

Date : 2025-03-12

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 25B26-PTH04

Customer Identification : Palmarosa - India - P10115R

Type : Essential Oil

Source : *Cymbopogon martini*

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

Date : 2025-03-12

PHYSICOCHEMICAL DATA

Refractive index : 1.4736 ± 0.0003 (20 °C)

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

Analyst : Cindy Caron B. Sc.

Date : 2025-02-26

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
Ethanol	0.01	Aliphatic alcohol
Isobutyral	tr	Aliphatic aldehyde
2-Methyl-3-buten-2-ol	0.01	Aliphatic alcohol
Isovaleral	0.01	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
2-Ethylfuran	tr	Furan
Isoamyl alcohol	0.02	Aliphatic alcohol
Isoamyl acetate	tr	Aliphatic ester
2-Heptanone	tr	Aliphatic ketone
Hashishene	tr	Monoterpene
Tricyclene	tr	Monoterpene
Prenyl acetate	0.01	Aliphatic ester
α -Pinene	0.01	Monoterpene
Camphene	0.02	Monoterpene
β -Pinene	0.01	Monoterpene
Sabinene	0.01	Monoterpene
6-Methyl-5-hepten-2-one	0.07	Aliphatic ketone
Myrcene	0.19	Monoterpene
6-Methyl-5-hepten-2-ol	0.01	Aliphatic alcohol
α -Phellandrene	0.03	Monoterpene
<i>cis</i> -Dehydroxylinalool oxide	0.02	Monoterpenic ether
<i>para</i> -Cymene	0.02	Monoterpene
Limonene	0.15	Monoterpene
1,8-Cineole	0.02	Monoterpenic ether
(<i>Z</i>)- β -Ocimene	0.38	Monoterpene
(<i>E</i>)- β -Ocimene	1.39	Monoterpene
2,6-Dimethyl-5-heptenal (melonal)	0.02	Aliphatic aldehyde
γ -Terpinene	0.01	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	0.02	Monoterpenic alcohol
Octanol	0.02	Aliphatic alcohol
Terpinolene	0.03	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	tr	Monoterpenic alcohol
Rosefuran	0.01	Monoterpenic ether
Linalool	2.57	Monoterpenic alcohol
Nonanal	0.05	Aliphatic aldehyde
Phenylethyl alcohol	0.01	Simple phenolic
Unknown	0.01	Unknown
Camphor	0.02	Monoterpenic ketone
Citronellal	0.01	Monoterpenic aldehyde
Nerol oxide	0.01	Aliphatic ether

α -Phellandren-8-ol	0.01	Monoterpenic alcohol
Menthol	0.01	Monoterpenic alcohol
Terpinen-4-ol	0.01	Monoterpenic alcohol
Isogeranial	0.01	Monoterpenic aldehyde
α -Terpineol	0.03	Monoterpenic alcohol
Decanal	0.01	Aliphatic aldehyde
Unknown	0.02	Unknown
Nerol	0.21	Monoterpenic alcohol
Citronellol	0.02	Monoterpenic alcohol
Neral	0.36	Monoterpenic aldehyde
Isoamyl hexanoate	0.02	Aliphatic ester
Geraniol	78.48	Monoterpenic alcohol
Geranial	0.70	Monoterpenic aldehyde
Unknown	0.02	Oxygenated monoterpene
Geranyl formate	0.11	Monoterpenic ester
Unknown	0.01	Unknown
Unknown	0.03	Unknown
Neryl acetate	0.02	Monoterpenic ester
Geranic acid	0.01	Aliphatic acid
Geranyl acetate	8.49	Monoterpenic ester
β -Elemene	0.10	Sesquiterpene
α -Gurjunene	0.03	Sesquiterpene
β -Caryophyllene	1.84	Sesquiterpene
<i>trans</i> - α -Bergamotene	[0.01]	Sesquiterpene
α -Guaiene	[0.01]	Sesquiterpene
α -Humulene	0.13	Sesquiterpene
Unknown	0.08	Sesquiterpene
β -Selinene	0.04	Sesquiterpene
Valencene	0.05	Sesquiterpene
α -Muurolene	0.03	Sesquiterpene
γ -Cadinene	0.05	Sesquiterpene
δ -Cadinene	0.02	Sesquiterpene
α -Elemol	0.02	Sesquiterpenic alcohol
Unknown	0.01	Unknown
Geranyl butyrate	0.17	Monoterpenic ester
(<i>E</i>)-Nerolidol	0.14	Sesquiterpenic alcohol
Caryophyllene oxide	0.20	Sesquiterpenic ether
Caryophyllene oxide isomer	0.02	Sesquiterpenic ether
Humulene epoxide II	0.01	Sesquiterpenic ether
Caryophylladienol II	0.02	Sesquiterpenic alcohol
Neointermedeol	0.01	Sesquiterpenic alcohol
(3 <i>Z</i>)-Caryophylla-3,8(13)-dien-5 β -ol	0.01	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	0.90	Sesquiterpenic alcohol
(2 <i>E</i> ,6 <i>E</i>)-Farnesal	0.01	Sesquiterpenic aldehyde
Geranyl caproate	0.73	Monoterpenic ester

(2E,6E)-Farnesyl acetate	0.10	Sesquiterpenic ester
Phytone	0.03	Terpenic ketone
Geranyl caprylate	0.17	Monoterpenic ester
Unknown	0.01	Unknown
Unknown	0.03	Unknown
Unknown	0.02	Unknown
Unknown	0.05	Unknown
Unknown	0.02	Unknown
Consolidated total	98.83	

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

Note: no correction factor was applied

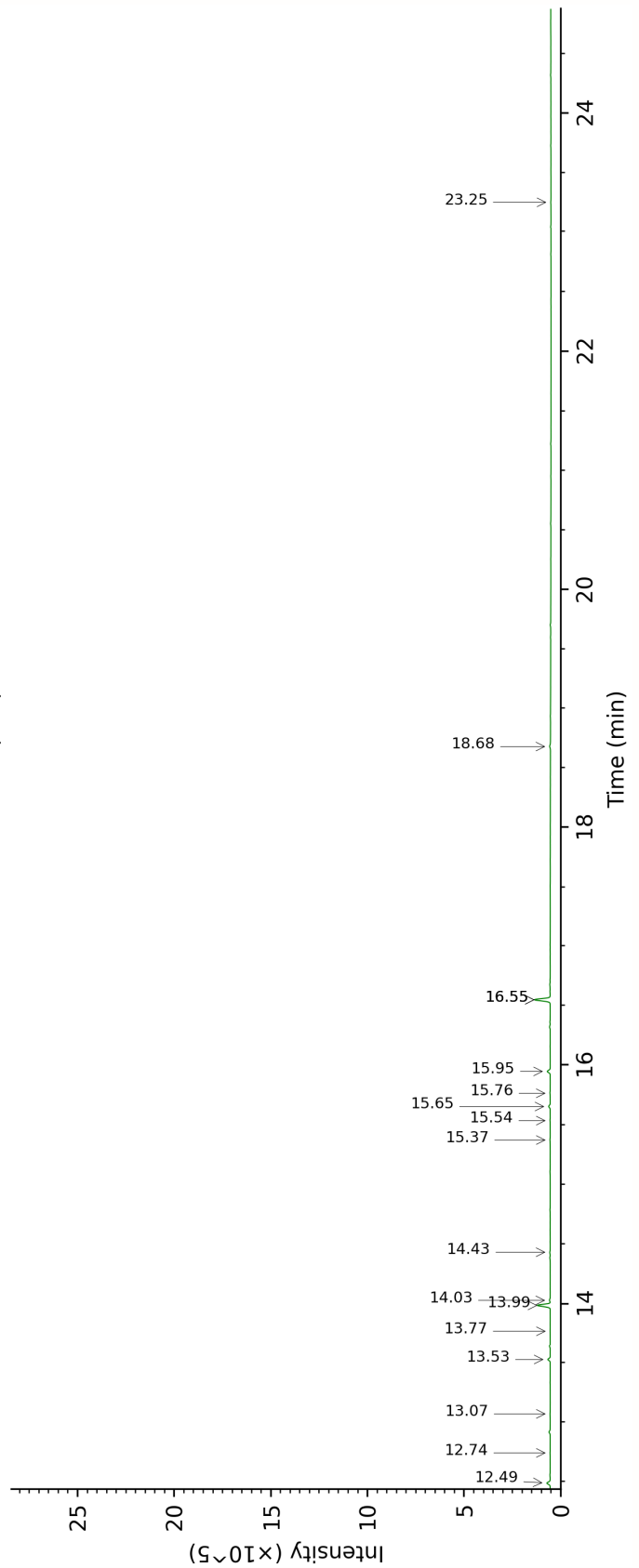
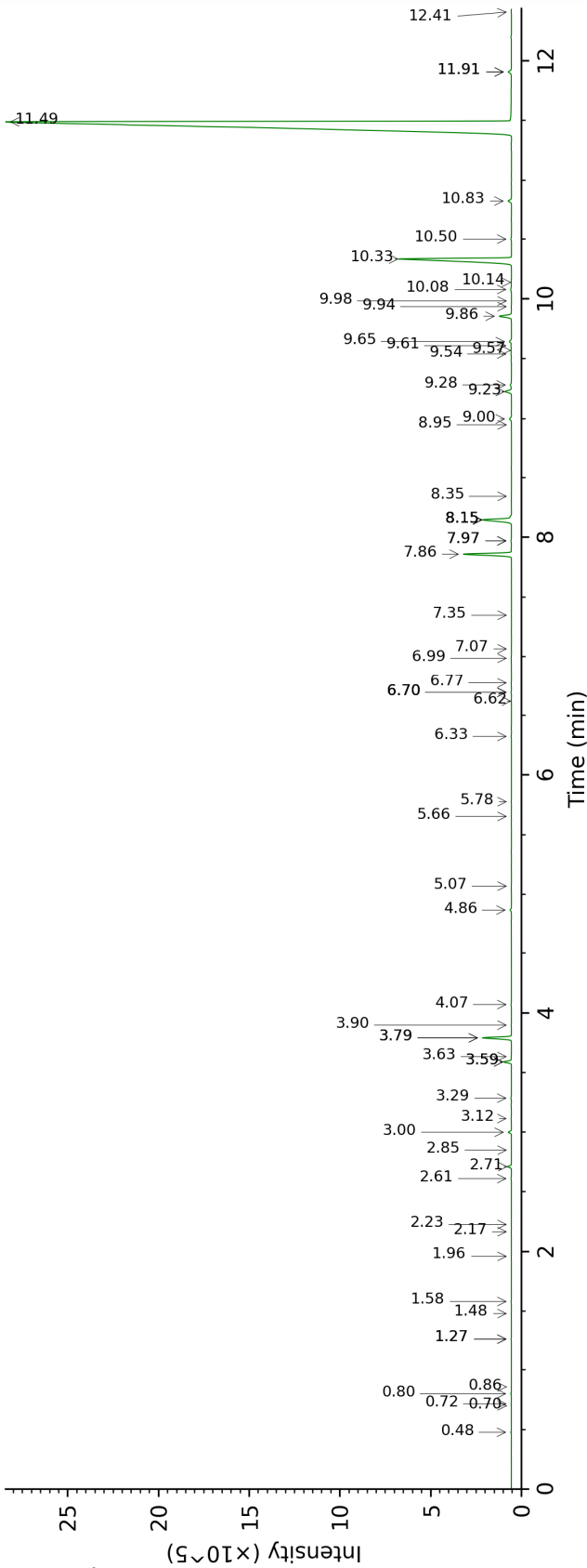
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

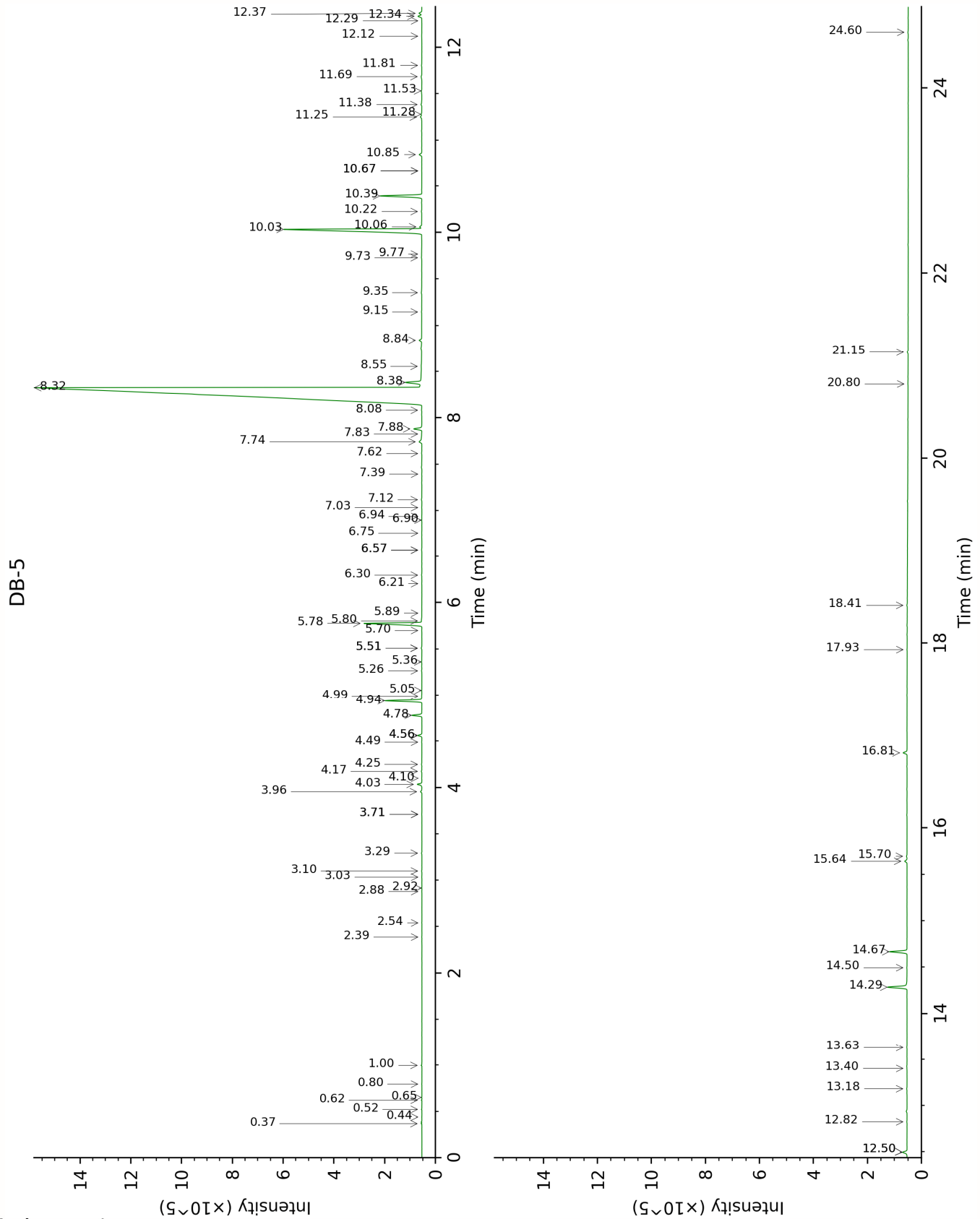
Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

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





FULL ANALYSIS DATA

Ethanol	Column DB-WAX			Column DB-5		
	0.80	910.5	0.02	0.37	502.2	0.01
Isobutyral	0.48	784.4	0.02	0.44	539.7	tr
2-Methyl-3-buten-2-ol	1.48	1016.5	0.01	0.52	607.9	0.01
Isovaleral	0.72	887.9	0.01	0.62	642.8	0.01
2-Methylbutyral	0.70	881.4	tr	0.65	653.3	tr
2-Ethylfuran	0.86	920.3	tr	0.80	703.7	tr
Isoamyl alcohol	3.29	1178.6	0.03	1.00	734.0	0.02
Isoamyl acetate	2.23	1092.3	0.01	2.39	879.6	tr
2-Heptanone	2.85	1143.9	0.01	2.54	892.3	tr
Hashishene	1.27*	990.1	[0.01]	2.88	917.4	tr
Tricyclene				2.92	919.9	tr
Prenyl acetate	3.79*	1217.8	[1.40]	3.03	927.7	0.01
α-Pinene	1.27*	990.1	[0.01]	3.10	932.1	0.01
Camphene	1.58	1026.7	0.02	3.29	944.8	0.02
β-Pinene	1.96	1065.0	0.01	3.71*	972.5	[0.01]
Sabinene	2.17	1086.1	0.01	3.71*	972.5	[0.01]
6-Methyl-5-hepten-2-one	4.86	1297.3	0.07	3.96	988.7	0.07
Myrcene	2.71	1132.8	0.17	4.03	994.0	0.19
6-Methyl-5-hepten-2-ol	6.70*	1429.3	[0.02]	4.10	998.3	0.01
α-Phellandrene	2.61	1124.9	0.02	4.17	1003.2	0.03
cis-Dehydroxylinalool oxide	3.64	1206.2	0.02	4.25	1008.0	0.02
para-Cymene	3.90	1225.7	0.01	4.49	1023.1	0.02
Limonene	3.00	1155.8	0.15	4.56*	1027.6	[0.17]
1,8-Cineole	3.12	1165.0	0.02	4.56*	1027.6	[0.17]
(Z)-β-Ocimene	3.59*	1202.9	[0.38]	4.78	1041.2	0.38
(E)-β-Ocimene	3.79*	1217.8	[1.40]	4.94	1051.2	1.39
2,6-Dimethyl-5-heptenal (melonal)	5.07	1311.5	0.01	4.99	1054.5	0.02
γ-Terpinene	3.59*	1202.9	[0.38]	5.05	1058.4	0.01
cis-Linalool oxide (fur.)	6.32	1401.8	0.02	5.26	1071.7	0.02
Octanol	7.97*	1525.3	[0.04]	5.36	1077.7	0.02
Terpinolene	4.07	1238.5	0.03	5.51*	1087.0	[0.03]
trans-Linalool oxide (fur.)	6.70*	1429.3	[0.02]	5.51*	1087.0	[0.03]
Rosefuran	5.78	1362.5	0.01	5.70	1098.9	0.01
Linalool	7.86	1516.6	2.58	5.78	1103.7	2.57

Nonanal	5.66	1353.6	0.01	5.80	1105.4	0.05
Phenylethyl alcohol	11.91*	1850.8	[0.20]	5.89	1110.7	0.01
Unknown COGU I [m/z 95, 123 (73), 67 (64), 82 (54), 41 (47), 55 (27)...]				6.20	1131.0	0.01
Camphor	6.99	1451.1	0.02	6.30	1136.9	0.02
Citronellal	6.77	1435.2	0.01	6.57*	1154.0	[0.02]
Nerol oxide	6.62	1423.8	0.01	6.57*	1154.0	[0.02]
α -Phellandren-8-ol	9.94	1681.6	0.02	6.75	1165.7	0.01
Menthol	8.95	1601.4	0.01	6.90	1175.2	0.01
Terpinen-4-ol	8.34	1554.3	0.01	6.94	1177.7	0.01
Isogeranial	7.97*	1525.3	[0.04]	7.03	1183.8	0.01
α -Terpineol	9.54	1649.5	0.04	7.12	1189.2	0.03
Decanal	7.07	1457.0	0.01	7.39	1206.9	0.01
Unknown ARAB I [m/z 69, 41 (55), 111 (25), 93 (14), 109 (14)...]				7.62	1221.7	0.02
Nerol	10.83	1756.5	0.19	7.74	1230.2	0.21
Citronellol	10.50	1728.7	0.04	7.83	1235.8	0.02
Neral	9.23	1624.0	0.38	7.88	1239.5	0.36
Isoamyl hexanoate	6.70*	1429.3	[0.02]	8.08	1252.9	0.02
Geraniol	11.49	1813.6	78.48	8.32*†	1269.2	[78.75]
Geranial	9.86	1675.1	0.70	8.38*†	1273.0	[0.92]
Unknown CYFL VII [m/z 43, 69 (77), 41 (70), 109 (54)... 152 (6)]	12.74	1926.1	0.01	8.56	1284.6	0.02
Geranyl formate	9.65	1657.9	0.12	8.84	1303.8	0.11
Unknown PRME VII [m/z 69, 41 (58), 114 (29), 43 (25), 83 (24), 123 (20)...]				9.15	1325.2	0.01
Unknown FRAG CDLXV [m/z 41, 43 (88), 69 (85), 67 (73), 109 (72), 82 (57)...]	14.03	2047.7	0.04	9.35	1339.8	0.03
Neryl acetate	9.98	1685.5	0.01	9.73	1366.2	0.02
Geranic acid				9.77	1369.0	0.01

Geranyl acetate	10.33	1714.6	8.42	10.03	1387.7	8.49
β -Elemene	8.15*	1539.0	[1.87]	10.06	1389.6	0.10
α -Gurjunene	7.35	1477.9	0.01	10.22	1401.2	0.03
β -Caryophyllene	8.15*	1539.0	[1.87]	10.39	1413.5	1.84
<i>trans</i> - α - Bergamotene	8.15*	1539.0	[1.87]	10.67*	1434.1	[0.01]
α -Guaiene	8.15*	1539.0	[1.87]	10.67*	1434.1	[0.01]
α -Humulene	9.00	1605.4	0.12	10.85	1447.2	0.13
Unknown CASA VII [m/z 189, 133 (75), 91 (71), 105 (69), 93 (44)... 204 (33)]	9.28	1628.5	0.08	11.25	1477.3	0.08
β -Selinene	9.57	1651.9	0.03	11.28	1479.5	0.04
Valencene	9.61	1655.1	0.04	11.38	1487.3	0.05
α -Muurolene				11.53	1498.3	0.03
γ -Cadinene	10.08	1693.3	0.07	11.68	1510.0	0.05
δ -Cadinene	10.14	1698.1	0.03	11.81	1519.5	0.02
α -Elemol	13.77	2022.6	0.01	12.12	1544.2	0.02
Unknown CYMA I [m/z 59, 68 (63), 43 (31), 67 (27), 81 (27), 94 (25), 69 (23), 41 (22), 84 (20)...]				12.29	1557.2	0.01
Geranyl butyrate	11.91*	1850.8	[0.20]	12.34	1561.0	0.17
(<i>E</i>)-Nerolidol	13.53	1999.0	0.13	12.37	1563.5	0.14
Caryophyllene oxide	12.49	1902.6	0.20	12.50*	1573.6	[0.22]
Caryophyllene oxide isomer	12.41	1895.8	0.02	12.50*	1573.6	[0.22]
Humulene epoxide II	13.07	1956.6	0.02	12.82	1599.4	0.01
Caryophylladienol II	15.76	2221.2	0.02	13.18	1628.6	0.02
Neointermedeol	15.37	2180.8	0.02	13.40	1646.8	0.01
(3 <i>Z</i>)-Caryophylla- 3,8(13)-dien-5 β -ol	16.55*	2303.5	[0.93]	13.63	1665.5	0.01
(2 <i>E</i> ,6 <i>E</i>)-Farnesol	16.55*	2303.5	[0.93]	14.29	1720.5	0.90
(2 <i>E</i> ,6 <i>E</i>)-Farnesal	15.54	2197.2	0.02	14.50	1738.7	0.01
Geranyl caproate	13.99	2043.6	0.73	14.67	1753.7	0.73
(2 <i>E</i> ,6 <i>E</i>)-Farnesyl acetate	15.65	2209.6	0.09	15.64	1840.0	0.10
Phytone	14.43	2086.7	0.03	15.70	1844.8	0.03
Geranyl caprylate	15.95	2240.4	0.18	16.81	1948.2	0.17

Unknown DRMO VII [m/z 69, 41 (49), 81 (47), 93 (21), 95 (30), 43 (26)...]				17.93	2057.1	0.01
Unknown DRMO VI [m/z 69, 41 (37), 81 (23), 95 (19), 109 (18)...]	18.68	2541.9	0.07	18.41	2104.5	0.03
Unknown CYMA III [m/z 69, 81 (70), 93 (37), 95 (31), 41 (24)...]				20.80	2361.5	0.02
Unknown MOFI VII [m/z 69, 81 (54), 95 (26), 41 (20), 82 (16), 123 (16)...]				21.15	2400.5	0.05
Unknown CYWI IV [m/z 69, 81 (64), 95 (29), 137 (19), 41 (19)...]	23.25	3127.8	0.02	24.60	2827.3	0.02
Total reported		98.56%			99.30%	

*: 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