

Date : 2025-05-20

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25E05-PTH02

Customer Identification : Patchouli - India - P20114R

Type : Essential Oil

Source : *Pogostemon cablin*

Customer : Plant Therapy

Checked and approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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 2025-05-20 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 : Alexis St-Gelais, Ph. D., Chimiste 2013-174

Date : 2025-05-20

PHYSICOCHEMICAL DATA

Refractive index : 1.5089 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-05-06

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
Toluene	tr	Simple phenolic
5-Methyl-2-hexanone	0.02	Aliphatic ketone
α -Pinene	0.09	Monoterpene
Sabinene	0.01	Monoterpene
β -Pinene	0.21	Monoterpene
Octen-3-ol	0.01	Aliphatic alcohol
Octan-3-one	0.01	Aliphatic ketone
Octan-3-ol	0.01	Aliphatic alcohol
Limonene	0.03	Monoterpene
Terpinolene	0.01	Monoterpene
Linalool	0.01	Monoterpenic alcohol
Geranial	0.01	Monoterpenic aldehyde
Unknown	0.01	Unknown
δ -Elemene isomer	0.01	Sesquiterpene
δ -Elemene	0.13	Sesquiterpene
α -Cubebene	0.01	Sesquiterpene
Eugenol	0.02	Phenylpropanoid
α -Ylangene	0.01	Sesquiterpene
α -Copaene	0.01	Sesquiterpene
β -Patchoulene	2.48	Sesquiterpene
β -Bourbonene	0.01	Sesquiterpene
<i>cis</i> - β -Elemene	0.06	Sesquiterpene
β -Elemene	1.11	Sesquiterpene
Cycloseychellene	0.60	Sesquiterpene
α -Gurjunene	0.01	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
β -Caryophyllene	3.20	Sesquiterpene
Seychellene	6.72	Sesquiterpene
α -Guaiane	13.35	Sesquiterpene
Selina-5,11-diene	0.05	Sesquiterpene
Unknown	0.05	Sesquiterpene
α -Humulene	0.57	Sesquiterpene
α -Patchoulene	4.79	Sesquiterpene
δ -patchoulene	1.77	Sesquiterpene
Patchoulene analog IV (Improperly reported as γ -patchoulene)	1.00	Sesquiterpene
9- <i>epi</i> - β -Caryophyllene	0.02	Sesquiterpene
Unknown	0.40	Sesquiterpene
Selina-4,11-diene	0.12	Sesquiterpene
Unknown	0.48	Sesquiterpene

Drima-7,9(11)-diene?	0.01	Sesquiterpene
β-Selinene	0.08	Sesquiterpene
Patchoulene analog II	0.18	Sesquiterpene
Unknown	0.11	Sesquiterpene
δ-Selinene	0.28	Sesquiterpene
Unknown	0.25	Sesquiterpene
α-Selinene	0.09	Sesquiterpene
Eudesma-2,4(15),11-triene	0.08	Sesquiterpene
Aciphyllene	2.92	Sesquiterpene
Pentadecane	0.08	Alkane
Nootkatene	0.03	Sesquiterpene
γ-Cadinene	0.40	Sesquiterpene
δ-Guaiene	17.04	Sesquiterpene
7-epi-α-Selinene	0.27	Sesquiterpene
Unknown	0.21	Sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.10	Oxygenated sesquiterpene
Unknown	0.10	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
α-Elemol	0.04	Sesquiterpenic alcohol
Norpatchoulol	0.59	Norsesquiterpenic alcohol
Germacrene B	0.06	Sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.42	Oxygenated sesquiterpene
Caryophyllene oxide isomer	0.11	Sesquiterpenic ether
Unknown	0.07	Oxygenated sesquiterpene
Caryophyllene oxide	0.46	Sesquiterpenic ether
Unknown	0.45	Oxygenated sesquiterpene
Unknown	0.22	Oxygenated sesquiterpene
Humulene epoxide II	0.11	Sesquiterpenic ether
Unknown	0.11	Oxygenated sesquiterpene
Unknown	0.23	Oxygenated sesquiterpene
Unknown	0.26	Oxygenated sesquiterpene
Unknown	0.67	Oxygenated sesquiterpene
Hinesol	0.43	Sesquiterpenic alcohol
Patchoulol	28.76	Sesquiterpenic alcohol
Pogostol	1.99	Sesquiterpenic alcohol
Unknown	0.24	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene
Rotundone	0.21	Sesquiterpenic ketone
Unknown	0.02	Oxygenated sesquiterpene
Pogostone	0.55	Terpenic lactone
Unknown	0.20	Oxygenated sesquiterpene
Unknown	0.17	Oxygenated sesquiterpene

Unknown	0.10	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene
Unknown	0.14	Oxygenated sesquiterpene
Unknown	0.12	Oxygenated sesquiterpene
Unknown	0.06	Oxygenated sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.05	Oxygenated sesquiterpene
Corymbolone analog	0.03	Sesquiterpenic alcohol
Corymbolone	0.09	Sesquiterpenic alcohol
Unknown	0.04	Oxygenated sesquiterpene
Phytol	0.02	Diterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene
Consolidated total	97.33	

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

Note: no correction factor was applied

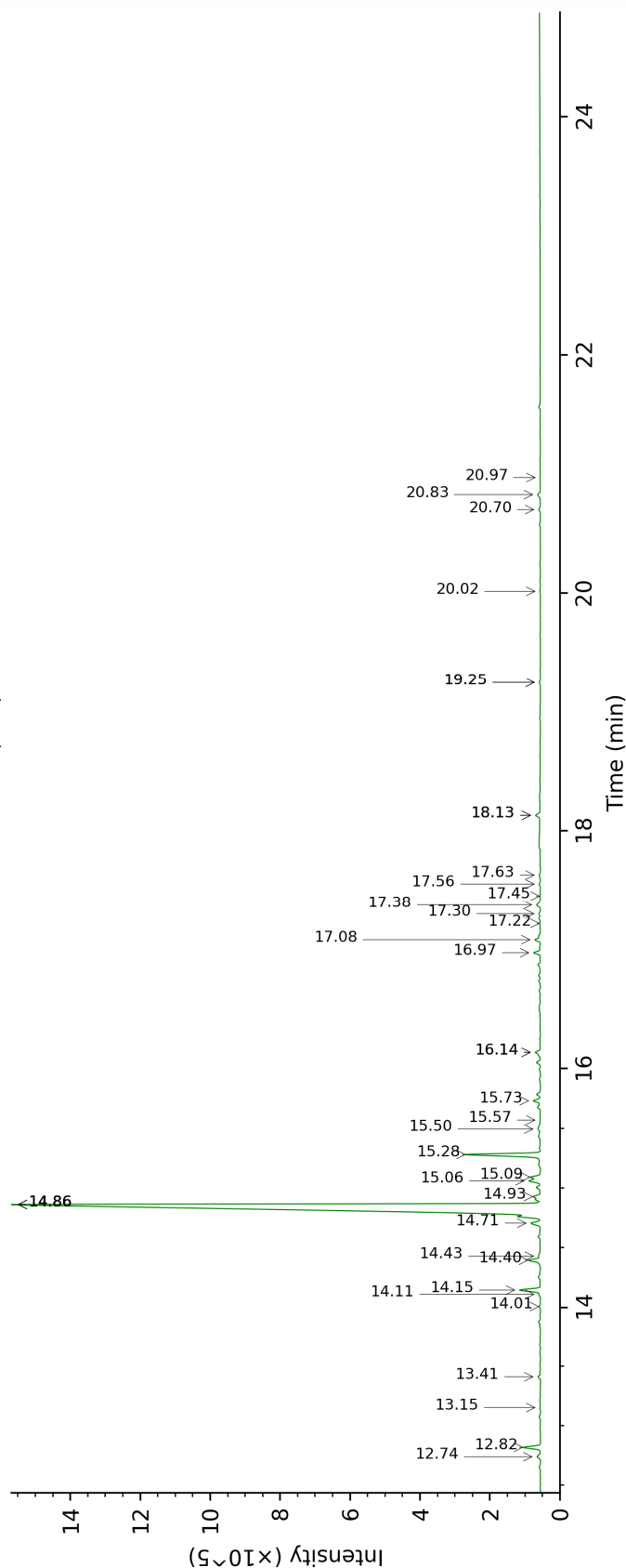
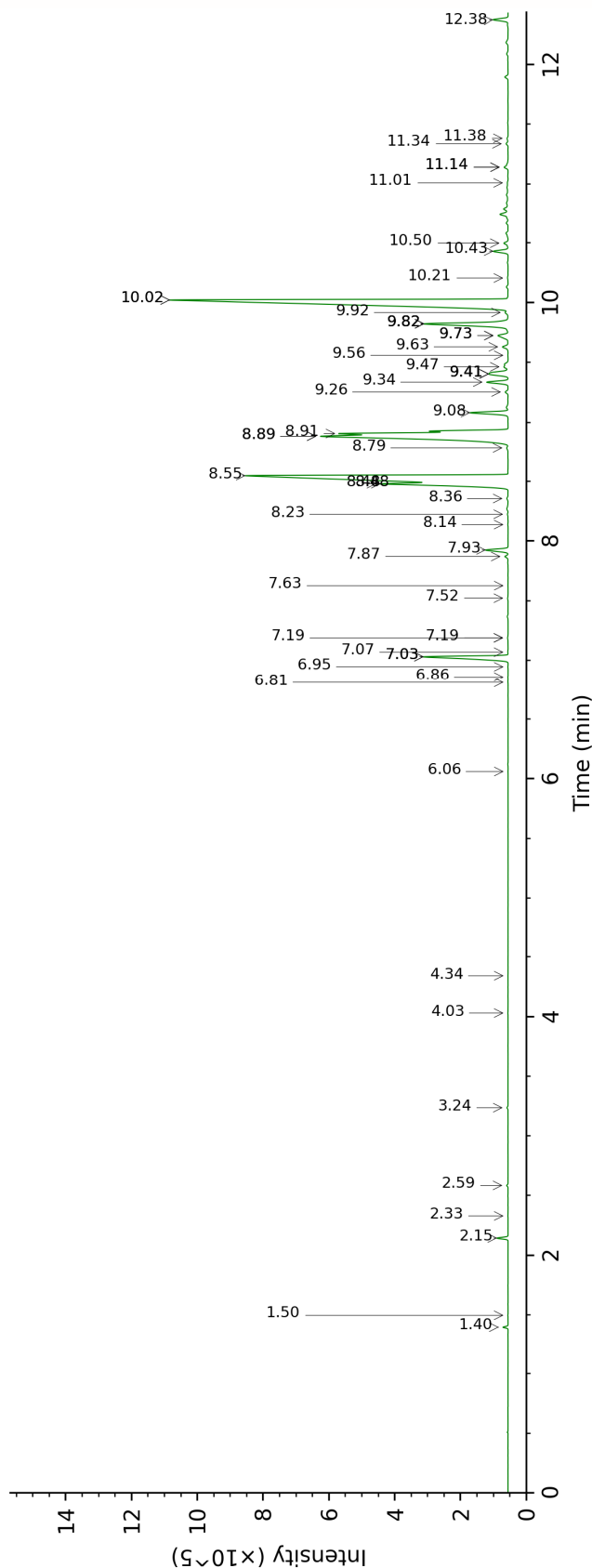
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

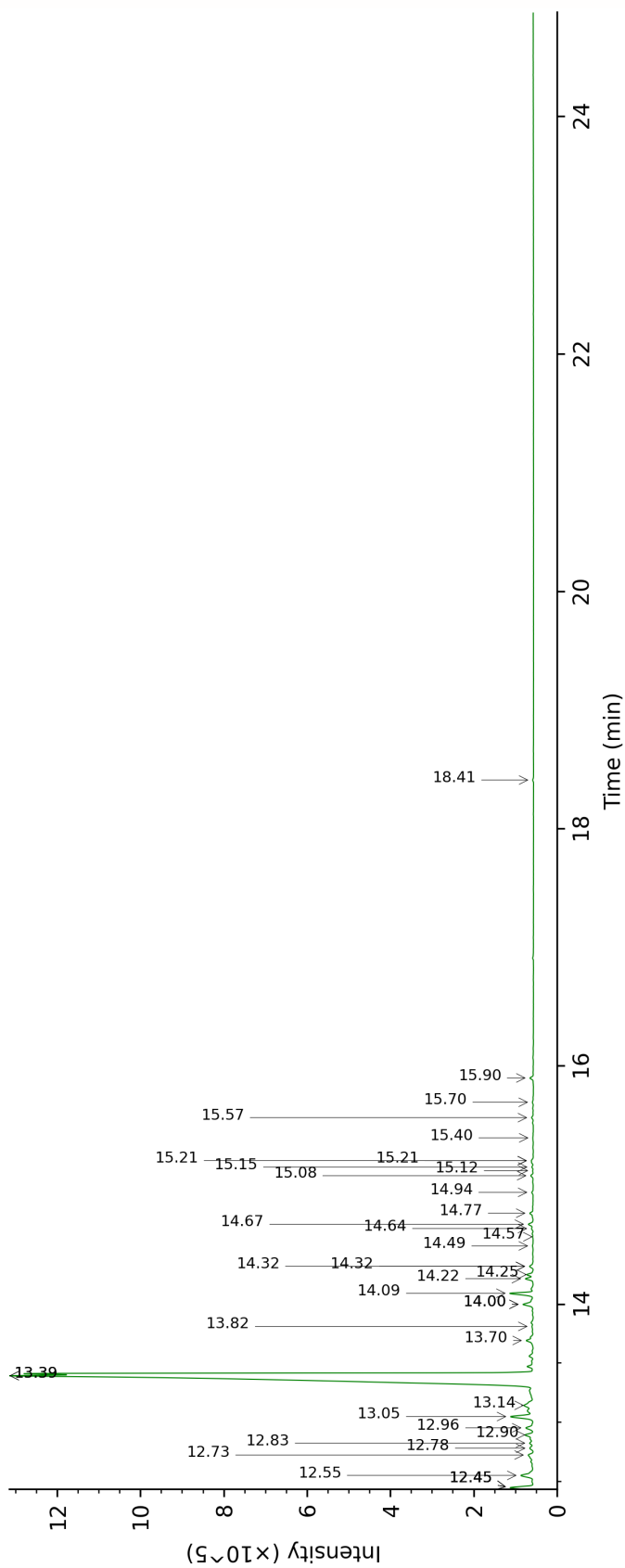
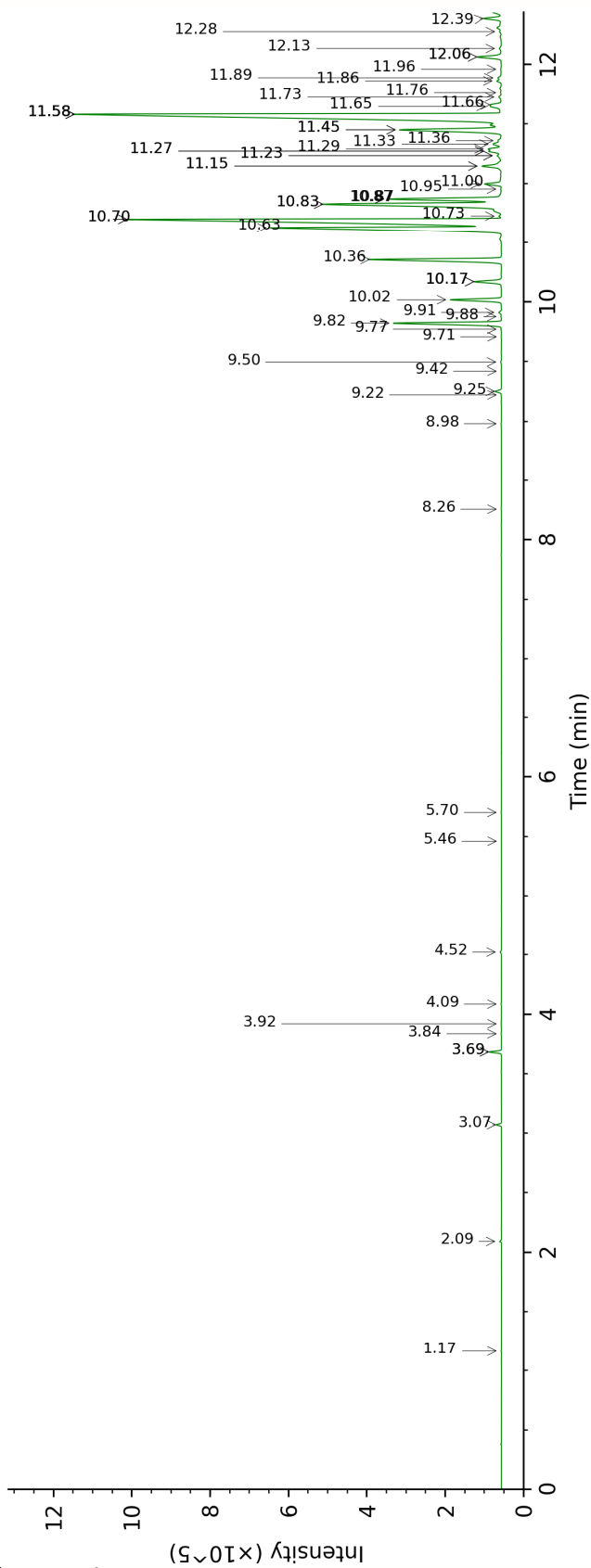
Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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

DB-WAX



DB-5



FULL ANALYSIS DATA

Toluene	Column DB-WAX			Column DB-5		
	1.50	1002.3	tr	1.17	759.0	tr
5-Methyl-2-hexanone	2.59	1106.9	0.03	2.09	855.4	0.02
α-Pinene	1.40	991.6	0.09	3.07	930.9	0.09
Sabinene	2.33	1084.9	0.01	3.68*	971.9	[0.22]
β-Pinene	2.15	1066.5	0.21	3.68*	971.9	[0.22]
Octen-3-ol	6.81	1419.5	0.01	3.84	982.1	0.01
Octan-3-one	4.03	1218.7	0.01	3.92	987.6	0.01
Octan-3-ol	6.06	1365.5	0.01	4.09	998.8	0.01
Limonene	3.24	1158.0	0.02	4.52	1026.8	0.03
Terpinolene	4.34	1241.5	0.01	5.46	1086.4	0.01
Linalool	8.14	1517.9	0.01	5.70	1101.7	0.01
Geranial	10.21	1680.3	0.02	8.26	1270.7	0.01
Unknown POCA I [m/z 159, 117 (68), 132 (55), 200 (35)]	7.19*	1447.2	[0.02]	8.98	1317.0	0.01
δ-Elemene isomer	6.95	1429.4	0.01	9.22	1334.2	0.01
δ-Elemene	7.03*	1435.6	[2.61]	9.25	1336.3	0.13
α-Cubebene	6.86	1423.0	0.01	9.42	1348.3	0.01
Eugenol	14.86*	2098.4	[28.52]	9.50	1353.8	0.02
α-Ylangene	7.07	1438.4	0.01	9.71	1368.8	0.01
α-Copaene	7.19*	1447.2	[0.02]	9.77	1373.4	0.01
β-Patchoulene	7.03*	1435.6	[2.61]	9.82	1377.0	2.48
β-Bourbonene	7.52	1471.6	0.02	9.88	1380.9	0.01
cis-β-Elemene	8.36	1534.6	0.04	9.91	1383.3	0.06
β-Elemene	8.48*	1544.1	[4.25]	10.02	1390.9	1.11
Cycloseychellene	7.93	1501.6	0.60	10.17*	1401.7	[0.63]
α-Gurjunene	7.63	1479.3	0.01	10.17*	1401.7	[0.63]
Isocaryophyllene	8.23	1524.5	0.02	10.17*	1401.7	[0.63]
β-Caryophyllene	8.48*	1544.1	[4.25]	10.36	1415.5	3.20
Seychellene	8.89*†	1575.2	[8.12]	10.63	1435.8	6.72
α-Guaiene	8.55	1549.3	13.35	10.70*	1441.2	[13.20]
Selina-5,11-diene	8.79	1567.7	0.05	10.70*	1441.2	[13.20]
Unknown POCA III [m/z 91, 93 (98), 79 (82), 81 (82), 105 (71), 107 (70)... 204 (38)]	9.26	1604.0	0.08	10.73	1443.2	0.05
α-Humulene	9.34	1610.6	0.57	10.83*	1450.8	[5.36]

α -Patchoulene	8.89*†	1575.2	[8.12]	10.83*	1450.8	[5.36]
δ -patchoulene	8.91*†	1576.9	[3.59]	10.87*	1454.1	[2.76]
Patchoulene analog IV (Improperly reported as γ -patchoulene)	9.08	1590.2	1.00	10.87*	1454.1	[2.76]
9-epi- β -Caryophyllene	9.41*	1616.1	[0.81]	10.95	1460.3	0.02
Unknown POCA IV [m/z 159, 91 (88), 93 (72), 79 (69), 105 (68), 41 (66), 81 (54), 202? (50)...]	9.41*	1616.1	[0.81]	11.00	1463.6	0.40
Selina-4,11-diene	9.47	1620.9	0.12	11.15*	1474.8	[0.60]
Unknown POCA V [m/z 147, 93 (87), 107 (77), 105 (77), 91 (73), 79 (63)... 204 (21)]	9.41*	1616.1	[0.81]	11.15*	1474.8	[0.60]
Drima-7,9(11)-diene?	9.56	1628.5	0.01	11.24*	1481.4	[0.14]
β -Selinene	9.92	1657.2	0.08	11.24*	1481.4	[0.14]
Patchoulene analog II	9.82*	1649.7	[2.93]	11.27*	1484.3	[0.30]
Unknown POCA VI [m/z 79, 107 (99), 91 (88), 93 (86), 81 (78), 105 (73), 41 (73)... 204? (12)]	9.73*	1641.8	[0.39]	11.27*	1484.3	[0.30]
δ -Selinene	9.73*	1641.8	[0.39]	11.29	1485.6	0.28
Unknown POCA VII [m/z 161, 189 (96), 91 (74), 204 (73), 105 (69), 41 (52)]	9.82*	1649.7	[2.93]	11.33	1488.7	0.25
α -Selinene	10.02*	1665.6	[17.78]	11.36	1490.9	0.09
Eudesma-2,4(15),11-triene	11.14*	1758.5	[0.15]	11.45*	1497.7	[3.00]
Aciphyllene	9.82*	1649.7	[2.93]	11.45*	1497.7	[3.00]
Pentadecane	7.87	1497.4	0.08	11.58*	1507.6	[17.55]

Nootkatene	11.01	1747.4	0.03	11.58*	1507.6	[17.55]
γ-Cadinene	10.43	1698.7	0.40	11.58*	1507.6	[17.55]
δ-Guaiene	10.02*	1665.6	[17.78]	11.58*	1507.6	[17.55]
7-epi-α-Selinene	10.50	1704.3	0.12	11.65	1512.8	0.27
Unknown POCA XLV [m/z 159, 91 (81), 117 (68), 131 (51), 105 (46)... 202 (37)]	9.63	1634.2	0.17	11.66	1513.9	0.21
Unknown POCA IX [m/z 41, 67 (95), 93 (92), 107 (91), 55 (77), 81 (77), 79 (73)... 205 (17)...]	11.38	1778.8	0.03	11.73	1519.1	0.07
Unknown POCA X [m/z 161, 119 (92), 91 (69), 105 (52), 145 (49)... 218 (6)]	11.34	1774.9	0.05	11.76	1521.9	0.02
Unknown POCA XI [m/z 91, 105 (98), 108 (83), 93 (82), 133 (79), 77 (64), 79 (57), 41 (56), 145 (55)... 218? (5)]				11.86	1529.7	0.10
Unknown POCA XII [m/z 91, 105 (78), 93 (77), 107 (71), 79 (64), 41 (63), 77 (63), 145 (60)... 218 (17)]				11.89	1531.8	0.10
Unknown POCA XIII [m/z 145, 131 (91), 91 (86), 105 (68), 146 (66), 43 (54)... 220? (5)]				11.96	1537.5	0.02
α-Elemol	14.11	2025.7	0.04	12.06*	1545.7	[0.61]
Norpatchoulenol	14.15	2029.1	0.59	12.06*	1545.7	[0.61]
Germacrene B	11.14*	1758.5	[0.15]	12.14	1551.3	0.06
Unknown POCA XV [m/z 41, 67 (90), 55 (87), 79 (85), 107 (84), 81				12.28	1562.5	0.04

(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)]	12.38	1865.7	0.39	12.39	1571.3	0.42
Caryophyllene oxide isomer	12.74	1898.1	0.11	12.45*	1576.4	[0.62]
Unknown POCA XIV isomer	14.43	2056.4	0.07	12.45*	1576.4	[0.62]
Caryophyllene oxide	12.82	1905.4	0.46	12.45*	1576.4	[0.62]
Unknown POCA XVII [m/z 43, 79 (44), 81 (41), 93 (40), 91 (40)... 220 (5)]	14.40	2053.1	0.38	12.56	1584.5	0.45
Unknown POCA XVIII [m/z 43, 105 (77), 91 (71), 93 (68), 41 (62), 107 (6)... 205 (41), 220 (7)]	14.71	2082.9	0.31	12.73	1598.0	0.22
Humulene epoxide II	13.41	1959.8	0.07	12.78	1602.5	0.11
Unknown POCA XIX [m/z 43, 161 (73), 91 (53), 95 (52), 79 (46), 119 (45)... 205 (29), 220? (1)]	14.86*	2098.4	[28.52]	12.83	1605.9	0.11
Unknown POCA XX [m/z 41, 91 (92), 55 (81), 93 (81), 79 (74), 43 (71), 95 (68), 123 (65)... 220 (17)]	14.93	2105.1	0.20	12.90	1611.7	0.23
Unknown POCA XXI [m/z 43, 79 (41), 93 (39), 41 (39), 91 (38), 81	15.09	2121.4	0.26	12.96	1616.6	0.26

(36)... 220 (3)]						
Unknown POCA XXII [m/z 41, 55 (92), 95 (80), 81 (76), 109 (76), 67 (66), 125 (65)... 220 (12)]	14.86*	2098.4	[28.52]	13.05	1624.5	0.67
Hinesol	15.06	2118.3	0.35	13.14	1632.3	0.43
Patchoulol	14.86*	2098.4	[28.52]	13.39*	1653.0	[30.76]
Pogostol	15.28	2140.3	1.99	13.39*	1653.0	[30.76]
Unknown POCA XXV [m/z 95, 107 (99), 41 (85), 93 (82), 91 (82), 109 (71), 105 (71), 105 (71), 108 (66)... 220 (29)]	16.14*	2227.5	[0.19]	13.70	1678.3	0.24
Unknown POCA XXVII [m/z 43, 41 (95), 97 (89), 109 (71), 55 (71), 107 (70), 95 (69), 110 (65)... 222 (5)]	15.50	2161.6	0.13	13.82	1688.1	0.05
Rotundone	15.73	2185.3	0.21	14.00*	1703.5	[0.36]
Unknown POCA LV [m/z 105, 107 (98), 91 (95), 166 (80), 248 (80), 93 (76)... 233 (66)]	13.15	1936.0	0.02	14.00*	1703.5	[0.36]
Pogostone				14.09	1711.5	0.55
Unknown POCA XXIX [m/z 107, 93 (87), 41 (83), 81 (82), 67 (80), 55 (76)... 204 (53), 207 (34), 222 (9)]	16.97	2315.6	0.19	14.22	1722.2	0.20
Unknown POCA XXX [m/z 83, 43 (85), 55 (39), 41 (29), 121 (27), 120 (25)... 218 (3)]	17.08	2327.4	0.15	14.25	1725.2	0.17
Unknown POCA XLIX [m/z 91, 108	16.14*	2227.5	[0.19]	14.32*	1731.2	[0.12]

(86), 107 (85), 93 (80), 120 (75), 105 (71), 95 (72)... 218 (37)]						
Unknown POCA XXXI [m/z 133, 148 (68), 147 (59), 91 (56), 79 (45), 105 (44)... 218 (8)]	17.22	2342.1	0.02	14.32*	1731.2	[0.12]
Unknown POCA XXXII [m/z 43, 83 (93), 55 (42), 41 (37), 121 (34), 111 (28)... 222? (1)]	17.56	2378.5	0.04	14.49	1746.2	0.04
Unknown POCA XXXIII [m/z 134, 107 (96), 91 (84), 93 (78), 79 (77), 41 (74), 43 (66), 77 (65)...]	17.45	2367.5	0.02	14.57	1752.8	0.02
Unknown POCA XXXIV [m/z 43, 191 (68), 41 (62), 91 (51), 95 (49), 110 (44)... 234 (22)]				14.64	1758.9	0.05
Unknown POCA XXXV [m/z 91, 105 (88), 95 (79), 93 (78), 81 (72), 79 (66)... 205 (33), 220 (7)...]				14.67	1762.0	0.14
Unknown POCA XXXVI [m/z 149, 131 (54), 105 (48), 91 (46), 41 (30), 93 (27)... 218 (23)]	17.38	2359.0	0.15	14.77	1770.1	0.12
Unknown POCA XXXVII [m/z 43, 95 (58), 67 (50), 41 (47), 55 (38), 109 (37)... 221	18.13*†	2443.0	[0.18]	14.94	1785.3	0.06

(9)... 236? (3)]						
Unknown POCA XXXVIII [m/z 219, 43 (67), 91 (46), 79 (42), 41 (41), 55 (36)... 234 (6)]	18.13*†	2443.0	[0.18]	15.08	1797.5	0.07
Unknown POCA XL [m/z 43, 91 (77), 79 (74), 109 (73), 110 (71)... 218 (52), 234? (1)]	17.63	2386.8	0.05	15.12	1801.2	0.02
Unknown POCA XXXIX [m/z 43, 91 (43), 41 (37), 79 (32), 219 (31)... 234 (14)]	20.70	2748.3	0.05	15.15	1803.8	0.04
Unknown POCA XLII [m/z 91, 41 (79), 43 (74), 79 (72), 105 (65), 77 (64), 147 (64), 93 (61)... 218 (26), 234 (14)]	17.30	2351.0	0.05	15.21*	1808.6	[0.09]
Unknown POCA XLI [m/z 43, 95 (54), 91 (46), 41 (37), 77 (32), 105 (31)... 216 (23), 234 (2)]	20.97	2781.8	0.01	15.21*	1808.6	[0.09]
Unknown POCA XLIII [m/z 43, 69 (60), 41 (55), 55 (40), 95 (33), 163 (27)... 234 (17)]	20.02	2663.5	0.02	15.40	1826.1	0.03
Unknown POCA XLIV [m/z 41, 110 (77), 55 (75), 69 (74), 43 (74), 95 (71), 97 (71), 123 (71), 67 (63), 136 (56)... 236? (7)]				15.57	1841.6	0.05
Corymbolone analog	19.25*	2571.3	[0.03]	15.70	1853.4	0.03
Corymbolone	20.83	2764.0	0.09	15.90	1872.0	0.09

Unknown POCA XLVII [m/z 41, 79 (97), 43 (97), 69 (72), 93 (70), 91 (62), 95 (58)... 220 (2)]	14.01	2015.8	0.04			
Phytol	19.25*	2571.3	[0.03]	18.41	2114.3	0.02
Unknown POCA XLVIII [m/z 163, 119 (50), 91 (48), 95 (47), 41 (44), 105 (41)... 220 (18)]	15.57	2169.1	0.01			
Total reported	93.77%			97.18%		

*: 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