

Date : 2024-08-05

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24G23-PTH01

Customer Identification : Organic Patchouli - Indonesia - PI0106R

Type : Essential Oil

Source : *Pogostemon cablin*

Customer : Plant Therapy

Checked and approved by:

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

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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 : 2024-07-30

PHYSICOCHEMICAL DATA

Refractive index : 1.5086 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2024-07-26

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
5-Methyl-2-hexanone	0.01	Aliphatic ketone
α -Pinene	0.08	Monoterpene
β -Pinene	0.19	Monoterpene
Octen-3-ol	0.01	Aliphatic alcohol
Octan-3-one	tr	Aliphatic ketone
Octan-3-ol	0.01	Aliphatic alcohol
Limonene	0.02	Monoterpene
Linalool	tr	Monoterpenic alcohol
Unknown	0.03	Unknown
δ -Elemene	0.15	Sesquiterpene
Unknown	0.01	Sesquiterpene
Eugenol	0.02	Phenylpropanoid
α -Copaene	0.01	Sesquiterpene
β -Patchoulene	2.49	Sesquiterpene
β -Bourbonene	0.02	Sesquiterpene
<i>cis</i> - β -Elemene	0.06	Sesquiterpene
β -Elemene	1.00	Sesquiterpene
Cycloseychellene	0.62	Sesquiterpene
Isocaryophyllene	0.01	Sesquiterpene
β -Caryophyllene	3.18	Sesquiterpene
Seychellene	6.76	Sesquiterpene
Selina-5,11-diene	0.02	Sesquiterpene
α -Guaiene	12.67	Sesquiterpene
Unknown	0.05	Sesquiterpene
α -Patchoulene	5.11	Sesquiterpene
α -Humulene	0.19	Sesquiterpene
Patchoulene analog I	1.78	Sesquiterpene
γ -Patchoulene	1.02	Sesquiterpene
9- <i>epi</i> - β -Caryophyllene	0.02	Sesquiterpene
Unknown	0.38	Sesquiterpene
Unknown	0.33	Sesquiterpene
Selina-4,11-diene	0.20	Sesquiterpene
β -Selinene	0.09	Sesquiterpene
Unknown	0.30	Sesquiterpene
Patchoulene analog II	0.30	Sesquiterpene
δ -Selinene	0.08	Sesquiterpene
Unknown	0.16	Sesquiterpene
α -Selinene	0.09	Sesquiterpene
Eudesma-2,4(15),11-triene	0.17	Sesquiterpene
Aciphyllene	2.88	Sesquiterpene

Pentadecane	0.13	Alkane
δ-Guaiene	16.76	Sesquiterpene
γ-Cadinene	0.23	Sesquiterpene
7-epi-α-Selinene	0.17	Sesquiterpene
Nootkatene	0.06	Sesquiterpene
Unknown	0.07	Sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.17	Oxygenated sesquiterpene
Unknown	0.14	Oxygenated sesquiterpene
Unknown	0.01	Sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Isocaryophyllene epoxide B	0.05	Sesquiterpenic ether
α-Elemol	0.05	Sesquiterpenic alcohol
Norpatchoulénol	0.75	Norsesquiterpenic alcohol
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.06	Oxygenated sesquiterpene
Unknown	0.23	Oxygenated sesquiterpene
Caryophyllene oxide	0.36	Sesquiterpenic ether
Caryophyllene oxide isomer	0.07	Sesquiterpenic ether
Unknown	0.09	Oxygenated sesquiterpene
Unknown	0.53	Oxygenated sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Hexadecane	0.06	Alkane
Humulene epoxide II	0.05	Sesquiterpenic ether
Unknown	0.12	Oxygenated sesquiterpene
Unknown	0.26	Oxygenated sesquiterpene
Unknown	0.21	Oxygenated sesquiterpene
Unknown	0.78	Oxygenated sesquiterpene
Hinesol	0.49	Sesquiterpenic alcohol
Caryophylladiénol II	0.04	Sesquiterpenic alcohol
Patchoulol	29.02	Sesquiterpenic alcohol
Pogostol	2.74	Sesquiterpenic alcohol
Unknown	0.15	Oxygenated sesquiterpene
Unknown	0.09	Oxygenated sesquiterpene
Unknown	0.18	Oxygenated sesquiterpene
Unknown	0.06	Oxygenated sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
Rotundone	0.19	Sesquiterpenic ketone
Unknown	0.11	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Pogostone	1.45	Terpenic lactone
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.22	Oxygenated sesquiterpene
Unknown	0.09	Oxygenated sesquiterpene

Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Unknown	0.06	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Phytol	0.03	Diterpenic alcohol
Consolidated total	97.34	

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

Note: no correction factor was applied

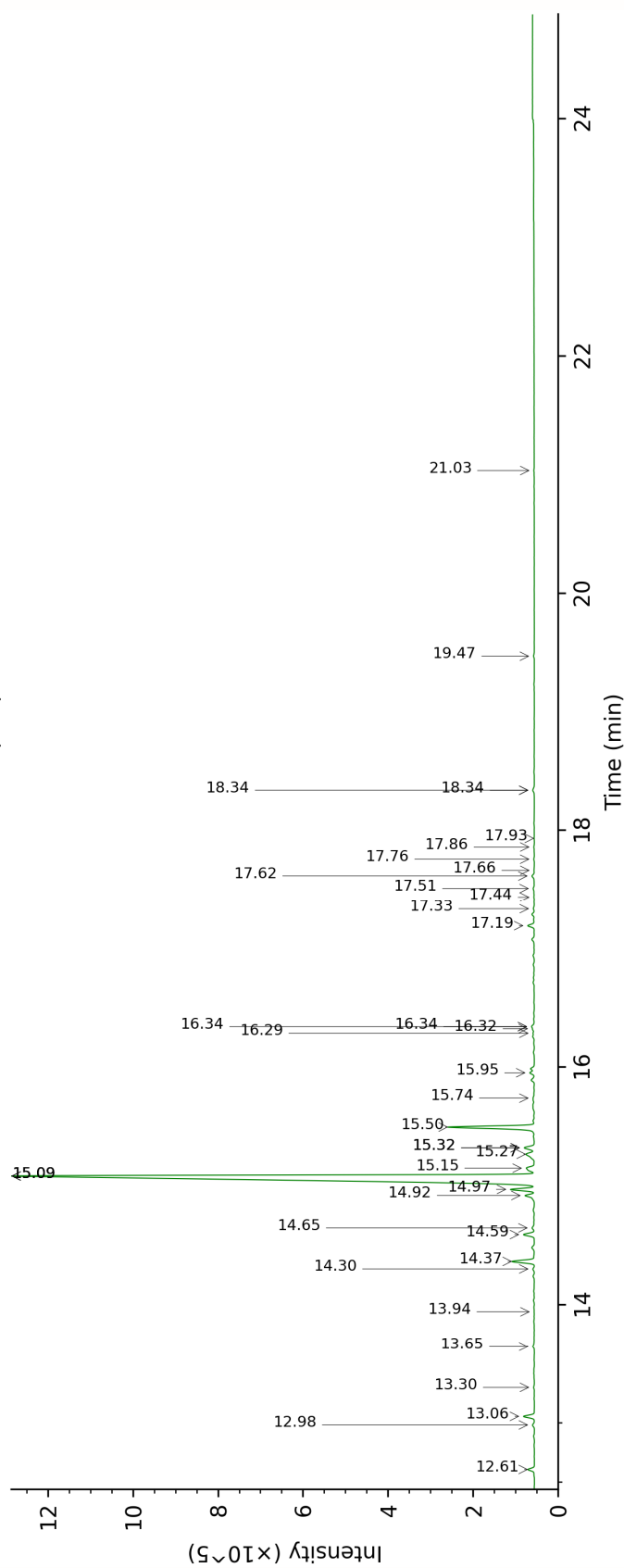
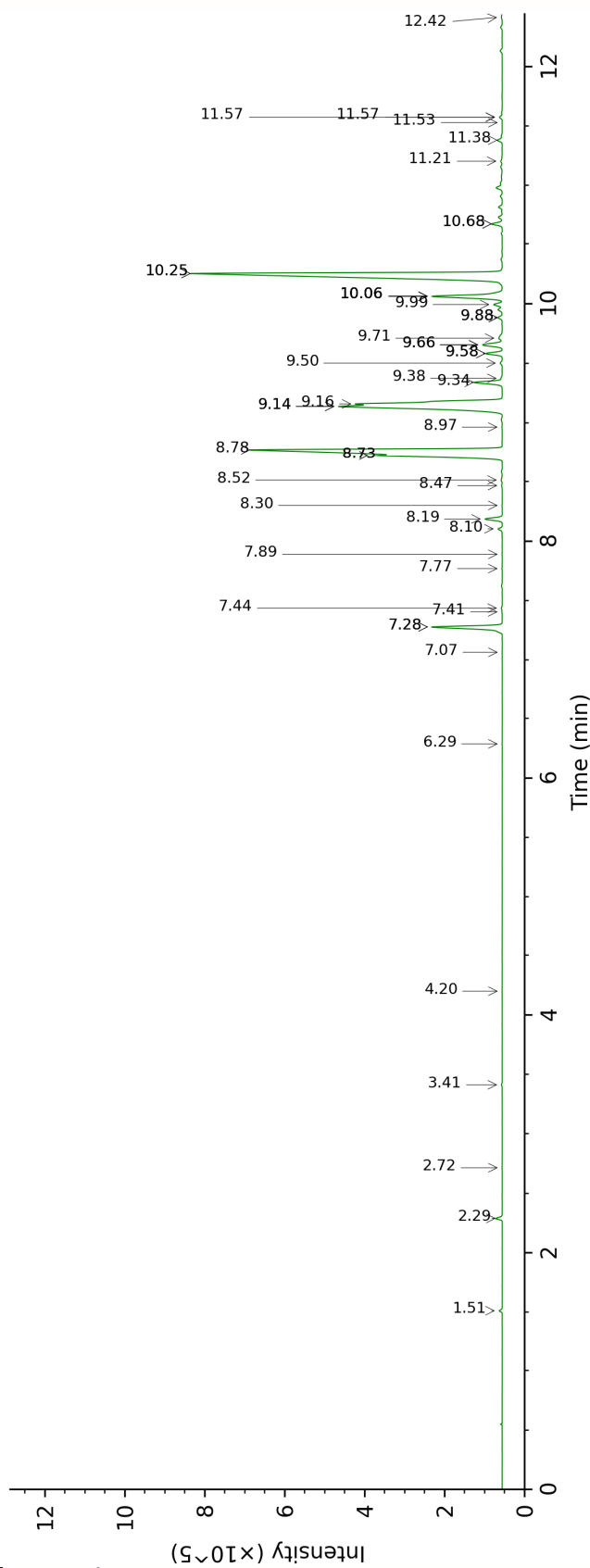
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

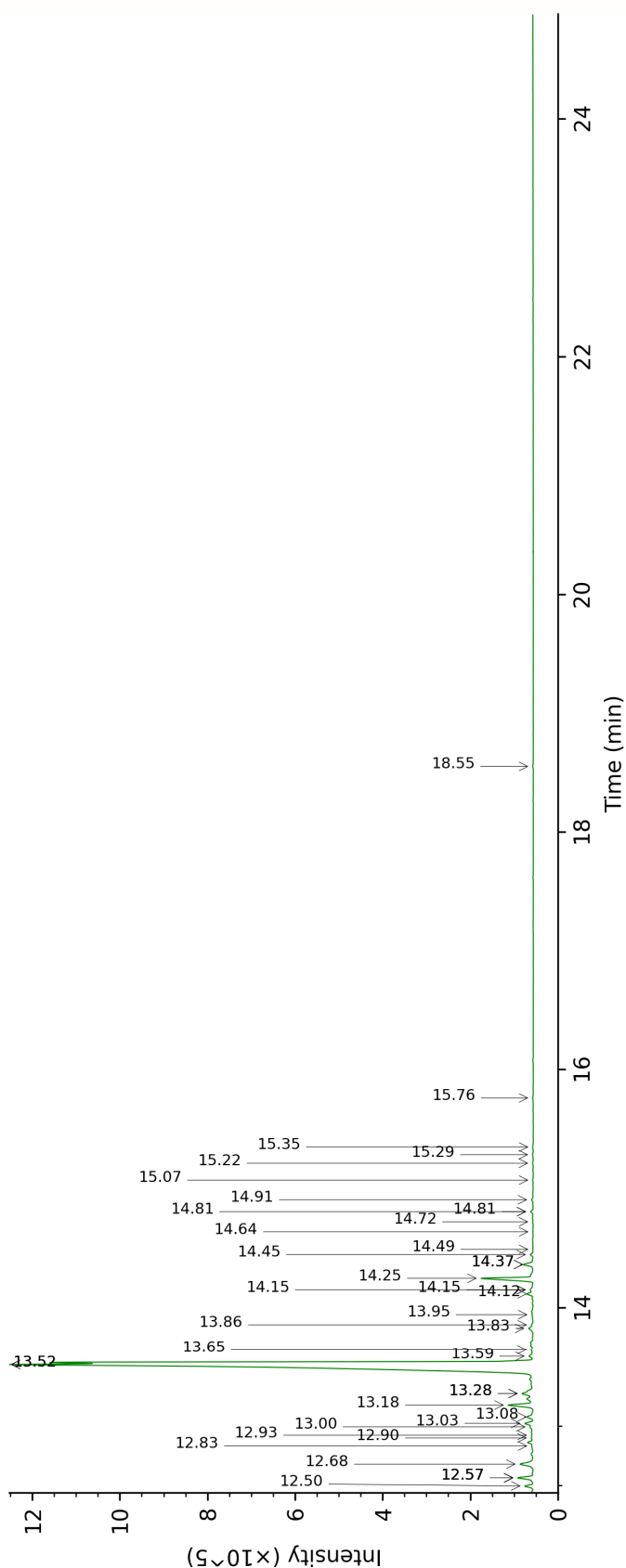
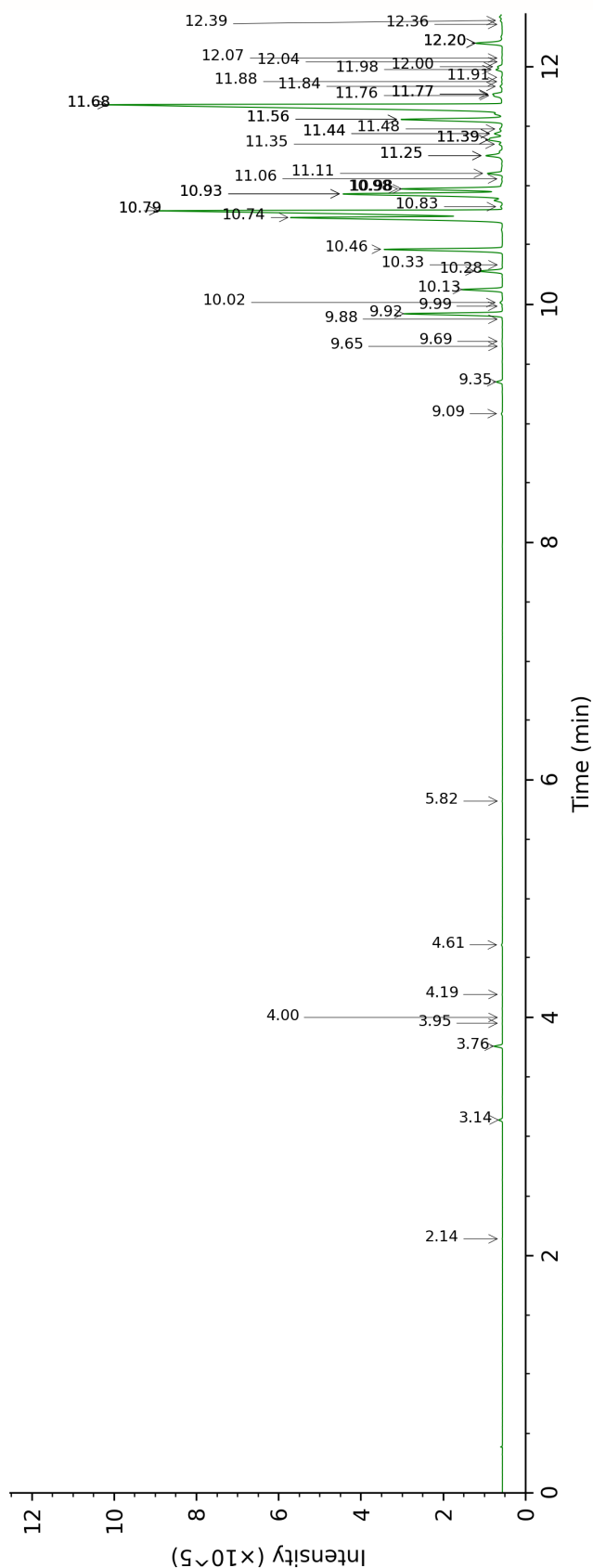
Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

This page was intentionally left blank. The following pages present the complete data of the analysis.

DB-WAX



DB-5



FULL ANALYSIS DATA

5-Methyl-2-hexanone	Column DB-WAX			Column DB-5		
	2.72	1105.9	0.01	2.14	855.0	0.01
α -Pinene	1.51	993.7	0.08	3.14	930.6	0.08
β -Pinene	2.29	1068.1	0.19	3.76	971.5	0.19
Octen-3-ol	7.07	1423.1	0.01	3.95	984.2	0.01
Octan-3-one	4.20	1217.7	0.01	4.00	987.4	tr
Octan-3-ol	6.29	1366.7	0.01	4.19	1000.1	0.01
Limonene	3.41	1159.2	0.02	4.61	1026.3	0.02
Linalool	8.30	1515.0	0.01	5.82	1102.2	tr
Unknown POCA I [m/z 159, 117 (68), 132 (55), 200 (35)]	7.44	1450.5	0.04	9.09	1316.2	0.03
δ -Elemene	7.28*	1438.9	[2.66]	9.35	1334.9	0.15
Unknown POCA II [m/z 145, 91 (67), 105 (57), 131 (56), 119 (52), 159 (49), 202 (45)]	7.89	1483.8	0.01	9.65	1355.8	0.01
Eugenol	15.09*	2100.9	[28.93]	9.69	1358.8	0.02
α -Copaene	7.41	1448.2	0.02	9.88	1371.8	0.01
β -Patchoulene	7.28*	1438.9	[2.66]	9.92	1375.0	2.49
β -Bourbonene	7.77	1475.0	0.01	9.99	1379.4	0.02
<i>cis</i> - β -Elemene	8.52	1531.5	0.05	10.02	1381.6	0.06
β -Elemene	8.73*	1547.7	[4.76]	10.13	1389.3	1.00
Cycloseychellene	8.19	1506.3	0.60	10.28	1400.1	0.62
Isocaryophyllene	8.47	1527.9	0.03	10.33	1403.9	0.01
β -Caryophyllene	8.73*	1547.7	[4.76]	10.46	1413.5	3.18
Seychellene	9.14*†	1579.6	[7.67]	10.74	1433.9	6.76
Selina-5,11-diene	8.97	1566.3	0.02	10.79*	1438.1	[12.78]
α -Guaiene	8.78	1551.5	12.67	10.79*	1438.1	[12.78]
Unknown POCA III [m/z 91, 93 (98), 79 (82), 81 (82), 105 (71), 107 (70)... 204 (38)]	9.50	1608.2	0.07	10.83	1440.6	0.05
α -Patchoulene	9.14*†	1579.6	[7.67]	10.93*	1448.6	[5.29]
α -Humulene	9.58*	1614.7	[0.56]	10.93*	1448.6	[5.29]
Patchoulene analog I	9.16*†	1581.2	[4.24]	10.98*	1451.7	[2.80]
γ -Patchoulene	9.34	1595.3	1.02	10.98*	1451.7	[2.80]
9-epi- β - Caryophyllene	9.66*	1620.5	[0.81]	11.06	1457.9	0.02
Unknown POCA	9.58*	1614.7	[0.56]	11.11	1461.4	0.38

IV [m/z 159, 91 (88), 93 (72), 79 (69), 105 (68), 41 (66), 81 (54), 202? (50)...]						
Unknown POCA V [m/z 147, 93 (87), 107 (77), 105 (77), 91 (73), 79 (63)... 204 (21)]	9.66*	1620.5	[0.81]	11.25*	1472.4	[0.53]
Selina-4,11-diene	9.71	1625.0	0.20	11.25*	1472.4	[0.53]
β-Selinene	10.06*	1653.2	[2.95]	11.35	1479.6	0.09
Unknown POCA VI [m/z 79, 107 (99), 91 (88), 93 (86), 81 (78), 105 (73), 41 (73)... 204? (12)]	9.99	1647.7	0.30	11.39*	1482.3	[0.60]
Patchoulene analog II	10.06*	1653.2	[2.95]	11.39*	1482.3	[0.60]
δ-Selinene	9.88*	1638.8	[0.15]	11.44*	1486.1	[0.25]
Unknown POCA VII [m/z 161, 189 (96), 91 (74), 204 (73), 105 (69), 41 (52)]	10.06*	1653.2	[2.95]	11.44*	1486.1	[0.25]
α-Selinene	10.25*	1668.5	[17.35]	11.48	1489.0	0.09
Eudesma-2,4(15),11-triene	11.38	1762.5	0.17	11.56*	1495.0	[3.05]
Aciphylle	10.06*	1653.2	[2.95]	11.56*	1495.0	[3.05]
Pentadecane	8.10	1499.9	0.13	11.68*	1504.3	[16.89]
δ-Guaiene	10.25*	1668.5	[17.35]	11.68*	1504.3	[16.89]
γ-Cadinene	10.68*	1703.2	[0.37]	11.76	1510.3	0.23
7-epi-α-Selinene	10.68*	1703.2	[0.37]	11.77*	1511.3	[0.22]
Nootkatene	11.20	1747.6	0.06	11.77*	1511.3	[0.22]
Unknown POCA XLV [m/z 159, 91 (81), 117 (68), 131 (51), 105 (46)... 202 (37)]	9.88*	1638.8	[0.15]	11.84	1516.4	0.07
Unknown POCA IX [m/z 41, 67 (95), 93 (92), 107 (91), 55 (77), 81 (77), 79 (73)... 205	11.58*	1778.8	[0.09]	11.88	1519.5	0.02

(17)...						
Unknown POCA X [m/z 161, 119 (92), 91 (69), 105 (52), 145 (49)... 218 (6)]	11.58*	1778.8	[0.09]	11.91	1522.3	0.03
Unknown POCA XI [m/z 91, 105 (98), 108 (83), 93 (82), 133 (79), 77 (64), 79 (57), 41 (56), 145 (55)... 218? (5)]				11.98	1527.4	0.17
Unknown POCA XII [m/z 91, 105 (78), 93 (77), 107 (71), 79 (64), 41 (63), 77 (63), 145 (60)... 218 (17)]				12.00	1529.3	0.14
Unknown POCA LIII [m/z 133, 105 (70), 146 (69), 145 (61), 91 (55), 131 (45), 187 (42), 159 (39), 119 (33), 202 (30)...	11.53	1774.9	0.01	12.04	1532.5	0.01
Unknown POCA XIII [m/z 145, 131 (91), 91 (86), 105 (68), 146 (66), 43 (54)... 220? (5)]				12.07	1535.0	0.02
Isocaryophyllene epoxide B	12.42	1852.4	0.05	12.20*	1544.7	[0.76]
α-Elemol	14.30	2025.5	0.05	12.20*	1544.7	[0.76]
Norpatchoulenol	14.37	2031.6	0.75	12.20*	1544.7	[0.76]
Unknown POCA XIV [m/z 191, 159 (66), 133 (53), 91 (45), 41 (42), 177 (35), 105 (33), 220 (32)]	13.94	1991.0	0.01	12.36	1557.1	0.02
Unknown POCA XV [m/z 41, 67 (90), 55 (87), 79 (85), 107 (84), 81				12.39	1559.7	0.06

(84), 93 (84), 121 (77), 91 (74)... 220 (7)]						
Unknown POCA XVI [m/z 43, 107 (94), 81 (71), 41 (63), 67 (58), 111 (58), 93 (55), 83 (54)... 205 (8), 220 (1)]	12.61	1869.2	0.22	12.50	1568.2	0.23
Caryophyllene oxide	13.06	1909.4	0.36	12.57*	1573.7	[0.45]
Caryophyllene oxide isomer	12.98	1902.8	0.07	12.57*	1573.7	[0.45]
Unknown POCA XIV isomer	14.65	2058.6	0.09	12.57*	1573.7	[0.45]
Unknown POCA XVII [m/z 43, 79 (44), 81 (41), 93 (40), 91 (40)... 220 (5)]	14.59	2053.2	0.39	12.68	1582.7	0.53
Unknown POCA XVIII [m/z 43, 105 (77), 91 (71), 93 (68), 41 (62), 107 (6)... 205 (41), 220 (7)]	14.92	2084.6	0.36	12.83	1594.6	0.07
Hexadecane	9.38	1597.9	0.03	12.90	1599.9	0.06
Humulene epoxide II	13.65	1963.7	0.08	12.92	1601.7	0.05
Unknown POCA XIX [m/z 43, 161 (73), 91 (53), 95 (52), 79 (46), 119 (45)... 205 (29), 220? (1)]	14.97	2089.7	0.70	13.00	1607.5	0.12
Unknown POCA XX [m/z 41, 91 (92), 55 (81), 93 (81), 79 (74), 43 (71), 95 (68), 123 (65)... 220 (17)]	15.15	2107.5	0.42	13.02	1609.9	0.26
Unknown POCA XXI [m/z 43, 79 (41), 93 (39), 41	15.27	2119.1	0.45	13.08	1614.4	0.21

(39), 91 (38), 81 (36)... 220 (3)] Unknown POCA XXII [m/z 41, 55 (92), 95 (80), 81 (76), 109 (76), 67 (66), 125 (65)... 220 (12)]	15.09*	2100.9	[28.93]	13.18	1622.6	0.78
Hinesol	15.32*	2124.5	[0.39]	13.28*	1630.6	[0.53]
Caryophylladienol II	16.32	2225.7	0.04	13.28*	1630.6	[0.53]
Patchoulol	15.09*	2100.9	[28.93]	13.52*	1650.7	[31.76]
Pogostol	15.50	2141.8	2.74	13.52*	1650.7	[31.76]
Unknown POCA XXIII [m/z 175, 218 (59), 133 (49), 91 (43), 41 (38), 147 (36)]	15.32*	2124.5	[0.39]	13.59	1656.5	0.15
Unknown POCA XXIV [m/z 43, 41 (87), 91 (64), 55 (63), 81 (58), 95 (54), 107 (52)... 222 (12)]				13.65	1661.2	0.09
Unknown POCA XXV [m/z 95, 107 (99), 41 (85), 93 (82), 91 (82), 109 (71), 105 (71), 105 (71), 108 (66)... 220 (29)]	16.34*	2227.5	[0.11]	13.83	1676.3	0.18
Unknown POCA XXVI [m/z 91, 41 (100), 107 (98), 108 (95), 95 (87), 93 (87), 105 (85), 79 (77), 119 (72)... 220? (15)]	16.29	2221.7	0.04	13.86	1678.8	0.06
Unknown POCA XXVII [m/z 43, 41 (95), 97 (89), 109 (71), 55 (71), 107 (70), 95 (69), 110 (65)... 222 (5)]	15.74	2166.0	0.04	13.95	1685.8	0.04
Rotundone	15.95	2187.3	0.16	14.12	1700.2	0.19

Unknown POCA XXVIII [m/z 43, 41 (82), 137 (78), 109 (76), 95 (75), 91 (72), 55 (67)... 220? (14)]				14.15*	1703.1	[0.14]
Unknown POCA LV [m/z 105, 107 (98), 91 (95), 166 (80), 248 (80), 93 (76)... 233 (66)]	13.30	1931.8	0.03	14.15*	1703.1	[0.14]
Pogostone				14.25	1711.5	1.45
Unknown POCA XXX [m/z 83, 43 (85), 55 (39), 41 (29), 121 (27), 120 (25)... 218 (3)]	17.33	2331.9	0.04	14.37*	1721.5	[0.33]
Unknown POCA XXIX [m/z 107, 93 (87), 41 (83), 81 (82), 67 (80), 55 (76)... 204 (53), 207 (34), 222 (9)]	17.19	2316.5	0.22	14.37*	1721.5	[0.33]
Unknown POCA XXXI [m/z 133, 148 (68), 147 (59), 91 (56), 79 (45), 105 (44)... 218 (8)]	17.44	2342.8	0.02	14.45	1728.7	0.09
Unknown POCA XLIX [m/z 91, 108 (86), 107 (85), 93 (80), 120 (75), 105 (71), 95 (72)... 218 (37)]	16.34*	2227.5	[0.11]	14.49	1732.5	0.02
Unknown POCA XXXII [m/z 43, 83 (93), 55 (42), 41 (37), 121 (34), 111 (28)... 222? (1)]	17.76	2377.3	0.02	14.64	1745.2	0.02
Unknown POCA XXXIII [m/z 134, 107 (96), 91 (84), 93 (78), 79 (77), 41 (74), 43 (66), 77 (65)...]	17.66	2367.2	0.02	14.72	1752.5	0.02

Unknown POCA XXXV [m/z 91, 105 (88), 95 (79), 93 (78), 81 (72), 79 (66)... 205 (33), 220 (7)...]	17.93	2396.6	0.01	14.81*	1759.9	[0.08]
Unknown POCA XXXIV [m/z 43, 191 (68), 41 (62), 91 (51), 95 (49), 110 (44)... 234 (22)]				14.81*	1759.9	[0.08]
Unknown POCA XXXVI [m/z 149, 131 (54), 105 (48), 91 (46), 41 (30), 93 (27)... 218 (23)]	17.62	2362.1	0.10	14.91	1768.5	0.06
Unknown POCA XXXVII [m/z 43, 95 (58), 67 (50), 41 (47), 55 (38), 109 (37)... 221 (9)... 236? (3)]	18.34*	2441.6	[0.08]	15.08	1782.8	0.02
Unknown POCA XXXVIII [m/z 219, 43 (67), 91 (46), 79 (42), 41 (41), 55 (36)... 234 (6)]	18.34*	2441.6	[0.08]	15.22	1795.1	0.03
Unknown POCA XL [m/z 43, 91 (77), 79 (74), 109 (73), 110 (71)... 218 (52), 234? (1)]	17.86	2388.5	0.02	15.29	1801.3	0.03
Unknown POCA XLII [m/z 91, 41 (79), 43 (74), 79 (72), 105 (65), 77 (64), 147 (64), 93 (61)... 218 (26), 234 (14)]	17.51	2350.7	0.05	15.35	1807.1	0.03
Unknown POCA XLIV [m/z 41, 110 (77), 55 (75), 69 (74), 43 (74), 95 (71), 97 (71), 123	21.03	2759.4	0.01	15.76	1844.4	0.02

(71), 67 (63), 136 (56)... 236? (7)]						
Phytol	19.47	2571.0	0.03	18.55	2111.8	0.03
Total reported		94.48%			97.33%	

*: 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