

Date : 2025-01-20

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25A06-PTH02

Customer Identification : Cinnamon Bark - Sri Lanka - CC0111R

Type : Essential Oil

Source : *Cinnamomum zeylanicum* [syn. *Cinnamomum verum*]

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 : 2025-01-17

PHYSICOCHEMICAL DATA

Refractive index : 1.5856 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-01-06

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
Ethylbenzene	tr	Simple phenolic
Styrene	0.01	Simple phenolic
Hashishene	tr	Monoterpene
Tricyclene	0.03	Monoterpene
α -Thujene	0.11	Monoterpene
α -Pinene	3.03	Monoterpene
Camphene	0.28	Monoterpene
α -Fenchene	0.01	Monoterpene
Benzaldehyde	0.08	Simple phenolic
Sabinene	0.01	Monoterpene
β -Pinene	0.37	Monoterpene
Myrcene	0.05	Monoterpene
α -Phellandrene	1.42	Monoterpene
Δ^3 -Carene	0.06	Monoterpene
α -Terpinene	0.67	Monoterpene
<i>meta</i> -Cymene	0.02	Monoterpene
<i>para</i> -Cymene	0.76	Monoterpene
Limonene	1.92	Monoterpene
β -Phellandrene	0.53	Monoterpene
1,8-Cineole	1.50	Monoterpenic ether
(<i>Z</i>)- β -Ocimene	0.02	Monoterpene
(<i>E</i>)- β -Ocimene	0.02	Monoterpene
γ -Terpinene	0.02	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.01	Monoterpenic alcohol
Isoterpinolene	0.01	Monoterpene
<i>para</i> -Cymenene	0.02	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Terpinolene	0.04	Monoterpene
Linalool	3.31	Monoterpenic alcohol
(3 <i>E</i>)-2,7-Dimethyl-3,6-octadien-2-ol	0.03	Monoterpenic alcohol
Phenylethyl alcohol	0.04	Simple phenolic
<i>cis-para</i> -Menth-2-en-1-ol	0.02	Monoterpenic alcohol
<i>trans</i> -Pinocarveol	0.01	Monoterpenic alcohol
Camphor	0.01	Monoterpenic ketone
Camphene hydrate	0.01	Monoterpenic alcohol
Hydrocinnamal	0.12	Phenylpropanoid
Borneol	0.03	Monoterpenic alcohol
3-Methylbenzofuran?	0.02	Phenylpropanoid
Terpinen-4-ol	0.07	Monoterpenic alcohol
Cryptone	0.01	Normoterpenic ketone

<i>para</i> -Cymen-8-ol	0.02	Monoterpenic alcohol
α -Terpineol	0.11	Monoterpenic alcohol
Myrtenal	0.01	Monoterpenic aldehyde
<i>cis</i> -Piperitol	0.01	Monoterpenic alcohol
<i>cis</i> - α -Phellandrene epoxide (iPr vs Me)	0.03	Monoterpenic ether
<i>trans</i> -Piperitol	0.01	Monoterpenic alcohol
(<i>Z</i>)-Cinnamal	0.32	Phenylpropanoid
Hydrocinnamyl alcohol	0.09	Phenylpropanoid
<i>ortho</i> -Anisaldehyde	0.05	Simple phenolic
Phenylethyl acetate	0.01	Phenolic ester
Chavicol	0.02	Phenylpropanoid
(<i>E</i>)-Cinnamal	71.24	Phenylpropanoid
Safrole	0.25	Phenylpropanoid
(<i>E</i>)-Cinnamyl alcohol	0.01	Phenylpropanoid
α -Cubebene	tr	Sesquiterpene
Eugenol	4.30	Phenylpropanoid
Hydrocinnamyl acetate	0.05	Phenylpropanoid ester
<i>ortho</i> -Methoxyhydrocinnamal?	0.01	Phenylpropanoid
α -Copaene	0.15	Sesquiterpene
β -Elemene	0.02	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
β -Caryophyllene	2.67	Sesquiterpene
Caryophylla-4(12),8(13)-diene	0.01	Sesquiterpene
(<i>E</i>)-Cinnamyl acetate	4.12	Phenylpropanoid ester
(<i>E</i>)-Isoeugenol	0.02	Phenylpropanoid
α -Humulene	0.19	Sesquiterpene
allo-Aromadendrene	0.01	Sesquiterpene
(<i>E</i>)- β -Farnesene	0.01	Sesquiterpene
Germacrene D	0.03	Sesquiterpene
<i>ar</i> -Curcumene	0.03	Sesquiterpene
Viridiflorene	0.03	Sesquiterpene
α -Muurolene	0.02	Sesquiterpene
2,3-Epoxycinnamyl acetate I?	0.01	Phenylpropanoid ester
γ -Cadinene	0.05	Sesquiterpene
δ -Cadinene	0.07	Sesquiterpene
<i>trans</i> -Calamenene	0.02	Sesquiterpene
Eugenyl acetate	0.14	Phenylpropanoid ester
(<i>E</i>)- <i>ortho</i> -Methoxycinnamal	0.03	Phenylpropanoid
<i>trans</i> -Cadina-1,4-diene	0.01	Sesquiterpene
α -Calacorene	0.02	Sesquiterpene
Isocaryophyllene epoxide B	0.02	Sesquiterpenic ether
Caryophyllenyl alcohol	0.03	Sesquiterpenic alcohol
Spathulenol	0.01	Sesquiterpenic alcohol
Caryophyllene oxide	0.17	Sesquiterpenic ether
Caryophyllene oxide isomer	0.01	Sesquiterpenic ether

Unknown	0.01	Oxygenated sesquiterpene
Humulene epoxide II	0.03	Sesquiterpenic ether
Tetradecanal	0.03	Aliphatic aldehyde
Caryophylladienol I	0.01	Sesquiterpenic alcohol
Caryophylladienol II	0.01	Sesquiterpenic alcohol
τ -Cadinol	0.01	Sesquiterpenic alcohol
Unknown	0.02	Sesquiterpenic alcohol
(3Z)-Caryophylla-3,8(13)-dien-5 β -ol	0.02	Sesquiterpenic alcohol
Benzyl benzoate	0.22	Phenolic ester
Unknown	0.03	Unknown
Unknown	0.02	Unknown
Unknown	0.02	Lignan
Consolidated total	99.55	

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

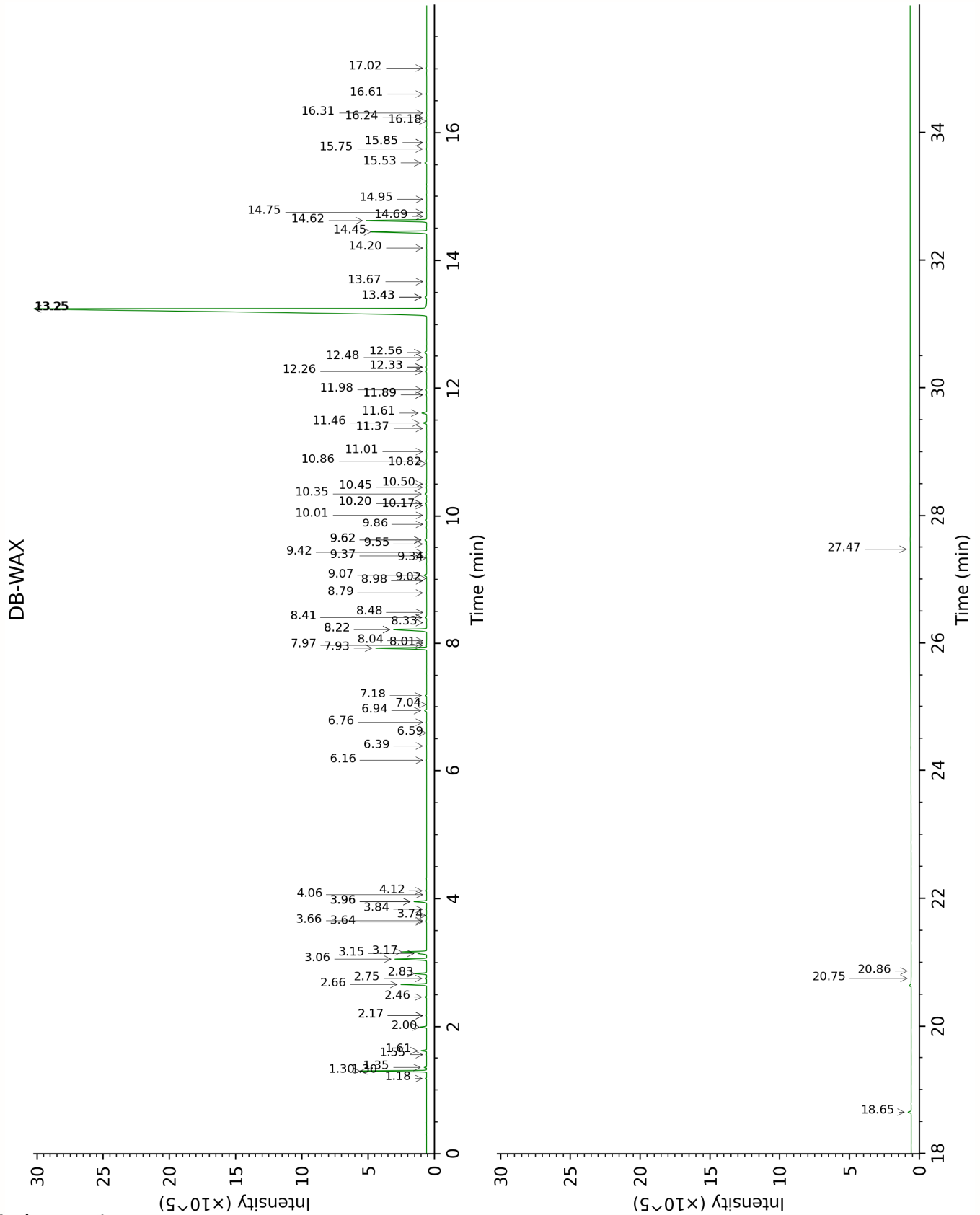
Note: no correction factor was applied

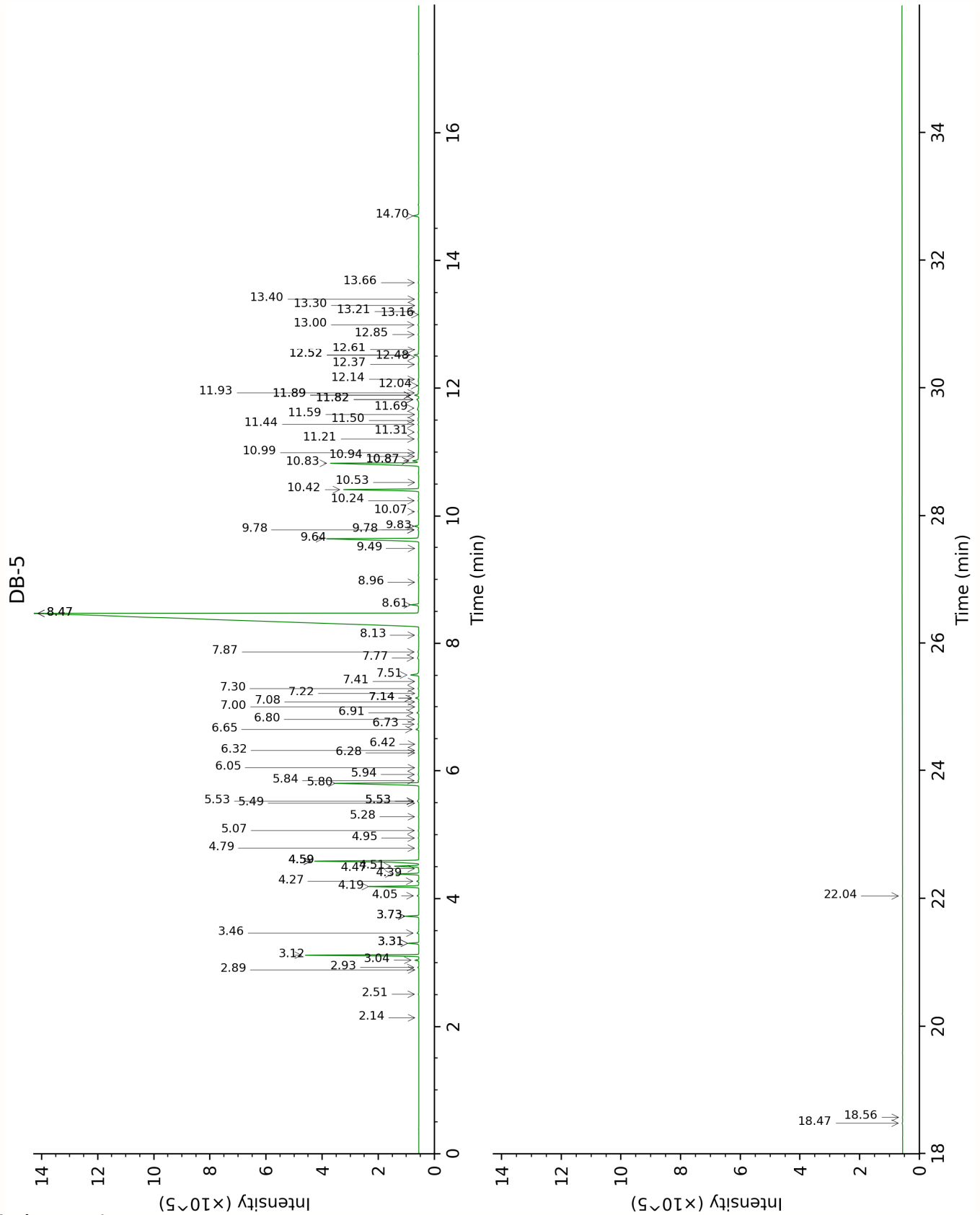
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

Ethylbenzene	Column DB-WAX			Column DB-5		
	2.17*	1082.2	[0.02]	2.14	856.5	tr
Styrene	3.74	1210.1	0.02	2.51	887.2	0.01
Hashishene	1.30*	989.6	[3.07]	2.89	915.8	tr
Tricyclene	1.18	968.8	0.03	2.93	918.4	0.03
α -Thujene	1.35	997.9	0.10	3.04	925.9	0.11
α -Pinene	1.30*	989.6	[3.07]	3.12	931.1	3.03
Camphene	1.62	1024.9	0.28	3.30*	943.5	[0.29]
α -Fenchene	1.55	1018.3	0.01	3.30*	943.5	[0.29]
Benzaldehyde	7.18	1461.9	0.09	3.46	954.1	0.08
Sabinene	2.17*	1082.2	[0.02]	3.73*	971.6	[0.38]
β -Pinene	2.00	1063.9	0.37	3.73*	971.6	[0.38]
Myrcene	2.76	1132.2	0.05	4.05	992.8	0.05
α -Phellandrene	2.66	1124.6	1.43	4.19	1002.4	1.42
Δ^3 -Carene	2.46	1109.0	0.06	4.27	1007.6	0.06
α -Terpinene	2.83	1138.2	0.67	4.39	1014.8	0.67
<i>meta</i> -Cymene	3.96*	1226.0	[0.78]	4.47	1020.0	0.02
<i>para</i> -Cymene	3.96*	1226.0	[0.78]	4.51	1022.4	0.76
Limonene	3.06	1156.2	1.92	4.59*	1027.4	[3.91]
β -Phellandrene	3.14	1163.4	0.53	4.59*	1027.4	[3.91]
1,8-Cineole	3.17	1165.4	1.50	4.59*	1027.4	[3.91]
(<i>Z</i>)- β -Ocimene	3.64	1202.6	0.01	4.79	1040.1	0.02
(<i>E</i>)- β -Ocimene	3.84	1217.2	0.02	4.95	1050.0	0.02
γ -Terpinene	3.66	1203.9	0.02	5.07	1057.4	0.02
<i>cis</i> -Linalool oxide (fur.)	6.39	1402.7	0.01	5.28	1071.0	0.01
Isoterpinolene	4.06	1234.0	0.01	5.49	1084.2	0.01
<i>para</i> -Cymenene	6.16	1386.5	0.02	5.52*	1086.2	[0.06]
<i>trans</i> -Linalool oxide (fur.)	6.76	1430.4	0.02	5.52*	1086.2	[0.06]
Terpinolene	4.12	1238.5	0.04	5.52*	1086.2	[0.06]
Linalool	7.93	1518.4	3.33	5.80	1103.7	3.31
(3 <i>E</i>)-2,7-Dimethyl-3,6-octadien-2-ol	8.04	1527.5	0.01	5.84	1106.4	0.03
Phenylethyl alcohol	11.90*	1845.6	[0.04]	5.94	1112.6	0.04
<i>cis-para</i> -Menth-2-en-1-ol	7.97	1521.8	0.03	6.05	1119.4	0.02
<i>trans</i> -Pinocarveol	9.02	1603.3	0.01	6.28	1134.2	0.01
Camphor	7.04	1451.0	0.01	6.32	1136.6	0.01
Camphene hydrate	8.33	1549.4	0.01	6.42	1142.9	0.01
Hydrocinnamal	10.35	1712.1	0.12	6.65	1157.6	0.12
Borneol	9.62*	1652.2	[0.14]	6.73	1162.8	0.03
3-Methylbenzofuran?	10.01	1684.4	0.01	6.80	1167.7	0.02
Terpinen-4-ol	8.41*	1555.7	[0.08]	6.91	1174.2	0.07
Cryptone	8.98	1600.3	0.01	7.00	1180.1	0.01
<i>para</i> -Cymen-8-ol	11.37	1799.3	0.02	7.08	1185.2	0.02
α -Terpineol	9.62*	1652.2	[0.14]	7.14*	1189.0	[0.11]

Myrtenal	8.48	1561.7	0.01	7.14*	1189.0	[0.11]
cis-Piperitol	9.37	1631.9	0.03	7.22	1194.3	0.01
cis- α -Phellandrene epoxide (iPr vs Me)	10.86	1755.6	0.05	7.30	1199.1	0.03
trans-Piperitol	10.20*	1699.6	[0.07]	7.41	1206.4	0.01
(Z)-Cinnamal	11.61	1820.6	0.34	7.51	1213.2	0.32
Hydrocinnamyl alcohol	13.43*	1985.3	[0.12]	7.77	1231.0	0.09
ortho-Anisaldehyde	12.33*	1884.2	[0.04]	7.87	1237.3	0.05
Phenylethyl acetate	10.82	1752.2	0.01	8.13	1254.8	0.01
Chavicol	16.24	2264.0	0.02	8.47*	1277.7	[71.26]
(E)-Cinnamal	13.25*	1968.8	[70.73]	8.47*	1277.7	[71.26]
Safrole	11.46	1806.8	0.25	8.60	1286.7	0.25
(E)-Cinnamyl alcohol	15.75	2213.3	0.03	8.96	1310.6	0.01
α -Cubebene	6.59	1417.9	0.01	9.49	1348.0	tr
Eugenol	14.62	2099.9	4.28	9.64	1358.6	4.30
Hydrocinnamyl acetate	12.26	1878.2	0.05	9.78*	1368.4	[0.04]
ortho-Methoxyhydrocinnamal?	13.67	2008.3	0.01	9.78*	1368.4	[0.04]
α -Copaene	6.94	1444.0	0.15	9.83	1372.5	0.15
β -Elemene	8.22*	1540.9	[2.68]	10.07	1389.3	0.02
Isocaryophyllene	8.00	1524.4	0.01	10.24	1401.4	0.02
β -Caryophyllene	8.22*	1540.9	[2.68]	10.42	1414.2	2.67
Caryophylla-4(12),8(13)-diene	8.41*	1555.7	[0.08]	10.53	1422.6	0.01
(E)-Cinnamyl acetate	14.45	2082.8	4.12	10.83	1444.9	4.12
(E)-Isoeugenol	16.31	2271.5	0.02	10.87*	1447.7	[0.27]
α -Humulene	9.07	1607.3	0.19	10.87*	1447.7	[0.27]
allo-Aromadendrene	8.79	1585.5	0.02	10.94	1452.9	0.01
(E)- β -Farnesene	9.34	1629.3	0.01	10.99	1457.2	0.01
Germacrene D	9.55	1647.0	0.03	11.21	1473.1	0.03
ar-Curcumene	10.50	1725.4	0.02	11.31	1481.2	0.03
Viridiflorene	9.42	1636.4	0.02	11.44	1490.2	0.03
α -Muuroleone	9.86	1672.1	0.01	11.50	1494.8	0.02
2,3-Epoxy-cinnamyl acetate I?	16.18	2258.5	0.01	11.59	1501.7	0.01
γ -Cadinene	10.17	1696.8	0.03	11.69	1509.4	0.05
δ -Cadinene	10.20*	1699.6	[0.07]	11.82*	1519.9	[0.09]
trans-Calamenene	11.01	1768.4	0.02	11.82*	1519.9	[0.09]
Eugenyl acetate	15.53	2190.8	0.14	11.89*	1525.3	[0.15]
(E)-ortho-Methoxycinnamal	17.02	2346.6	0.03	11.89*	1525.3	[0.15]
trans-Cadina-1,4-diene	10.45	1721.0	0.04	11.93	1528.1	0.01
α -Calacorene	11.90*	1845.6	[0.04]	12.04	1537.1	0.02
Isocaryophyllene epoxide B	11.98	1852.8	0.05	12.14	1544.8	0.02

Caryophyllenyl alcohol	13.43*	1985.3	[0.12]	12.37	1563.0	0.03
Spathulenol	14.20	2058.6	0.01	12.48	1571.9	0.01
Caryophyllene oxide	12.56	1904.8	0.17	12.52*	1574.6	[0.18]
Caryophyllene oxide isomer	12.48	1897.6	0.01	12.52*	1574.6	[0.18]
Unknown CYSC XX [m/z 161, 159 (69), 91 (41), 187 (38), 105 (37), 146 (35), 131 (34)...]	14.75	2112.6	0.02	12.60	1581.3	0.01
Humulene epoxide II	13.25*	1968.8	[70.73]	12.85	1600.5	0.03
Tetradecanal	12.33*	1884.2	[0.04]	13.00	1612.8	0.03
Caryophylladienol I	15.85*	2223.5	[0.01]	13.16	1626.1	0.01
Caryophylladienol II	15.85*	2223.5	[0.01]	13.21	1630.0	0.01
τ -Cadinol	14.69	2106.6	0.01	13.30	1637.7	0.01
Unknown cadinol analog II [m/z 95, 121 (73), 43 (57), 79 (43), 161 (43), 109 (40)... 204 (35), 222 (2)]	14.95	2133.0	0.01	13.40	1645.8	0.02
(3Z)-Caryophylla-3,8(13)-dien-5 β -ol	16.61	2302.8	0.02	13.66	1667.1	0.02
Benzyl benzoate	18.65	2528.2	0.23	14.70	1755.5	0.22
Unknown CIZE II [m/z 69, 91 (57), 41 (49), 181 (32), 169 (25), 167 (22)...]	20.75	2779.2	0.01	18.47	2110.6	0.03
Unknown CIZE III [m/z 69, 91 (56), 41 (49), 169 (34), 239 (28), 93 (23)...]	20.86	2793.9	0.01	18.56	2120.0	0.02
Unknown OCSA V [m/z 326, 148 (67), 147 (41), 117 (30), 91 (22)...]	27.47	3687.7	0.01	22.04	2502.9	0.02
Total reported		99.05%			99.51%	

*: 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