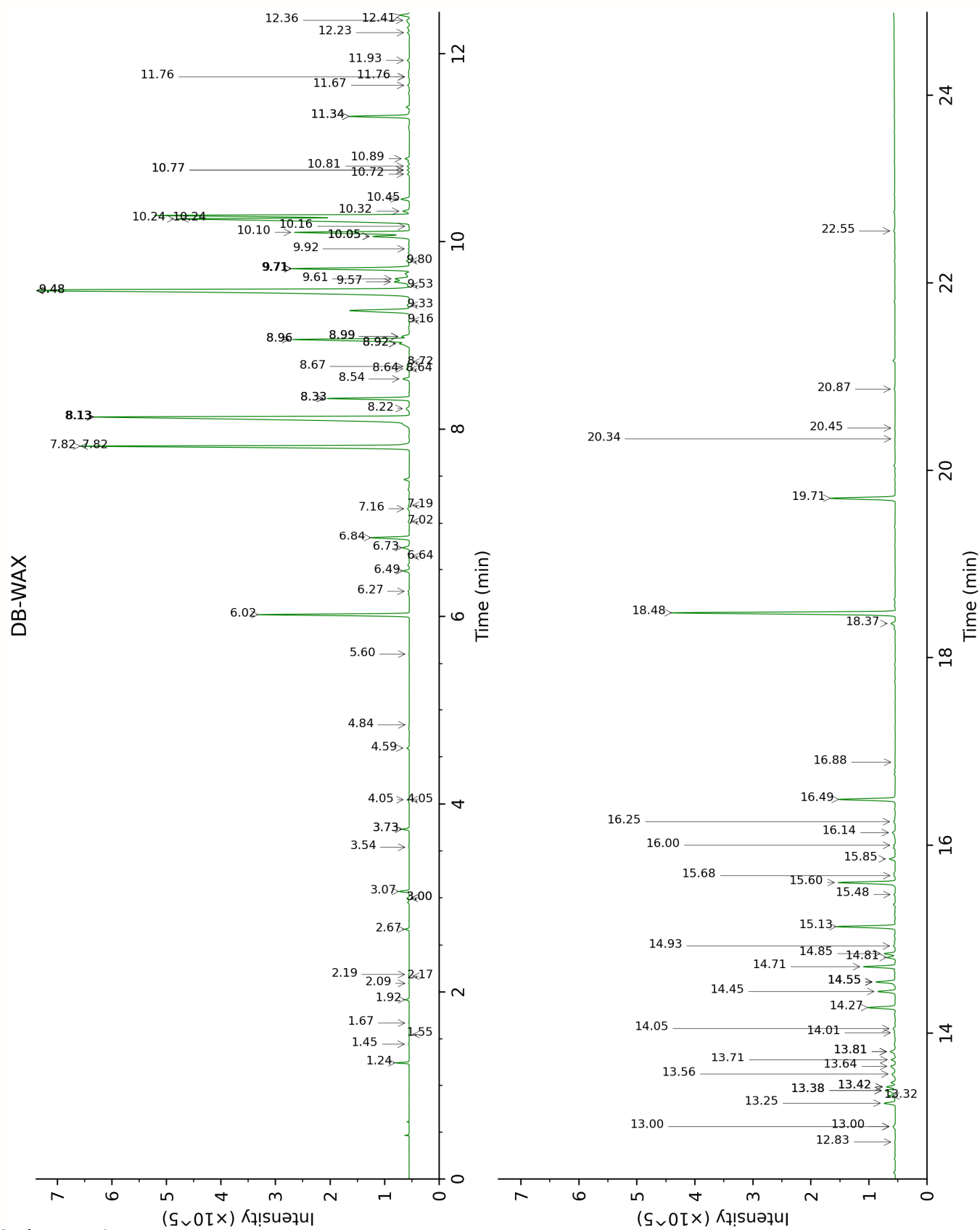
Note: no correction factor was applied

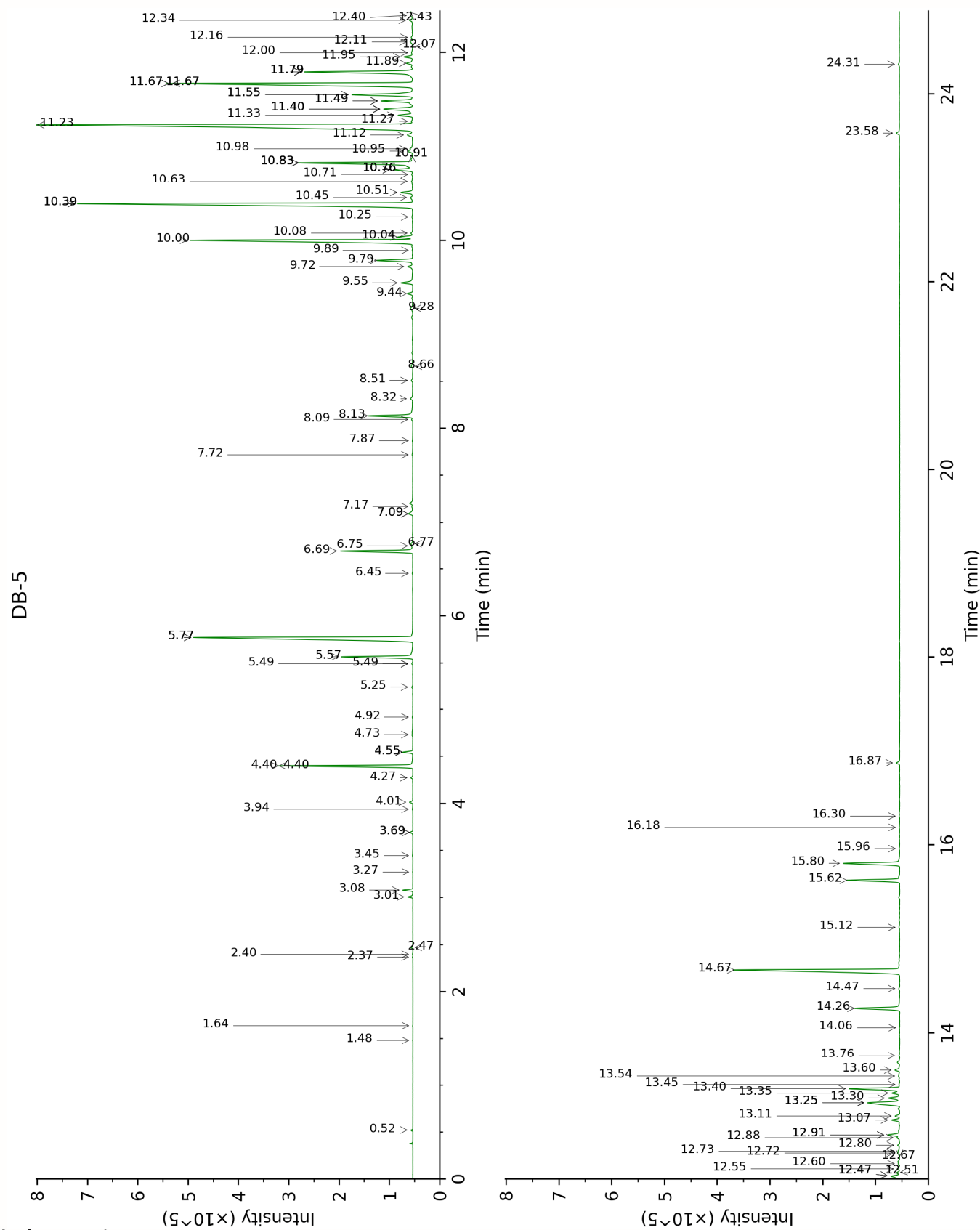
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

2-Methyl-3-buten-2-ol	Column DB-WAX			Column DB-5		
	1.45	1011.9	0.01	0.52	603.5	0.02
Octane				1.48	800.2	tr
Butyl acetate	1.67	1035.5	0.01	1.64	814.1	tr
Isoamyl acetate	2.19	1089.8	0.01	2.37	875.7	0.02
2-Methylbutyl acetate	2.17	1087.8	0.01	2.40	878.3	0.01
3-Methyl-3-butenyl acetate	3.00*	1156.8	[0.05]	2.47	884.4	0.05
Prenyl acetate	3.73*	1214.5	[0.15]	3.01	924.1	0.12
α -Pinene	1.24	986.5	0.20	3.08	929.0	0.21
Camphene	1.55	1022.8	0.01	3.27	941.8	0.01
Benzaldehyde	7.02	1458.0	0.03	3.45	953.5	0.03
Sabinene	2.09	1079.9	0.01	3.69*	970.1	[0.08]
β -Pinene	1.92	1061.6	0.07	3.69*	970.1	[0.08]
6-Methyl-5-hepten-2-one	4.84	1296.3	tr	3.94	986.5	0.02
Myrcene	2.67	1130.1	0.09	4.02	991.6	0.09
(3Z)-Hexenyl acetate	4.60	1278.0	0.05	4.27	1008.6	0.05
<i>para</i> -Methylanisole	6.02	1383.0	3.44	4.40*	1016.6	[3.47]
Hexyl acetate	4.05*	1237.5	[0.04]	4.40*	1016.6	[3.47]
1,8-Cineole	3.07	1162.6	0.22	4.55*	1025.8	[0.25]
Limonene	3.00*	1156.8	[0.05]	4.55*	1025.8	[0.25]
(Z)- β -Ocimene	3.54	1200.3	0.02	4.73	1037.6	0.03
(E)- β -Ocimene	3.73*	1214.5	[0.15]	4.92	1049.3	0.02
<i>cis</i> -Linalool oxide (fur.)	6.27	1401.3	0.03	5.24	1070.0	0.03
Terpinolene	4.05*	1237.5	[0.04]	5.49*	1085.6	[0.03]
<i>trans</i> -Linalool oxide (fur.)	6.64	1429.3	0.02	5.49*	1085.6	[0.03]
Methyl benzoate	8.33*	1559.3	[1.95]	5.57	1090.3	1.96
Nonanal	5.60	1352.2	0.01	5.77*	1103.3	[8.51]
Linalool	7.82*	1519.4	[8.68]	5.77*	1103.3	[8.51]
<i>ortho</i> -Dimethoxybenzene				6.45	1147.0	0.02
Benzyl acetate	9.71*	1671.5	[3.20]	6.69	1162.2	1.94
<i>para</i> -Cresyl acetate	9.71*	1671.5	[3.20]	6.74	1165.8	0.03
Ethyl benzoate	8.96*	1609.7	[3.29]	6.77	1167.3	0.06
α -Terpineol	9.48*	1652.3	[17.27]	7.09*	1188.1	[0.18]
Methyl salicylate	10.16	1708.7	0.02	7.09*	1188.1	[0.18]
Methylchavicol	8.99*	1612.3	[0.22]	7.17	1193.1	0.03
Nerol	10.72	1756.8	0.05	7.72	1229.5	0.03
Neral	9.16	1626.3	0.03	7.87	1239.7	0.03

Phenylethyl acetate	10.76*	1760.5	[0.05]	8.09	1254.7	0.03
Geraniol	11.34*	1810.0	[1.45]	8.13	1257.3	1.37
Geranial	9.80	1678.3	0.07	8.32	1269.5	0.09
(E)-Anethole	10.81	1764.1	0.05	8.51	1282.5	0.06
1-Nitro-2-phenylethane	13.81*	2038.2	[0.19]	8.66	1292.7	0.09
Benzyl butyrate	11.34*	1810.0	[1.45]	9.28	1336.1	0.12
α -Cubebene	6.49	1417.7	0.15	9.44	1347.0	0.17
Eugenol	14.44	2100.3	0.44	9.55	1355.1	0.41
α -Ylangene	6.73	1436.4	0.18	9.72	1367.2	0.17
α -Copaene	6.84	1444.5	0.96	9.79	1371.9	1.01
β -Bourbonene	7.19	1471.0	0.02	9.89	1379.4	0.01
Geranyl acetate	10.24*†	1715.5	[8.55]	10.00	1387.0	7.55
β -Elemene	8.13*	1543.8	[12.77]	10.04	1389.3	0.44
Cyperene	7.16	1468.3	0.05	10.08	1392.3	0.05
Methyleugenol	13.00*	1961.5	[0.09]	10.25	1404.5	0.03
β -Ylangene	7.82*	1519.4	[8.68]	10.39*	1414.9	[12.42]
β -Caryophyllene	8.13*	1543.8	[12.77]	10.39*	1414.9	[12.42]
Caryophylla-4(12),8(13)-diene	8.33*	1559.3	[1.95]	10.45	1419.8	0.09
β -Copaene	8.13*	1543.8	[12.77]	10.51	1423.8	0.36
Aromadendrene	8.22	1550.9	0.12	10.63	1432.9	0.06
Isogermacrene D	8.64*†	1584.1	[0.08]	10.70	1438.5	0.03
9-epi-Isocaryophyllene	8.72	1589.8	0.02	10.76*	1442.3	[0.59]
<i>trans</i> -Muuro-3,5-diene	8.54	1575.7	0.18	10.76*	1442.3	[0.59]
(E)-Cinnamyl acetate	14.27	2083.7	0.70	10.76*	1442.3	[0.59]
ϵ -Muuro-1?	8.92*	1606.1	[0.33]	10.83*	1447.8	[3.63]
α -Humulene	8.96*	1609.7	[3.29]	10.83*	1447.8	[3.63]
(E)-Isoeugenol	16.14	2273.3	0.13	10.83*	1447.8	[3.63]
allo-Aromadendrene	8.64*†	1584.1	[0.08]	10.91	1454.1	0.02
<i>cis</i> -Cadina-1(6),4-diene	8.67†	1586.2	0.07	10.95	1457.1	0.17
<i>cis</i> -Muuro-4(15),5-diene	8.99*	1612.3	[0.22]	10.98	1458.9	0.10
<i>trans</i> -Cadina-1(6),4-diene	8.92*	1606.1	[0.33]	11.12	1469.9	0.22
Germacrene D	9.48*	1652.3	[17.27]	11.23	1477.8	17.60
<i>trans</i> -Muuro-4(15),5-diene	9.53	1656.7	0.05	11.27	1480.7	0.03
Prenyl benzoate	13.38*	1997.3	[0.33]	11.33	1485.5	0.44

epi-Cubebol	11.67	1839.5	0.05	11.40*	1490.4	[1.10]
Viridiflorene	9.33	1639.6	0.08	11.40*	1490.4	[1.10]
Bicyclogermacrene	9.71*	1671.5	[3.20]	11.40*	1490.4	[1.10]
(3Z,6E)- α -Farnesene	9.92	1688.7	0.03	11.49*	1496.8	[0.94]
α -Muurolene	9.71*	1671.5	[3.20]	11.49*	1496.8	[0.94]
Unknown CAOD II [m/z 119, 41 (95), 123 (53), 80 (49), 161 (44), 105 (42)... 204 (2)]				11.55*	1501.8	[1.97]
δ -Amorphene	9.57	1660.0	0.46	11.55*	1501.8	[1.97]
(Z)- γ -Bisabolene	9.61	1662.6	0.45	11.67*	1511.1	[9.03]
γ -Cadinene	10.05*	1699.6	[1.01]	11.67*	1511.1	[9.03]
(3E,6E)- α -Farnesene	10.24*†	1715.5	[8.55]	11.67*	1511.1	[9.03]
Cubebol	12.23	1889.8	0.06	11.67*	1511.1	[9.03]
<i>trans</i> -Calamenene	10.89	1771.0	0.11	11.79*	1520.7	[3.37]
δ -Cadinene	10.10	1703.2	3.05	11.79*	1520.7	[3.37]
Zonarene	10.05*	1699.6	[1.01]	11.79*	1520.7	[3.37]
<i>trans</i> -Cadina-1,4-diene	10.32	1722.5	0.19	11.89	1527.9	0.20
α -Cadinene	10.45	1733.5	0.23	11.95	1533.2	0.26
α -Calacorene	11.76*	1847.7	[0.04]	12.00	1536.7	0.05
<i>cis</i> -Dracunculifolol	11.76*	1847.7	[0.04]	12.07	1542.1	0.02
α -Elemol	13.71	2029.1	0.10	12.11	1545.7	0.09
Germacrene B	10.76*	1760.5	[0.05]	12.16	1549.5	0.05
(E)-Nerolidol	13.42*	2000.9	[0.23]	12.34	1563.8	0.10
(3Z)-Hexenyl benzoate	14.05	2062.0	0.07	12.40	1568.0	0.08
Spathulenol	14.01	2057.7	0.02	12.43	1570.4	0.05
Caryophyllene oxide	12.41	1906.8	0.25	12.47*	1573.8	[0.34]
Caryophyllene oxide isomer	12.36	1901.5	0.12	12.47*	1573.8	[0.34]
Unknown cadinol or muurolol analog [m/z 161, 119 (77), 120 (76), 105 (73), 93 (57)... 204 (36)]	11.93	1863.4	0.06	12.51	1576.6	0.10
Unknown MECA III [m/z 161, 105 (84), 43 (80), 119 (72), 93 (62), 121 (54)... 204 (38), 222 (2)]	13.56	2014.2	0.14	12.55	1579.9	0.10
Viridiflorol	13.64	2022.3	0.17	12.60	1584.2	0.03

Humulene epoxide I	12.83	1946.1	0.03	12.67	1589.7	0.01
Guaiaol	13.81*	2038.2	[0.19]	12.72	1593.1	0.06
Copaborneol	14.55*	2110.6	[0.55]	12.74	1594.5	0.06
Humulene epoxide II	13.00*	1961.5	[0.09]	12.80	1599.6	0.07
1,10-diepi-Cubenol	13.38*	1997.3	[0.33]	12.88	1606.0	0.09
(E)-Isoeugenyl acetate	16.88	2353.5	0.02	12.91*	1608.5	[0.37]
Junenol	13.25	1984.7	0.30	12.91*	1608.5	[0.37]
1-epi-Cubenol	13.42*	2000.9	[0.23]	13.07	1621.6	0.24
γ-Eudesmol	14.55*	2110.6	[0.55]	13.11	1625.1	0.13
τ-Muurolol	14.71	2127.0	0.78	13.25*	1636.7	[1.34]
τ-Cadinol	14.55*	2110.6	[0.55]	13.25*	1636.7	[1.34]
Cubenol	13.32	1991.8	0.18	13.25*	1636.7	[1.34]
α-Muurolol	14.85	2141.0	0.28	13.30	1640.8	0.39
Unknown cadinol analog II [m/z 95, 121 (73), 43 (57), 79 (43), 161 (43), 109 (40)... 204 (35), 222 (2)]	14.81	2136.9	0.21	13.35	1645.3	0.25
α-Cadinol	15.13	2169.9	1.49	13.40	1649.0	1.43
cis-Calamenen-10-ol	16.00	2259.2	0.04	13.45	1652.8	0.03
Bulnesol	14.93	2149.1	0.07	13.54	1660.3	0.04
Unknown CAOD I [m/z 123, 95 (31), 81 (29), 105 (27)... 222 (5)]	15.85	2244.0	0.16	13.60	1665.5	0.15
Eudesma-4(15),7-dien-1β-ol	15.68	2225.5	0.04	13.76	1678.5	0.03
(2Z,6E)-Farnesol	16.25	2285.4	0.06	14.06	1703.2	0.01
(2E,6E)-Farnesol	16.49	2310.7	1.41	14.26	1721.0	1.39
(2E,6E)-Farnesal	15.48	2204.4	0.04	14.47	1739.2	0.04
Benzyl benzoate	18.48	2532.4	6.09	14.67	1756.4	6.15
Unknown CAOD VII [m/z 121, 107 (86), 81 (71), 93 (71), 59 (68), 43 (67)...]				15.12	1795.4	0.04
(2E,6E)-Farnesyl acetate	15.60	2217.8	1.49	15.62	1840.5	1.48
Benzyl salicylate	19.71	2677.2	1.76	15.80	1856.7	1.74
Unknown THAR VI [m/z 91, 93 (98), 81	20.45	2768.9	0.02	15.96	1871.0	0.02

(92), 41 (92), 105 (86), 107 (86)...						
Unknown THAR VII [m/z 123, 81 (96), 41 (74), 43 (64), 91 (62), 95 (57)...	20.34	2754.7	0.01	16.18	1891.4	0.01
Unknown THAR VIII [m/z 123, 81 (47), 43 (35), 91 (30), 41 (27), 79 (24)...	20.87	2820.9	0.04	16.30	1902.2	0.02
Geranyl benzoate	18.37	2519.2	0.14	16.87	1955.8	0.11
Unknown CAOD XIII [m/z 326, 327 (22), 311 (17), 137 (8), 202 (7)...				23.58	2690.1	0.12
Unknown CAOD XI [m/z 69, 81 (42), 147 (26), 119 (25), 93 (25), 41 (24)...	22.55	3040.8	0.05	24.31	2783.6	0.04
Total reported		95.16%			98.42%	

*: 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