

Date : 2025-07-03

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25F16-PTH02

Customer Identification : Cananga - Indonesia - CR3104R

Type : Essential Oil

Source : *Cananga odorata* var. *macrophylla* (Cananga)

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

Date : 2025-07-02

PHYSICOCHEMICAL DATA

Refractive index : 1.5023 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-06-17

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-Methylbutyl acetate	tr	Aliphatic ester
α -Thujene	0.03	Monoterpene
α -Pinene	0.08	Monoterpene
Camphene	0.01	Monoterpene
Benzaldehyde	tr	Simple phenolic
β -Pinene	0.02	Monoterpene
Sabinene	0.07	Monoterpene
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Myrcene	0.25	Monoterpene
α -Phellandrene	0.01	Monoterpene
Δ^3 -Carene	tr	Monoterpene
(3Z)-Hexenyl acetate	0.01	Aliphatic ester
α -Terpinene	0.08	Monoterpene
<i>para</i> -Methylanisole	1.74	Simple phenolic
<i>para</i> -Cymene	0.02	Monoterpene
Limonene	0.04	Monoterpene
β -Phellandrene	0.03	Monoterpene
(Z)- β -Ocimene	0.03	Monoterpene
(E)- β -Ocimene	0.03	Monoterpene
γ -Terpinene	0.14	Monoterpene
Terpinolene	0.05	Monoterpene
<i>para</i> -Cresol	0.05	Simple phenolic
Methyl benzoate	0.01	Phenolic ester
Linalool	1.54	Monoterpenic alcohol
Nonanal	0.02	Aliphatic aldehyde
<i>cis-para</i> -Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Benzeneacetonitrile	0.01	Simple phenolic
<i>trans-para</i> -Menth-2-en-1-ol	0.01	Monoterpenic alcohol
Benzyl acetate	0.03	Phenolic ester
<i>para</i> -Cresyl acetate	0.01	Phenolic ester
Terpinen-4-ol	0.25	Monoterpenic alcohol
α -Terpineol	0.05	Monoterpenic alcohol
Methylchavicol	0.07	Phenylpropanoid
Nerol	0.04	Monoterpenic alcohol
Neral	0.06	Monoterpenic aldehyde
3,4-Dimethoxytoluene	0.01	Phenolic ester
Geraniol	0.86	Monoterpenic alcohol
Geranial	0.06	Monoterpenic aldehyde
(E)-Anethole	0.02	Phenylpropanoid
1-Nitro-2-phenylethane	0.01	Simple phenolic

4-Vinylguaiaicol	0.01	Simple phenolic
Bicycloelemene	0.05	Sesquiterpene
Benzyl butyrate	0.11	Phenolic ester
α -Cubebene	0.24	Sesquiterpene
Eugenol	0.29	Phenylpropanoid
α -Ylangene	0.25	Sesquiterpene
α -Copaene	1.37	Sesquiterpene
β -Bourbonene	0.01	Sesquiterpene
β -Cubebene	0.04	Sesquiterpene
Geranyl acetate	1.90	Monoterpenic ester
β -Elemene	0.47	Sesquiterpene
Cyperene	0.04	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
Methyleugenol	0.12	Phenylpropanoid
α -Gurjunene	0.03	Sesquiterpene
β -Caryophyllene	32.52	Sesquiterpene
β -Copaene	0.08	Sesquiterpene
Caryophylla-4(12),8(13)-diene	0.48	Sesquiterpene
Aromadendrene	0.12	Sesquiterpene
α -Guaiene	0.04	Sesquiterpene
Isogermacrene D	0.02	Sesquiterpene
<i>trans</i> -Muuroala-3,5-diene	0.13	Sesquiterpene
α -Humulene	8.35	Sesquiterpene
α -Patchoulene	0.01	Sesquiterpene
(<i>E</i>)-Isoeugenol	0.03	Phenylpropanoid
<i>cis</i> -Cadina-1(6),4-diene	0.03	Sesquiterpene
<i>cis</i> -Muuroala-4(15),5-diene	0.29	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.09	Sesquiterpene
γ -Muurolene	0.51	Sesquiterpene
α -Amorphene	2.23	Sesquiterpene
Germacrene D	8.59	Sesquiterpene
<i>trans</i> -Muuroala-4(15),5-diene	0.10	Sesquiterpene
Prenyl benzoate	0.35	Phenolic ester
epi-Cubebol	0.03	Sesquiterpenic alcohol
Bicyclogermacrene	1.23	Sesquiterpene
α -Muurolene	0.12	Sesquiterpene
Unknown	1.31	Sesquiterpene
Methyl (<i>E</i>)-isoeugenol	0.02	Phenylpropanoid
(3 <i>Z</i> ,6 <i>E</i>)- α -Farnesene	0.03	Sesquiterpene
Unknown	3.02	Sesquiterpene
δ -Amorphene	0.59	Sesquiterpene
δ -Guaiene	0.67	Sesquiterpene
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	6.27	Sesquiterpene
Cubebol	0.02	Sesquiterpenic alcohol
γ -Cadinene	1.38	Sesquiterpene

β -Curcumene	0.09	Sesquiterpene
(Z)- γ -Bisabolene	0.07	Sesquiterpene
<i>trans</i> -Calamenene	0.09	Sesquiterpene
Zonarene	0.50	Sesquiterpene
δ -Cadinene	4.49	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.33	Sesquiterpene
α -Cadinene	0.33	Sesquiterpene
α -Calacorene	0.03	Sesquiterpene
<i>cis</i> -Dracunculifolol	0.01	Sesquiterpenic alcohol
α -Elemol	0.21	Sesquiterpenic alcohol
Germacrene B	0.03	Sesquiterpene
Sesquirosefuran?	0.03	Sesquiterpenic ether
β -Calacorene	0.06	Sesquiterpene
(<i>E</i>)-Nerolidol	0.12	Sesquiterpenic alcohol
(3Z)-Hexenyl benzoate	0.10	Phenolic ester
Spathulenol	0.03	Sesquiterpenic alcohol
Caryophyllene oxide isomer	0.04	Sesquiterpenic ether
Caryophyllene oxide	0.25	Sesquiterpenic ether
Globulol	0.20	Sesquiterpenic alcohol
Unknown	0.09	Oxygenated sesquiterpene
Viridiflorol	0.08	Sesquiterpenic alcohol
Guaïol	0.08	Sesquiterpenic alcohol
Copaborneol	0.04	Sesquiterpenic alcohol
Eudesm-5-en-11-ol analog	0.06	Sesquiterpenic alcohol
Humulene epoxide II	0.08	Sesquiterpenic ether
1,10-diepi-Cubenol	0.11	Sesquiterpenic alcohol
Junenol	0.26	Sesquiterpenic alcohol
1-epi-Cubenol	0.41	Sesquiterpenic alcohol
γ -Eudesmol	0.24	Sesquiterpenic alcohol
Cubenol	0.23	Sesquiterpenic alcohol
τ -Muurolol	0.85	Sesquiterpenic alcohol
τ -Cadinol	0.34	Sesquiterpenic alcohol
β -Eudesmol	0.10	Sesquiterpenic alcohol
α -Muurolol	0.34	Sesquiterpenic alcohol
Unknown	0.30	Sesquiterpenic alcohol
α -Cadinol	1.56	Sesquiterpenic alcohol
<i>trans</i> -Calamenen-10-ol	0.04	Sesquiterpenic alcohol
Bulnesol	0.03	Sesquiterpenic alcohol
Unknown	0.15	Oxygenated sesquiterpene
(2 <i>E</i> ,6 <i>Z</i>)-Farnesol	0.02	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	1.24	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesal	0.04	Sesquiterpenic aldehyde
Benzyl benzoate	3.82	Phenolic ester
(2 <i>E</i> ,6 <i>E</i>)-Farnesyl acetate	0.43	Sesquiterpenic ester
Benzyl salicylate	0.41	Phenolic ester

Geranyl benzoate	0.19	Phenolic ester
Consolidated total	97.90	

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

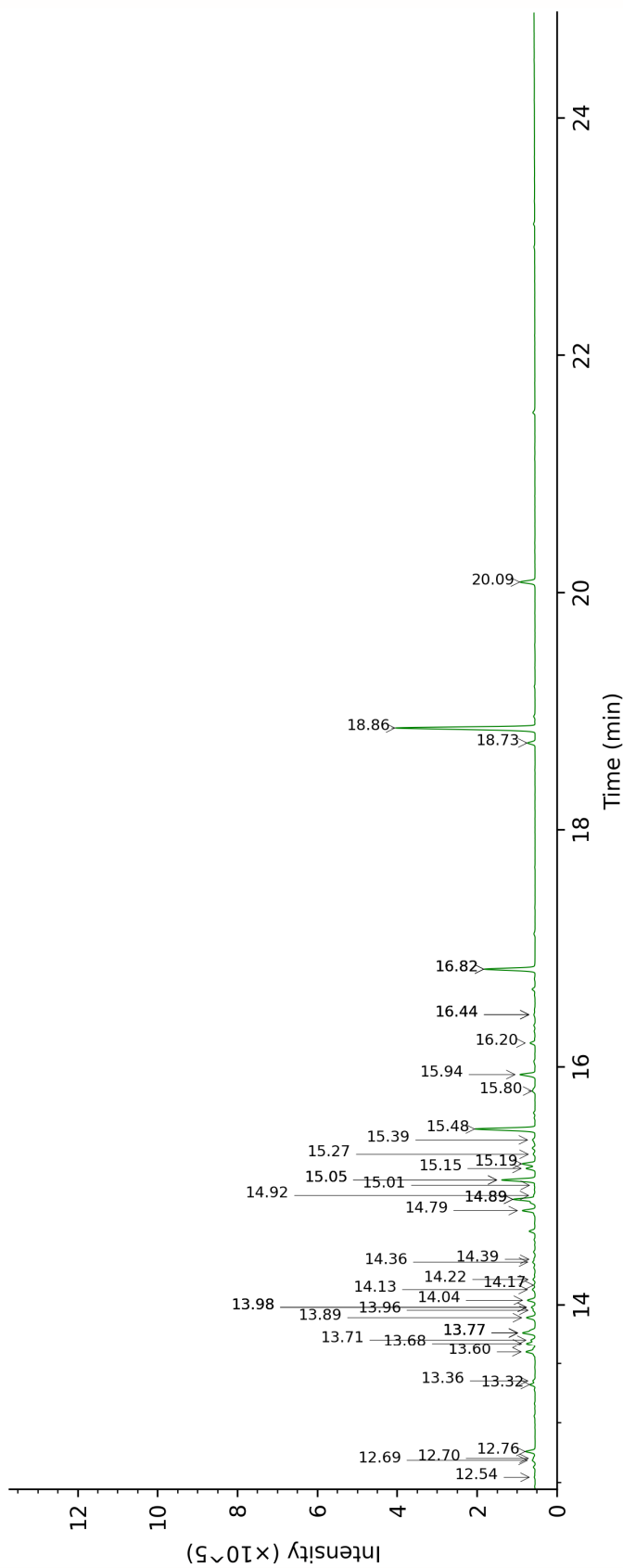
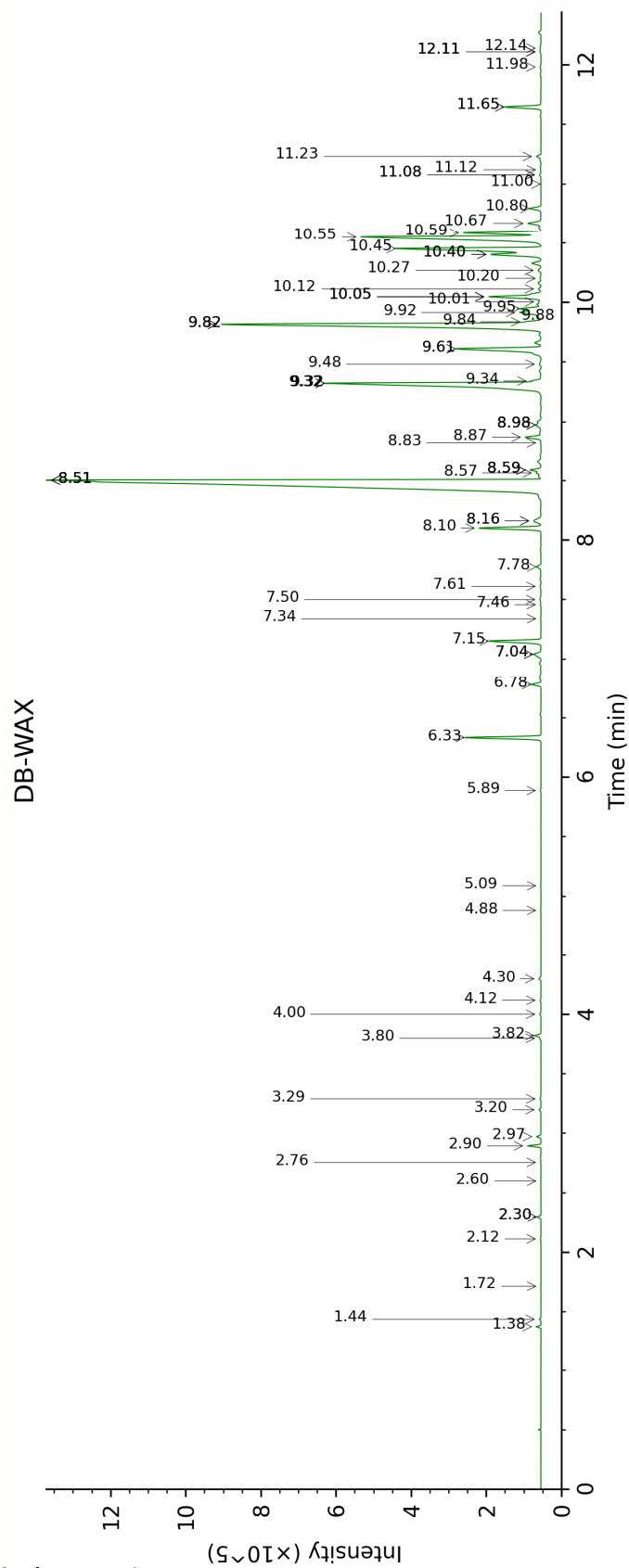
Note: no correction factor was applied

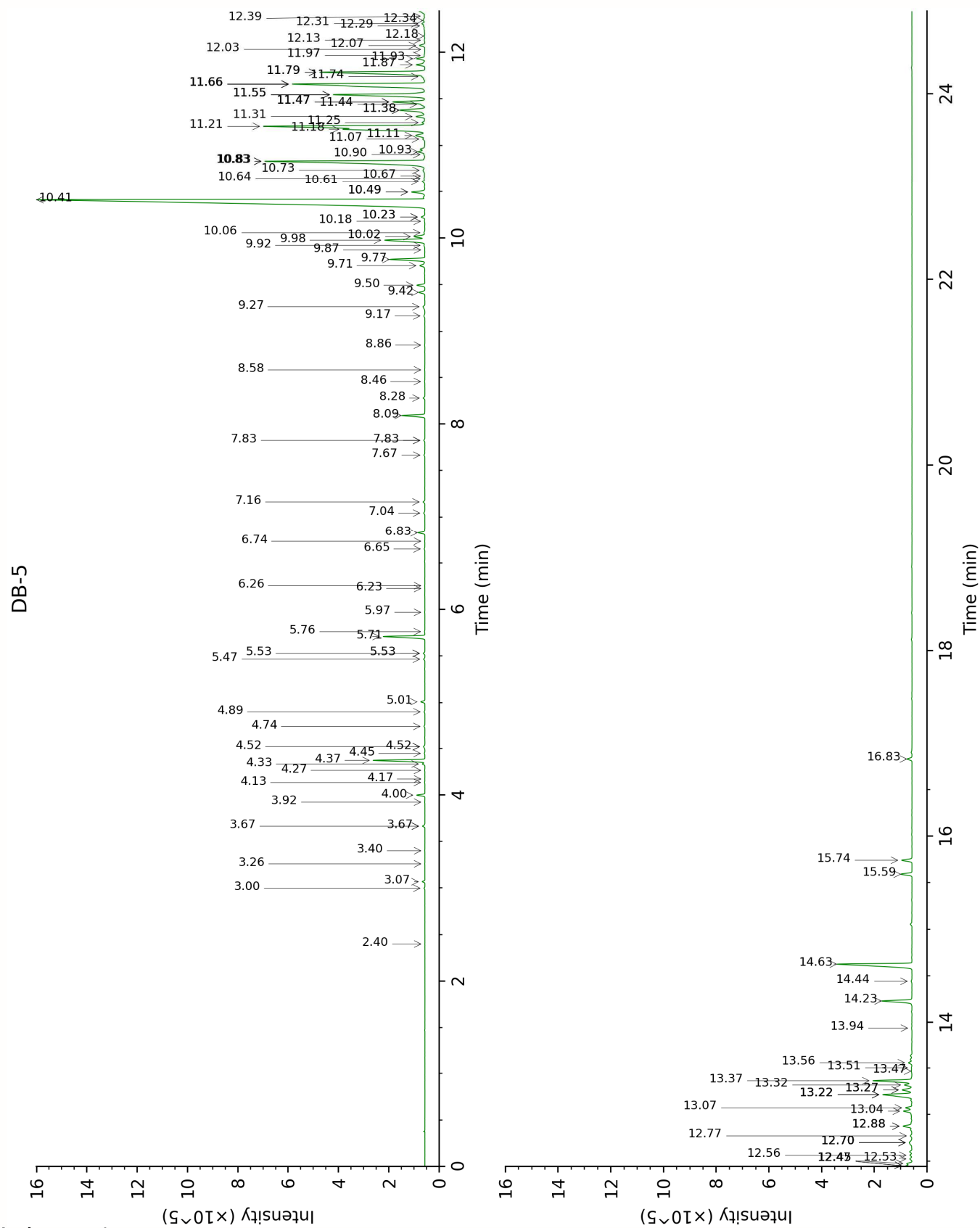
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

2-Methylbutyl acetate	Column DB-WAX			Column DB-5		
	2.30*	1085.1	[0.08]	2.40	881.3	tr
α -Thujene	1.44	1000.0	0.02	3.00	926.0	0.03
α -Pinene	1.38	991.6	0.08	3.07	930.7	0.08
Camphene	1.72	1027.4	0.01	3.26	943.5	0.01
Benzaldehyde	7.34	1461.3	0.01	3.40	952.9	tr
β -Pinene	2.12	1066.8	0.02	3.67*	970.6	[0.09]
Sabinene	2.30*	1085.1	[0.08]	3.67*	970.6	[0.09]
6-Methyl-5-hepten-2-one	5.09	1301.3	0.01	3.92	987.9	0.01
Myrcene	2.90	1134.7	0.26	4.00	993.0	0.25
α -Phellandrene	2.76	1123.7	0.01	4.14	1002.1	0.01
Δ^3 -Carene	2.60	1111.4	tr	4.17	1004.6	tr
(3Z)-Hexenyl acetate	4.88	1285.3	0.01	4.27	1010.5	0.01
α -Terpinene	2.97	1140.8	0.09	4.33	1014.8	0.08
<i>para</i> -Methylanisole	6.34	1386.9	1.73	4.37	1017.2	1.74
<i>para</i> -Cymene	4.12	1229.3	0.02	4.45	1022.0	0.02
Limonene	3.20	1158.7	0.04	4.52*	1026.6	[0.07]
β -Phellandrene	3.29	1165.9	0.03	4.52*	1026.6	[0.07]
(Z)- β -Ocimene	3.80	1205.7	0.03	4.74	1040.4	0.03
(E)- β -Ocimene	4.00	1220.6	0.03	4.89	1050.3	0.03
γ -Terpinene	3.82	1207.4	0.14	5.01	1057.6	0.14
Terpinolene	4.30	1242.7	0.05	5.47	1086.7	0.05
<i>para</i> -Cresol	13.96	2018.8	0.05	5.53*	1090.7	[0.06]
Methyl benzoate	8.59*†	1556.6	[0.26]	5.53*	1090.7	[0.06]
Linalool	8.10	1518.8	1.55	5.71	1102.2	1.54
Nonanal	5.89	1354.9	0.01	5.76	1105.5	0.02
<i>cis-para</i> -Menth-2-en-1-ol	8.16*	1523.5	[0.32]	5.97	1119.0	0.01
Benzeneacetonitrile	12.14	1852.0	0.02	6.23	1135.5	0.01
<i>trans-para</i> -Menth-2-en-1-ol	8.98*	1586.5	[0.18]	6.26	1137.5	0.01
Benzyl acetate	10.01	1669.6	0.04	6.65	1163.1	0.03
<i>para</i> -Cresyl acetate	10.05*	1673.0	[1.39]	6.74	1168.5	0.01
Terpinen-4-ol	8.59*†	1556.6	[0.26]	6.83	1174.5	0.25
α -Terpineol	9.82*	1654.3	[11.91]	7.04	1188.6	0.05
Methylchavicol	9.34*†	1615.9	[0.16]	7.16	1196.4	0.07
Nerol	11.08*	1759.3	[0.04]	7.67	1230.2	0.04
Neral	9.48	1627.3	0.06	7.82*	1241.0	[0.04]
3,4-Dimethoxytoluene	11.00	1752.7	0.01	7.82*	1241.0	[0.04]
Geraniol	11.65*	1808.2	[0.86]	8.09	1259.2	0.86
Geranial	10.12	1678.4	0.06	8.28	1272.0	0.06

(E)-Anethole	11.12	1762.9	0.02	8.46	1284.1	0.02
1-Nitro-2-phenylethane	14.17	2039.2	0.03	8.58	1292.7	0.01
4-Vinylguaiaicol	15.05*	2125.6	[0.86]	8.86	1307.9	0.01
Bicycloelemene	7.04*	1439.1	[0.28]	9.17	1330.1	0.05
Benzyl butyrate	11.65*	1808.2	[0.86]	9.27	1337.1	0.11
α -Cubebene	6.78	1419.8	0.23	9.42	1348.1	0.24
Eugenol	14.80	2099.8	0.32	9.50	1353.5	0.29
α -Ylangene	7.04*	1439.1	[0.28]	9.71	1368.4	0.25
α -Copaene	7.15	1447.3	1.37	9.77	1373.1	1.37
β -Bourbonene	7.46	1470.1	0.02	9.87	1380.3	0.01
β -Cubebene	7.78	1493.7	0.13	9.92	1383.8	0.04
Geranyl acetate	10.59*†	1717.6	[1.75]	9.98	1387.7	1.90
β -Elemene	8.51*	1550.0	[33.11]	10.02	1390.4	0.47
Cyperene	7.50	1473.3	0.04	10.06	1393.4	0.04
Isocaryophyllene	8.16*	1523.5	[0.32]	10.18	1402.1	0.02
Methyleugenol	13.32	1959.4	0.12	10.23*	1405.4	[0.14]
α -Gurjunene	7.61	1481.5	0.03	10.23*	1405.4	[0.14]
β -Caryophyllene	8.51*	1550.0	[33.11]	10.41	1419.3	32.52
β -Copaene	8.51*	1550.0	[33.11]	10.49*	1425.5	[0.55]
Caryophylla-4(12),8(13)-diene	8.59*†	1556.6	[0.26]	10.49*	1425.5	[0.55]
Aromadendrene	8.57*†	1554.7	[0.11]	10.61	1434.1	0.12
α -Guaiene	8.51*	1550.0	[33.11]	10.64	1436.6	0.04
Isogermacrene D	8.98*	1586.5	[0.18]	10.67	1438.8	0.02
<i>trans</i> -Muuroala-3,5-diene	8.87	1578.5	0.42	10.73	1443.4	0.13
α -Humulene	9.32*†	1614.3	[8.64]	10.83*	1450.7	[8.52]
α -Patchoulene	8.83	1574.9	0.01	10.83*	1450.7	[8.52]
(E)-Isoeugenol	16.44*	2267.8	[0.05]	10.83*	1450.7	[8.52]
<i>cis</i> -Cadina-1(6),4-diene	8.98*	1586.5	[0.18]	10.90	1456.1	0.03
<i>cis</i> -Muuroala-4(15),5-diene	9.32*†	1614.3	[8.64]	10.93	1458.4	0.29
<i>trans</i> -Cadina-1(6),4-diene	9.32*†	1614.3	[8.64]	11.07	1468.6	0.09
γ -Muurolene	9.61*	1637.7	[2.73]	11.11	1471.5	0.51
α -Amorphene	9.61*	1637.7	[2.73]	11.18*†	1476.5	[3.32]
Germacrene D	9.82*	1654.3	[11.91]	11.21*†	1478.9	[7.50]
<i>trans</i> -Muuroala-4(15),5-diene	9.84	1656.0	0.17	11.25	1481.8	0.10
Prenyl benzoate	13.77*	2000.4	[0.43]	11.31	1486.7	0.35
epi-Cubebol	11.98	1838.0	0.03	11.38*	1491.8	[1.26]
Bicyclogermacrene	10.05*	1673.0	[1.39]	11.38*	1491.8	[1.26]
α -Muurolene	10.05*	1673.0	[1.39]	11.44	1496.5	0.12

Unknown CAOD II [m/z 119, 41 (95), 123 (53), 80 (49), 161 (44), 105 (42)... 204 (2)]				11.47*	1498.4	[1.36]
Methyl (E)- isoeugenol	15.01	2121.1	0.02	11.47*	1498.4	[1.36]
(3Z,6E)- α -Farnesene	10.20	1685.5	0.03	11.47*	1498.4	[1.36]
Unknown CAOD III, not seen in MS	9.82*	1654.3	[11.91]	11.55*	1504.3	[4.29]
δ -Amorphene	9.95	1664.9	0.59	11.55*	1504.3	[4.29]
δ -Guaiene	9.92	1662.4	0.67	11.55*	1504.3	[4.29]
(3E,6E)- α -Farnesene	10.55*†	1714.5	[6.42]	11.66*	1513.2	[7.83]
Cubebol	12.54	1887.6	0.02	11.66*	1513.2	[7.83]
γ -Cadinene	10.40*	1702.1	[1.49]	11.66*	1513.2	[7.83]
β -Curcumene	10.27	1690.9	0.09	11.66*	1513.2	[7.83]
(Z)- γ -Bisabolene	9.88	1659.3	0.07	11.66*	1513.2	[7.83]
<i>trans</i> -Calamenene	11.23	1772.4	0.12	11.74	1519.6	0.09
Zonarene	10.40*	1702.1	[1.49]	11.79*	1523.3	[4.99]
δ -Cadinene	10.45	1706.3	4.49	11.79*	1523.3	[4.99]
<i>trans</i> -Cadina-1,4- diene	10.67	1724.7	0.37	11.87	1529.6	0.33
α -Cadinene	10.80	1735.3	0.30	11.93	1534.8	0.33
α -Calacorene	12.11*	1849.3	[0.04]	11.97	1537.5	0.03
<i>cis</i> -Dracunculifolol	12.11*	1849.3	[0.04]	12.03	1542.7	0.01
α -Elemol	14.04	2027.0	0.21	12.08	1546.0	0.21
Germacrene B	11.08*	1759.3	[0.04]	12.13	1550.5	0.03
Sesquirosefuran?	12.11*	1849.3	[0.04]	12.18	1554.0	0.03
β -Calacorene	12.69	1900.4	0.08	12.29	1562.7	0.06
(E)-Nerolidol	13.77*	2000.4	[0.43]	12.31	1564.5	0.12
(3Z)-Hexenyl benzoate	14.36	2057.9	0.07	12.34	1567.3	0.10
Spathulenol	14.39	2060.1	0.03	12.39	1570.9	0.03
Caryophyllene oxide isomer	12.70	1902.0	0.04	12.45*	1575.3	[0.35]
Caryophyllene oxide	12.76	1907.3	0.25	12.45*	1575.3	[0.35]
Globulol	13.90	2012.8	0.23	12.47	1577.4	0.20
Unknown MECA III [m/z 161, 105 (84), 43 (80), 119 (72), 93 (62), 121 (54)... 204 (38), 222 (2)]	13.98*	2021.3	[0.10]	12.52	1581.5	0.09
Viridiflorol	13.98*	2021.3	[0.10]	12.56	1584.6	0.08
Guaiol	14.13	2035.6	0.08	12.70*	1595.3	[0.22]

Copaborneol	14.92	2112.6	0.04	12.70*	1595.3	[0.22]
Eudesm-5-en-11-ol analog	14.22	2043.7	0.06	12.70*	1595.3	[0.22]
Humulene epoxide II	13.36	1962.2	0.06	12.77	1601.1	0.08
1,10-diepi-Cubenol	13.71	1994.6	0.11	12.88*	1609.5	[0.41]
Junenol	13.60	1984.9	0.26	12.88*	1609.5	[0.41]
1-epi-Cubenol	13.77*	2000.4	[0.43]	13.04	1622.9	0.41
γ-Eudesmol	14.89*	2109.3	[0.58]	13.07	1625.9	0.24
Cubenol	13.68	1991.7	0.23	13.22*	1637.7	[1.57]
τ-Muurolol	15.05*	2125.6	[0.86]	13.22*	1637.7	[1.57]
τ-Cadinol	14.89*	2109.3	[0.58]	13.22*	1637.7	[1.57]
β-Eudesmol	15.39	2159.4	0.10	13.27*	1641.9	[0.47]
α-Muurolol	15.19	2139.2	0.34	13.27*	1641.9	[0.47]
Unknown cadinol analog II [m/z 95, 121 (73), 43 (57), 79 (43), 161 (43), 109 (40)... 204 (35), 222 (2)]	15.15	2135.3	0.22	13.32	1646.3	0.30
α-Cadinol	15.48	2168.6	1.55	13.37	1650.1	1.56
trans-Calamenen-10-ol	16.82*	2308.2	[1.26]	13.47	1658.7	0.04
Bulnesol	15.27	2147.3	0.06	13.50	1661.7	0.03
Unknown CAOD I [m/z 123, 95 (31), 81 (29), 105 (27)... 222 (5)]	16.20	2242.9	0.13	13.56	1666.1	0.15
(2E,6Z)-Farnesol	16.44*	2267.8	[0.05]	13.94	1697.7	0.02
(2E,6E)-Farnesol	16.82*	2308.2	[1.26]	14.23	1722.7	1.24
(2E,6E)-Farnesal	15.80	2200.9	0.11	14.44	1741.1	0.04
Benzyl benzoate	18.86	2534.5	3.81	14.63	1757.1	3.82
(2E,6E)-Farnesyl acetate	15.94	2215.3	0.42	15.59	1842.9	0.43
Benzyl salicylate	20.09	2680.7	0.42	15.74	1856.5	0.41
Geranyl benzoate	18.73	2519.9	0.20	16.83	1957.9	0.19
Total reported		96.21%			98.33%	

*: 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