

Date : 2024-07-11

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24F26-PTH05

Customer Identification : Persian Lime - Mexico - PW0102R

Type : Essential Oil

Source : *Citrus latifolia*

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 : Benoit Roger, Ph. D.

Date : 2024-07-04

PHYSICOCHEMICAL DATA

Refractive index : 1.4791 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2024-06-28

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
Tricyclene	0.01	Monoterpene
α -Thujene	0.51	Monoterpene
α -Pinene	2.07	Monoterpene
Camphene	0.07	Monoterpene
β -Pinene	11.41	Monoterpene
Sabinene	1.86	Monoterpene
6-Methyl-5-hepten-2-one	tr	Aliphatic ketone
Myrcene	1.42	Monoterpene
α -Phellandrene	0.05	Monoterpene
Octanal	0.01	Aliphatic aldehyde
Δ^3 -Carene	0.01	Monoterpene
α -Terpinene	0.29	Monoterpene
<i>para</i> -Cymene	0.51	Monoterpene
1,8-Cineole	0.41	Monoterpenic ether
Limonene	55.77	Monoterpene
(<i>Z</i>)- β -Ocimene	0.05	Monoterpene
(<i>E</i>)- β -Ocimene	0.11	Monoterpene
γ -Terpinene	12.51	Monoterpene
<i>cis</i> -Sabinene hydrate	0.03	Monoterpenic alcohol
Terpinolene	0.61	Monoterpene
<i>trans</i> -Sabinene hydrate	0.03	Monoterpenic alcohol
Linalool	0.11	Monoterpenic alcohol
<i>cis</i> -Limonene oxide	0.02	Monoterpenic ether
<i>trans</i> -Limonene oxide	0.01	Monoterpenic ether
Epoxyterpinolene	0.01	Monoterpenic ether
Citronellal	0.03	Monoterpenic aldehyde
Borneol	0.01	Monoterpenic alcohol
Isoneral	0.01	Monoterpenic aldehyde
Terpinen-4-ol	0.08	Monoterpenic alcohol
Isogeranial	0.01	Monoterpenic aldehyde
α -Terpineol	0.19	Monoterpenic alcohol
γ -Terpineol	0.01	Monoterpenic alcohol
Decanal	0.04	Aliphatic aldehyde
2,3-Epoxyneral?	0.01	Monoterpenic aldehyde
Nerol	0.07	Monoterpenic alcohol
2,3-Epoxygeranial?	0.03	Monoterpenic aldehyde
Neral	1.80	Monoterpenic aldehyde
Geraniol	0.03	Monoterpenic alcohol
Geranial	2.79	Monoterpenic aldehyde
Unknown	0.01	Oxygenated monoterpene

Undecanal	0.01	Aliphatic aldehyde
δ-Elemene	0.10	Sesquiterpene
Citronellyl acetate	0.04	Monoterpenic ester
Neryl acetate	0.77	Monoterpenic ester
Geranyl acetate	0.17	Monoterpenic ester
β-Elemene	0.12	Sesquiterpene
Dodecanal	0.03	Aliphatic aldehyde
β-Caryophyllene	0.65	Sesquiterpene
cis-α-Bergamotene	0.07	Sesquiterpene
α-Santalene	0.03	Sesquiterpene
γ-Elemene	0.03	Sesquiterpene
trans-α-Bergamotene	1.08	Sesquiterpene
α-Humulene	0.06	Sesquiterpene
β-Santalene	0.05	Sesquiterpene
(E)-β-Farnesene	0.09	Sesquiterpene
Germacrene D	0.07	Sesquiterpene
γ-Curcumene	0.03	Sesquiterpene
trans-β-Bergamotene	0.07	Sesquiterpene
Bicyclogermacrene	0.04	Sesquiterpene
(Z)-α-Bisabolene	0.15	Sesquiterpene
β-Bisabolene	1.37	Sesquiterpene
(3E,6E)-α-Farnesene	0.22	Sesquiterpene
(E)-α-Bisabolene	0.05	Sesquiterpene
Germacrene B	0.13	Sesquiterpene
Caryophyllene oxide	0.03	Sesquiterpenic ether
Alismol	0.03	Sesquiterpenic alcohol
Unknown	0.01	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
α-Bisabolol	0.05	Sesquiterpenic alcohol
Herniarin	0.08	Coumarin
(2E,6Z)-Farnesal	0.04	Sesquiterpenic aldehyde
Citropten	0.13	Furanocoumarin
Bergapten	0.05	Furanocoumarin
Hexadecanal	0.07	Aliphatic aldehyde
Isopimpinellin	0.05	Furanocoumarin
Consolidated total	99.06	

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

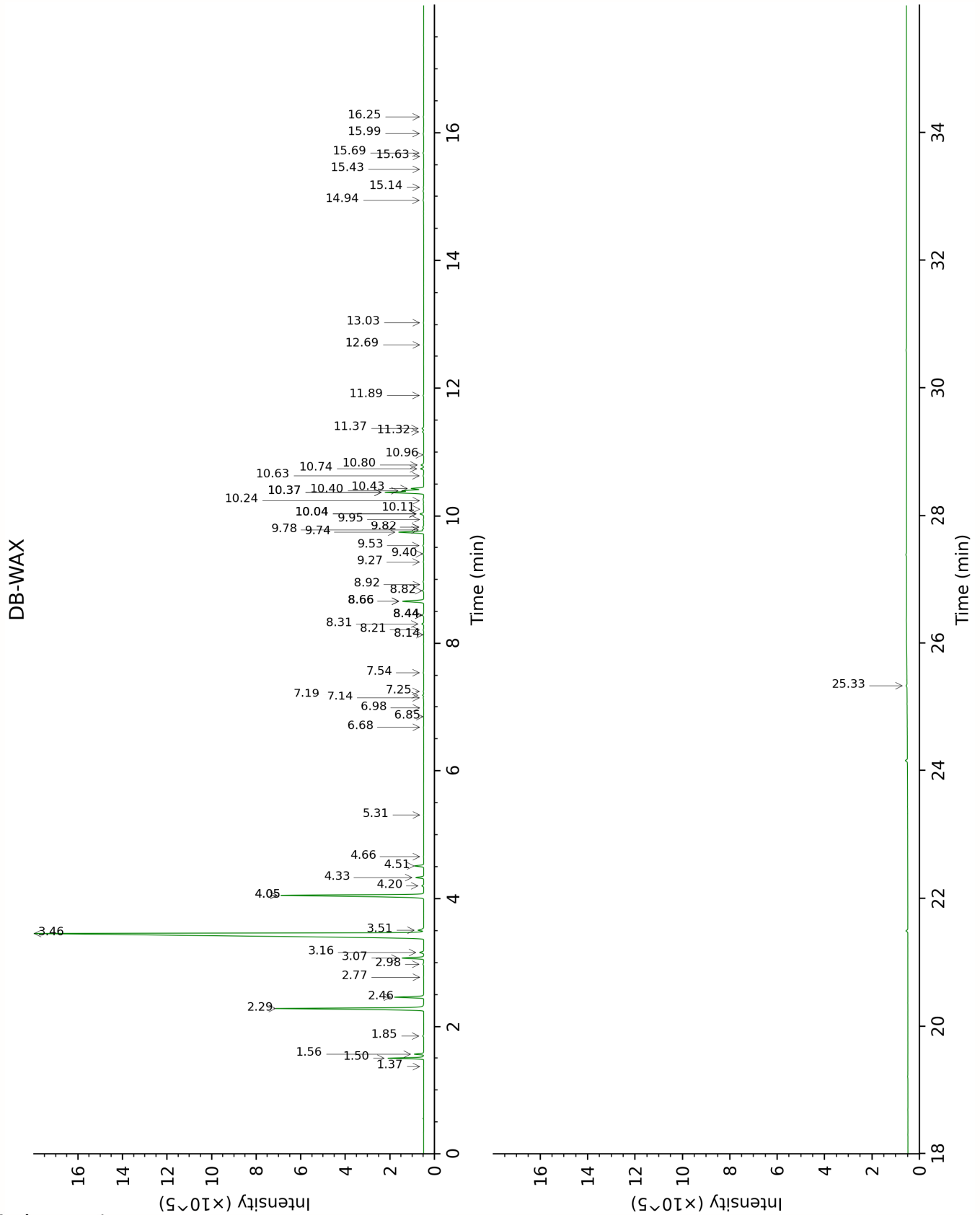
Note: no correction factor was applied

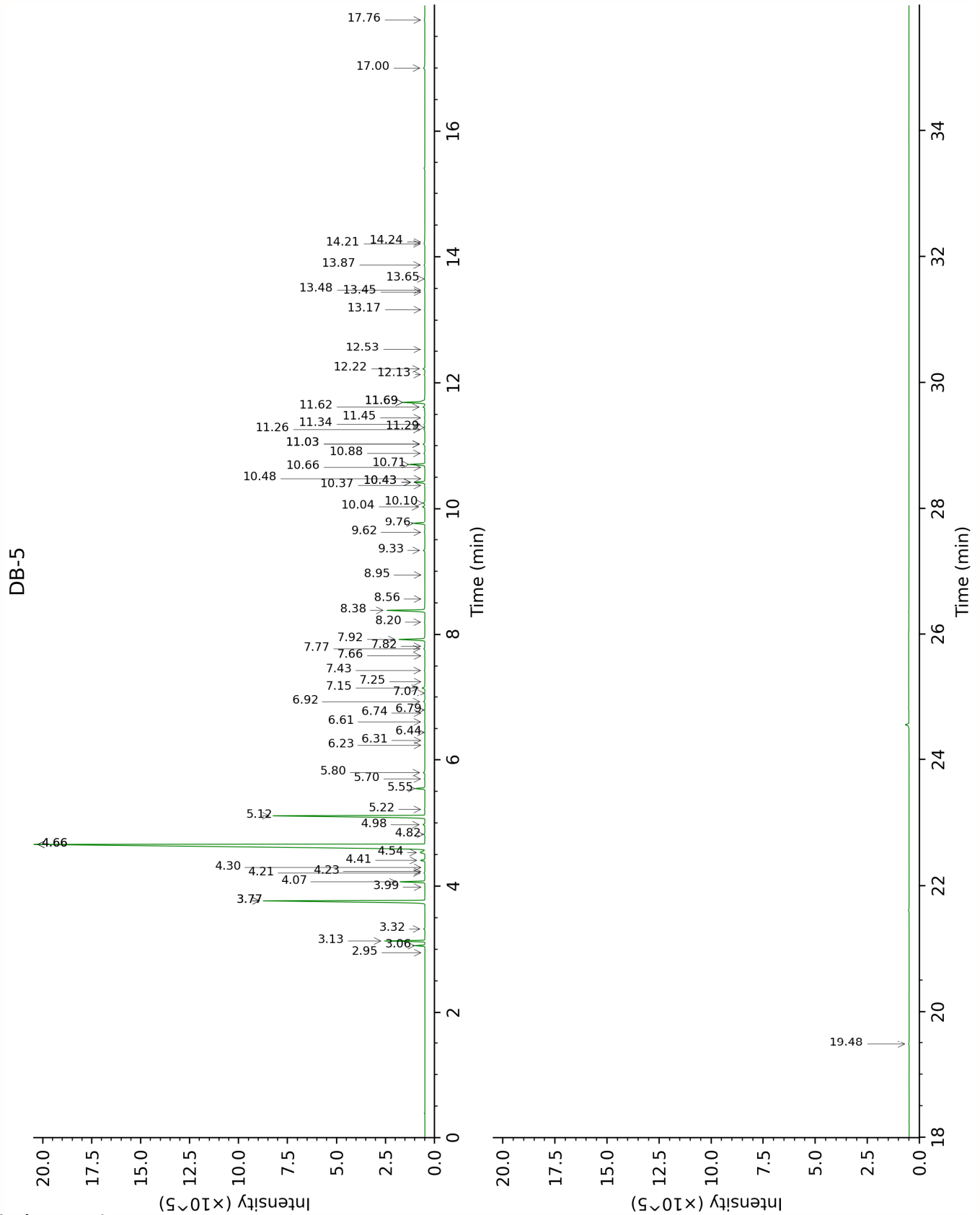
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

Tricyclene	Column DB-WAX			Column DB-5		
	1.37	971.3	0.01	2.95	919.0	0.01
α -Thujene	1.56	999.0	0.52	3.06	926.4	0.51
α -Pinene	1.50	991.5	2.06	3.13	931.4	2.07
Camphene	1.86	1027.1	0.06	3.32	943.9	0.07
β -Pinene	2.29	1068.3	11.41	3.77*	973.4	[13.30]
Sabinene	2.46	1085.1	1.86	3.77*	973.4	[13.30]
6-Methyl-5-hepten-2-one	5.31	1300.5	0.01	3.99	987.8	tr
Myrcene	3.07	1133.6	1.43	4.07	993.4	1.42
α -Phellandrene	2.98	1126.3	0.05	4.21	1002.6	0.05
Octanal	4.66	1249.2	0.01	4.23	1004.2	0.01
Δ 3-Carene	2.77	1110.8	0.01	4.30	1008.3	0.01
α -Terpinene	3.16	1140.2	0.28	4.41	1015.3	0.29
<i>para</i> -Cymene	4.33	1226.3	0.53	4.54	1023.1	0.51
1,8-Cineole	3.51	1166.6	0.41	4.66*	1031.2	[56.26]
Limonene	3.46	1162.6	55.77	4.66*	1031.2	[56.26]
(<i>Z</i>)- β -Ocimene	4.05*	1206.8	[12.56]	4.82	1041.1	0.05
(<i>E</i>)- β -Ocimene	4.20	1217.2	0.12	4.98	1050.8	0.11
γ -Terpinene	4.05*	1206.8	[12.56]	5.12	1059.6	12.51
<i>cis</i> -Sabinene hydrate	7.14	1430.7	0.04	5.22	1065.9	0.03
Terpinolene	4.51	1239.0	0.62	5.55	1086.7	0.61
<i>trans</i> -Sabinene hydrate	8.21	1509.5	0.04	5.70	1096.2	0.03
Linalool	8.31	1516.7	0.12	5.80	1102.5	0.11
<i>cis</i> -Limonene oxide	6.68	1397.1	0.02	6.23	1130.2	0.02
<i>trans</i> -Limonene oxide	6.85	1409.2	0.01	6.31	1135.1	0.01
Epoxyterpinolene	6.98	1419.2	0.02	6.44	1143.2	0.01
Citronellal	7.25	1438.7	0.03	6.60	1153.9	0.03
Borneol	10.04*	1651.5	[0.29]	6.74	1162.8	0.01
Isoneral	8.14	1503.9	0.01	6.79	1165.9	0.01
Terpinen-4-ol	8.82	1556.3	0.09	6.92	1174.4	0.08
Isogeranial	8.44*	1527.2	[0.11]	7.07	1183.8	0.01
α -Terpineol	10.04*	1651.5	[0.29]	7.15	1188.9	0.19
γ -Terpineol	10.11	1657.4	0.01	7.25	1195.3	0.01
Decanal	7.54	1460.1	0.03	7.43	1206.7	0.04
2,3-Epoxyneral?				7.66	1222.3	0.01
Nerol	11.32	1756.9	0.09	7.77	1229.8	0.07
2,3-Epoxygeranial?				7.82	1232.6	0.03
Neral	9.78	1630.5	0.10	7.92	1239.8	1.80
Geraniol	11.89	1805.3	0.05	8.20	1258.1	0.03

Geranial	10.37*	1678.3	[2.96]	8.38	1270.7	2.79
Unknown CIAU V [m/z 95, 67 (45), 41 (42), 110 (42), 43 (41), 59 (36)]	12.69	1875.6	0.02	8.56	1282.7	0.01
Undecanal	8.92	1563.6	0.01	8.94	1308.4	0.01
δ-Elemene	7.19	1434.1	0.10	9.33	1335.9	0.10
Citronellyl acetate	9.74	1627.7	1.80	9.62	1356.1	0.04
Neryl acetate	10.43	1683.2	0.88	9.76	1366.2	0.77
Geranyl acetate	10.80	1713.6	0.21	10.04	1385.4	0.17
β-Elemene	8.66*	1543.8	[1.78]	10.10	1389.7	0.12
Dodecanal	10.24	1668.0	0.02	10.37	1409.6	0.03
β-Caryophyllene	8.66*	1543.8	[1.78]	10.42*	1413.4	[0.72]
cis-α-Bergamotene	8.44*	1527.2	[0.11]	10.42*	1413.4	[0.72]
α-Santalene	8.44*	1527.2	[0.11]	10.48	1417.5	0.03
γ-Elemene	9.27	1590.6	0.03	10.66	1431.0	0.03
trans-α- Bergamotene	8.66*	1543.8	[1.78]	10.71	1434.4	1.08
α-Humulene	9.53	1611.0	0.06	10.88	1447.5	0.06
β-Santalene	9.40	1600.7	0.05	11.03*	1458.5	[0.15]
(E)-β-Farnesene	9.82*	1634.1	[0.07]	11.03*	1458.5	[0.15]
Germacrene D	10.04*	1651.5	[0.29]	11.26	1475.6	0.07
γ-Curcumene	9.95	1644.4	0.03	11.29	1478.1	0.03
trans-β- Bergamotene	9.82*	1634.1	[0.07]	11.34	1481.7	0.07
Bicyclogermacrene	10.37*	1678.3	[2.96]	11.45	1489.5	0.04
(Z)-α-Bisabolene	10.63	1699.4	0.06	11.62	1502.2	0.15
β-Bisabolene	10.40	1680.4	1.37	11.69*	1507.9	[1.75]
(3E,6E)-α- Farnesene	10.74	1708.6	0.22	11.69*	1507.9	[1.75]
(E)-α-Bisabolene	10.96	1726.8	0.05	12.13	1542.5	0.05
Germacrene B	11.37	1761.4	0.13	12.22	1549.6	0.13
Caryophyllene oxide	13.03	1906.6	0.03	12.53	1574.1	0.03
Alismol	15.99	2190.4	0.05	13.17	1625.0	0.03
Unknown cadinol analog II [m/z 95, 121 (73), 43 (57), 79 (43), 161 (43), 109 (40)... 204 (35), 222 (2)]	15.43	2134.4	0.02	13.45	1648.0	0.01
Unknown CILI I [m/z 94, 43 (89), 41 (67), 122 (46), 69 (41)...222]	15.14	2105.5	0.03	13.48	1650.6	0.04

Unknown CILI II [m/z 69, 95 (100), 41 (89), 109 (68), 67 (61)...222]	16.25	2217.4	0.04	13.65	1665.1	0.04
α -Bisabolol	15.69	2159.9	0.06	13.87	1683.3	0.05
Herniarin				14.21	1711.2	0.08
(2E,6Z)-Farnesal	15.63	2154.5	0.01	14.24	1713.7	0.04
Citropten				17.00	1963.3	0.13
Bergapten	25.33	3354.0	0.08	17.76	2037.1	0.05
Hexadecanal	14.94	2085.3	0.07			
Isopimpinellin				19.48	2213.0	0.05
Total reported		99.02%			99.25%	

*: 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