

Date : 2026-06-30

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

**Internal code** : 26F02-PTH02

**Customer Identification** : Amyris - Dominican Republic - AH0114

**Type** : Essential Oil

**Source** : *Amyris balsamifera*

**Customer** : Plant Therapy

Checked and approved by:

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

*Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.*

*This report is an update of the version first issued on 2026-06-04 to make a modification in the sample identification section.*

## 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 :** Jean-Christophe Fortin, M. Sc.

**Date :** 2026-06-04

## PHYSICOCHEMICAL DATA

**Refractive index :**  $1.5058 \pm 0.0003$  (20 °C)

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

**Analyst :** Cindy Caron B. Sc.

**Date :** 2026-06-03

## 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	0.01	Simple phenolic
Limonene	0.01	Monoterpene
$\alpha$ -Terpineol	0.01	Monoterpenic alcohol
Unknown	0.12	Apocarotenoid
Unknown	0.07	Sesquiterpene
Cyclosativene II	0.06	Sesquiterpene
$\alpha$ -Copaene	0.02	Sesquiterpene
Unknown	0.14	Sesquiterpene
$\beta$ -Cubebene	0.02	Sesquiterpene
$\beta$ -Elemene	0.23	Sesquiterpene
7-epi-Sesquithujene	0.03	Sesquiterpene
Longifolene	0.05	Sesquiterpene
Unknown	0.06	Sesquiterpene
Isocaryophyllene	0.02	Sesquiterpene
$\alpha$ -Gurjunene	0.04	Sesquiterpene
Sesquithujene	0.05	Sesquiterpene
<i>cis</i> - $\alpha$ -Bergamotene	0.06	Sesquiterpene
$\beta$ -Caryophyllene	0.20	Sesquiterpene
$\beta$ -Copaene	0.04	Sesquiterpene
$\gamma$ -Elemene	0.06	Sesquiterpene
<i>trans</i> - $\alpha$ -Bergamotene	0.08	Sesquiterpene
epi- $\beta$ -Santalene	0.08	Sesquiterpene
Cadina-4,11-diene	0.13	Sesquiterpene
Unknown	1.10	Sesquiterpenic ether
$\alpha$ -Humulene	0.08	Sesquiterpene
allo-Aromadendrene	0.32	Sesquiterpene
Amorpha-4,11-diene	0.37	Sesquiterpene
Muurola-4,11-diene	2.58	Sesquiterpene
$\beta$ -Santalene	0.13	Sesquiterpene
Selina-4,11-diene	0.37	Sesquiterpene
$\gamma$ -Muurolene	0.49	Sesquiterpene
Unknown	0.44	Sesquiterpene
$\gamma$ -Curcumene	1.40	Sesquiterpene
$\beta$ -Selinene	1.18	Sesquiterpene
$\alpha$ -Curcumene	3.09	Sesquiterpene
Valencene	0.90	Sesquiterpene
Unknown	0.57	Oxygenated sesquiterpene
4-epi- <i>cis</i> -Dihydroagarofuran	1.39	Sesquiterpenic ether
$\alpha$ -Muurolene	0.30	Sesquiterpene
$\alpha$ -Zingiberene	2.98	Sesquiterpene

β-Bisabolene	1.21	Sesquiterpene
β-Dihydroagarofuran	0.04	Sesquiterpenic ether
Unknown	0.95	Oxygenated sesquiterpene
7-epi-α-Selinene	0.76	Sesquiterpene
Liguloxide analog III	0.35	Sesquiterpenic ether
δ-Cadinene	0.09	Sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
β-Sesquiphellandrene	3.84	Sesquiterpene
Selina-4(15),7(11)-diene	0.40	Sesquiterpene
α-Agarofuran	0.52	Sesquiterpenic ether
Selina-4,7(11)-diene	0.83	Sesquiterpene
Selina-3,7(11)-diene	3.17	Sesquiterpene
(E)-α-Bisabolene	0.04	Sesquiterpene
α-Elemol	9.01	Sesquiterpenic alcohol
Unknown	0.27	Unknown
(E)-Nerolidol	0.67	Sesquiterpenic alcohol
Spathulenol	0.14	Sesquiterpenic alcohol
Caryophyllene oxide isomer	0.03	Sesquiterpenic ether
Caryophyllene oxide	0.01	Sesquiterpenic ether
Eudesm-5-en-11-ol analog	0.58	Sesquiterpenic alcohol
Humulene epoxide II	0.02	Sesquiterpenic ether
Unknown	0.65	Oxygenated sesquiterpene
Unknown	0.12	Oxygenated sesquiterpene
10-epi-γ-Eudesmol	6.00	Sesquiterpenic alcohol
Unknown	1.22	Oxygenated sesquiterpene
Eremoligenol?	0.35	Sesquiterpenic alcohol
Unknown	0.17	Oxygenated sesquiterpene
γ-Eudesmol	7.58	Sesquiterpenic alcohol
Eremoligenol	0.14	Sesquiterpenic alcohol
Hinesol	0.43	Sesquiterpenic alcohol
Unknown	0.70	Oxygenated sesquiterpene
Unknown	0.79	Oxygenated sesquiterpene
β-Eudesmol	4.14	Sesquiterpenic alcohol
Selin-11-en-4α-ol	0.20	Sesquiterpenic alcohol
7-epi-α-Eudesmol	6.97	Sesquiterpenic alcohol
Valerianol	17.08	Sesquiterpenic alcohol
4α-Hydroxydihydroagarofuran	0.22	Sesquiterpenic alcohol
α-Eudesmol	2.94	Sesquiterpenic alcohol
trans-Calamenen-10-ol	0.14	Sesquiterpenic alcohol
Dehydrojinkoh-eremol	0.49	Sesquiterpenic alcohol
Unknown	0.32	Oxygenated sesquiterpene
Unknown	0.20	Oxygenated sesquiterpene
Unknown	0.11	Oxygenated sesquiterpene
Caryophyllene acetate	0.09	Sesquiterpenic ester
Unknown	0.25	Oxygenated sesquiterpene

3β,4β-Oxidoagarofuran?	0.05	Sesquiterpenic ether
(2E,6E)-Farnesol	0.19	Sesquiterpenic alcohol
(6R,7R)-Bisabolone	0.24	Sesquiterpenic ketone
(6S,7R)-Bisabolone	0.41	Sesquiterpenic ketone
Drimenol	1.48	Sesquiterpenic alcohol
Cryptomeridiol analog	0.04	Sesquiterpenic alcohol
Cryptomeridiol	0.04	Sesquiterpenic alcohol
Unknown	0.02	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
Unknown	0.07	Oxygenated sesquiterpene
Carissone analog II	0.01	Sesquiterpenic alcohol
Unknown	0.01	Oxygenated sesquiterpene
<b>Consolidated total</b>	<b>96.14</b>	

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

Note: no correction factor was applied

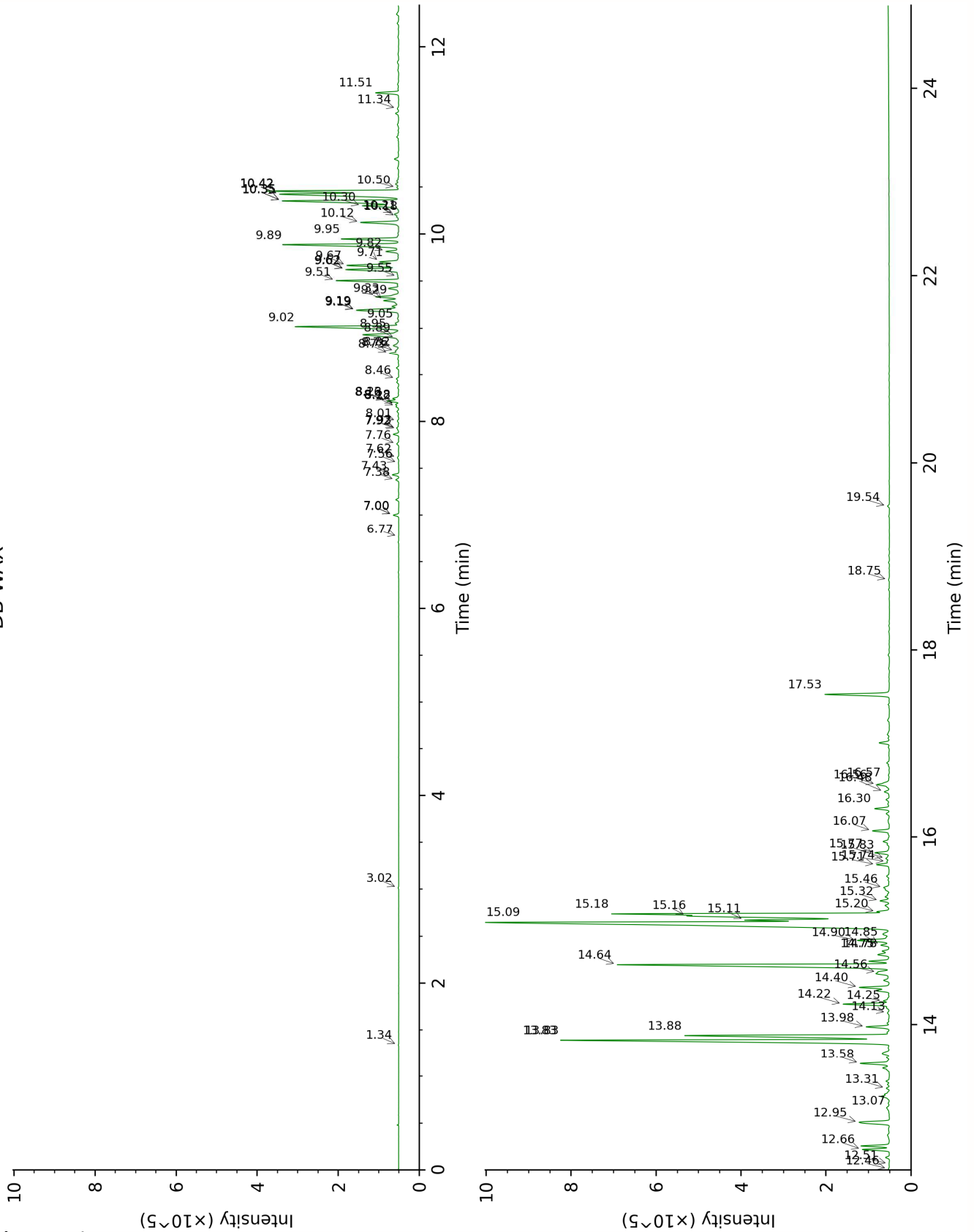
**About "consolidated" data:** The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

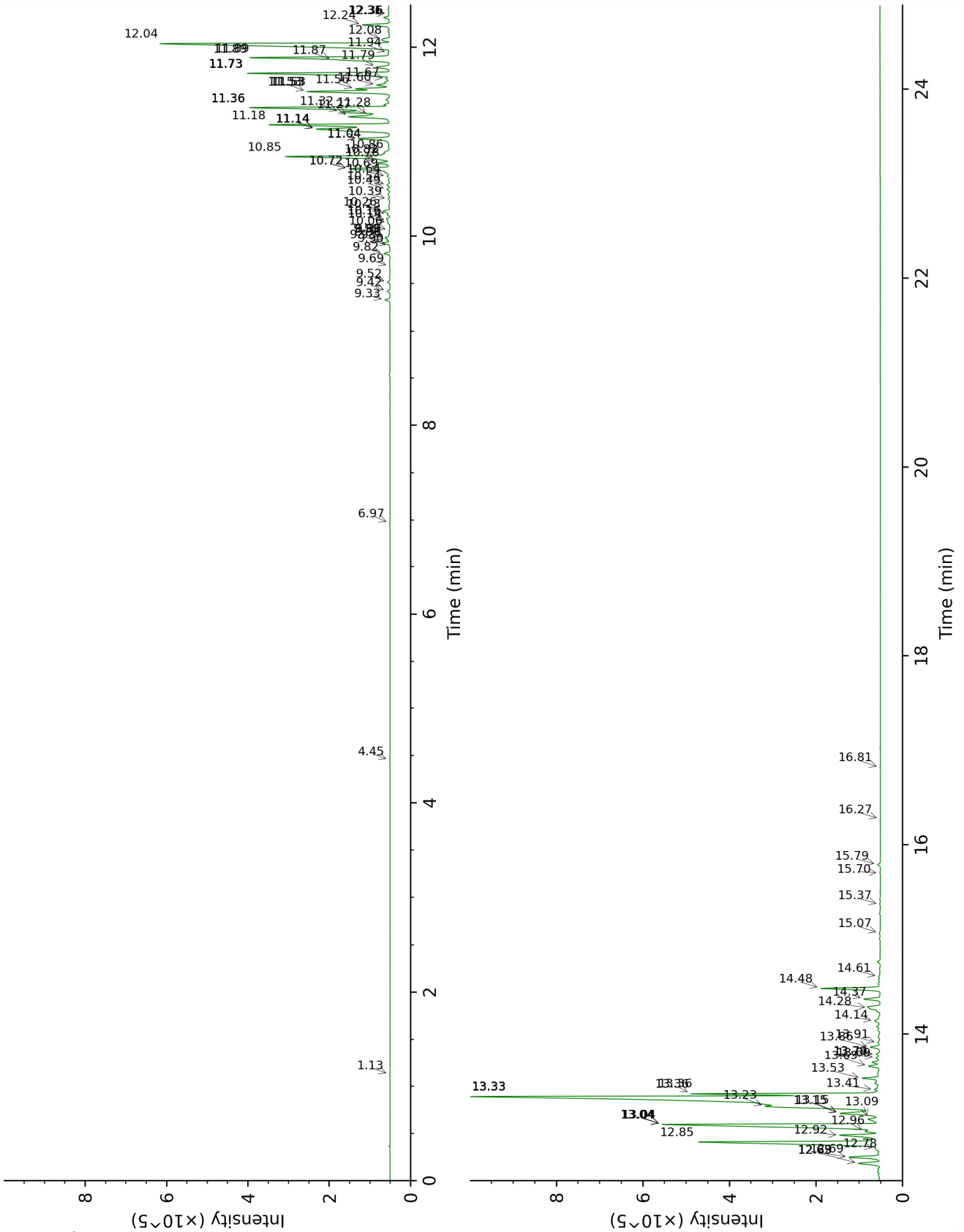
**Bracketed value (xx):** A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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		
	1.34	1000.3	tr	1.13	757.5	0.01
Limonene	3.02	1156.5	0.01	4.45	1026.9	0.01
$\alpha$ -Terpineol	9.55	1651.2	0.02	6.97	1189.3	0.01
Unknown AMBA I [m/z 177, 107 (57), 81 (55), 95 (50), 41 (34), 93 (34), 123 (32)... 192 (23)]	7.00*	1451.0	[0.11]	9.33	1348.4	0.12
Unknown AMBA XXVII [m/z 123, 81 (45), 107 (30), 79 (28), 41 (28)... 204 (5)]				9.42	1354.8	0.07
Cyclosativene II	6.77	1433.1	0.01	9.52	1361.5	0.06
$\alpha$ -Copaene	7.00*	1451.0	[0.11]	9.69	1373.6	0.02
Unknown AMBA II [m/z 189, 105 (79), 91 (73), 107 (67), 93 (65), 133 (65)... 204 (38)]	7.43	1483.6	0.14	9.82	1383.0	0.14
$\beta$ -Cubebene	7.56	1493.1	0.01	9.90	1388.8	0.02
$\beta$ -Elemene	8.22*	1544.5	[0.25]	9.93†	1390.8	0.20
7-epi-Sesquithujene	7.62	1497.4	0.03	9.96†	1393.2	0.06
Longifolene	7.76	1508.5	0.05	9.99*	1394.9	[0.13]
Unknown CULA II [m/z 119, 93 (82), 161 (71), 105 (68), 91 (65), 133 (56)... 204 (15)]	8.46	1563.2	0.06	9.99*	1394.9	[0.13]
Isocaryophyllene	7.92	1521.0	0.02	10.06	1400.4	0.02
$\alpha$ -Gurjunene	7.38	1479.5	0.07	10.14	1405.8	0.04
Sesquithujene	7.93	1521.8	0.04	10.16	1407.4	0.05
<i>cis</i> - $\alpha$ -Bergamotene	8.01	1527.8	0.03	10.23	1412.5	0.06
$\beta$ -Caryophyllene	8.22*	1544.5	[0.25]	10.26	1415.2	0.20
$\beta$ -Copaene	8.16	1539.8	0.05	10.39	1424.8	0.04
$\gamma$ -Elemene	8.82	1591.9	0.17	10.49	1432.3	0.06
<i>trans</i> - $\alpha$ -Bergamotene	8.18	1541.5	0.07	10.54	1435.8	0.08
epi- $\beta$ -Santalene	8.76	1587.1	0.09	10.64	1443.3	0.08
Cadina-4,11-diene	8.89	1597.8	0.04	10.69	1447.2	0.13
Unknown AMBA III [m/z 109, 81 (84), 207 (73), 43 (55), 41 (52), 69 (48), 55 (47), 124 (39)]	9.19*	1621.8	[1.21]	10.72*	1449.2	[1.18]
$\alpha$ -Humulene	9.05	1610.4	0.08	10.72*	1449.2	[1.18]
allo-Aromadendrene	8.73	1585.0	0.22	10.78	1453.8	0.32
Amorpha-4,11-diene	9.30	1630.2	0.37	10.82†	1457.0	0.20
Muurola-4,11-diene	9.02	1607.7	2.58	10.85†	1458.9	2.68
$\beta$ -Santalene	8.95	1602.1	0.09	10.86	1460.2	0.13
Selina-4,11-diene	9.19*	1621.8	[1.21]	11.04*	1473.0	[0.86]

γ-Muurolene	9.33	1633.5	0.49	11.04*	1473.0	[0.86]
Unknown AMBA V [m/z 189, 91 (95), 105 (93), 133 (84), 119 (75), 41 (59), 93 (46)... 204 (33)]	9.70	1664.2	0.44	11.14*	1480.7	[3.02]
γ-Curcumene	9.51	1647.8	1.40	11.14*	1480.7	[3.02]
β-Selinene	9.62*	1657.5	[1.36]	11.14*	1480.7	[3.02]
α-Curcumene	10.42*†	1724.0	[3.87]	11.18	1484.1	3.09
Valencene	9.62*	1657.5	[1.36]	11.27†	1490.4	1.18
Unknown AMBA VI [m/z 71, 69 (84), 93 (82), 109 (82), 41 (72), 43 (69), 81 (66), 55 (56), 79 (49)... 189 (37), 204 (3), 207 (3)]	12.66	1921.5	0.57	11.28†	1491.6	0.29
4-epi-cis- Dihydroagarofuran	9.67	1661.1	1.39	11.32*†	1494.2	[1.46]
α-Muurolene	9.82	1673.3	0.30	11.36*†	1497.7	[4.09]
α-Zingiberene	9.89	1679.4	2.98	11.36*†	1497.7	[4.09]
β-Bisabolene	9.95	1684.3	1.21	11.53*	1510.6	[2.35]
β-Dihydroagarofuran	10.18	1703.7	0.04	11.53*	1510.6	[2.35]
Unknown AMBA VIII [m/z 136, 121, (59), 93 (55), 80 (51), 81 (50), 71 (44), 123 (40)... 204 (3), 207 (1)]	12.95	1948.8	0.95	11.53*	1510.6	[2.35]
7-epi-α-Selinene	10.12	1698.8	0.91	11.56	1513.0	0.76
Liguloxide analog III				11.60	1516.0	0.35
δ-Cadinene	10.21	1705.9	0.11	11.67	1521.3	0.09
Unknown AMBA XXVI [m/z 124, 109 (77), 123 (62), 105 (56), 91 (56), 41 (55), 43 (51), 205 (50)... 220 (21)]	11.34	1803.3	0.04	11.73*	1525.9	[3.88]
β-Sesquiphellandrene	10.42*†	1724.0	[3.87]	11.73*	1525.9	[3.88]
Selina-4(15),7(11)-diene	10.35*	1717.8	[3.29]	11.79	1530.9	0.40
α-Agarofuran	11.51	1817.9	0.52	11.87†	1537.5	1.07
Selina-4,7(11)-diene	10.30	1713.5	0.83	11.89*†	1538.9	[3.45]
Selina-3,7(11)-diene	10.35*	1717.8	[3.29]	11.89*†	1538.9	[3.45]
(E)-α-Bisabolene	10.50	1730.3	0.04	11.94	1542.8	0.04
α-Elemol	13.83*	2032.2	[8.96]	12.04	1550.6	9.01
Unknown AMBA XXVIII [m/z 123, 81 (30), 93 (19), 121 (17), 43 (16), 95 (14)...]				12.08	1554.1	0.27
(E)-Nerolidol	13.58	2007.9	0.69	12.24	1566.2	0.67
Spathulenol	14.13	2060.8	0.04	12.31	1572.4	0.14
Caryophyllene oxide isomer	12.46	1902.9	0.03	12.36*	1576.0	[0.03]

Caryophyllene oxide	12.51	1907.7	0.01	12.36*	1576.0	[0.03]
Eudesm-5-en-11-ol analog	13.98	2046.1	0.51	12.63	1597.0	0.58
Humulene epoxide II	13.07	1960.3	0.02	12.69*	1602.2	[0.83]
Unknown AMBA IX [m/z 59, 91 (59), 105 (53), 93 (48), 161 (46), 79 (39), 123 (37)... 204 (12), 222 (1)]	14.40	2087.3	0.65	12.69*	1602.2	[0.83]
Unknown MIAL II [m/z 43, 81 (97), 135 (71), 95 (62), 204 (61), 71 (59), 207 (56)... 222 (3)]	14.25	2073.1	0.12	12.78	1609.6	0.12
10-epi-γ-Eudesmol	13.88	2037.1	5.48	12.85	1615.3	6.00
Unknown AMBA X [m/z 161, 59 (59), 81 (50), 204 (49), 93 (36), 189 (34)... 220 (t)]	14.22	2069.9	0.99	12.92	1621.3	1.22
Eremoligenol?	14.56	2103.2	0.21	12.96	1624.7	0.35
Unknown MYGA VIII [m/z 105, 161 (51), 91 (36), 59 (30), 147 (29), 189 (24), 204 (23)... 218 (t)]	14.85	2131.8	0.17	13.04*	1630.8	[7.89]
γ-Eudesmol	14.64	2111.0	7.58	13.04*	1630.8	[7.89]
Eremoligenol	14.78	2125.3	0.14	13.04*	1630.8	[7.89]
Hinesol	14.75	2121.4	0.29	13.09	1635.2	0.43
Unknown AMBA XII [m/z 43, 41 (64), 109 (49), 69 (46), 95 (45), 55 (45)... 221 (23), 236 (31)]	13.83*	2032.2	[8.96]	13.16*	1640.5	[1.49]
Unknown AMBA XI [m/z 105, 59 (72), 161 (65), 147 (64), 91 (54), 43 (34), 189 (34)... 204 (30), 220 (1)]	14.90	2136.9	0.79	13.16*	1640.5	[1.49]
β-Eudesmol	15.16*†	2163.5	[5.22]	13.23*	1646.6	[4.14]
Selin-11-en-4α-ol	15.32	2179.7	0.20	13.33*†	1655.2	[19.95]
7-epi-α-Eudesmol	15.18*†	2165.7	[5.70]	13.33*†	1655.2	[19.95]
Valerianol	15.09*	2156.4	[17.08]	13.33*†	1655.2	[19.95]
4α-Hydroxydihydroagarofuran	15.20	2168.1	0.22	13.36*†	1657.7	[4.06]
α-Eudesmol	15.11*	2158.9	[2.94]	13.36*†	1657.7	[4.06]
trans-Calamenen-10-ol	16.48	2300.9	0.13	13.41	1661.5	0.14
Dehydrojinkoh-eremol	16.06	2256.9	0.39	13.53	1671.4	0.49
Unknown AMBA XIV [m/z 109, 81 (67), 69 (64), 41 (63), 95 (46), 67 (35)... 207 (15)...]	16.30	2282.0	0.33	13.65	1681.9	0.32

Unknown AMBA XV [m/z 69, 41 (90), 123 (74), 122 (51)... 206 (14), 218 (2)]	15.46	2194.1	0.14	13.69	1685.3	0.20
Unknown ZIOF XXXVIII [m/z 137, 119 (70), 84 (69), 41 (68), 69 (53), 55 (45), 109 (38)... 222 (2)]	15.77	2225.8	0.10	13.74	1689.3	0.11
Caryophyllene acetate	13.32	1982.9	0.06	13.79	1693.1	0.09
Unknown AMBA XVI [m/z 81, 136 (77), 109 (68), 121 (61), 41 (48), 93 (41), 79 (35), 107 (34), 123 (30)... 222 (1)]	16.56	2309.0	0.29	13.86	1699.3	0.25
3 $\beta$ ,4 $\beta$ -Oxidoagarofuran?	15.74	2222.5	0.05	13.91	1703.1	0.05
(2E,6E)-Farnesol	16.57	2310.4	0.11	14.14	1723.1	0.19
(6R,7R)-Bisabolone	15.71	2219.1	0.29	14.28	1735.2	0.24
(6S,7R)-Bisabolone	15.83	2232.3	0.33	14.37	1743.1	0.41
Drimenol	17.53	2414.4	1.53	14.48	1753.0	1.48
Cryptomeridiol analog	18.75	2553.4	0.03	14.61	1763.8	0.04
Cryptomeridiol	19.54	2647.0	0.05	15.07	1803.9	0.04
Unknown AMBA XIX [m/z 177, 43 (51), 138 (40), 59 (40), 205 (32)... 238 (5)]				15.37	1831.3	0.02
Unknown AMBA XXII [m/z 43, 109 (77), 69 (65), 41 (60), 55 (51), 95 (44), 135 (43)... 207 (19)...]				15.70	1861.8	0.01
Unknown AMBA XXI [m/z 59, 45 (92), 43 (70), 177 (58), 121 (58), 220 (57)... 236 (3)]				15.79	1869.8	0.07
Carissone analog II				16.27	1914.2	0.01
Unknown AMBA XXV [m/z 59, 121 (66), 218 (27), 136 (26), 178 (26), 43 (24), 91 (24), 123 (23)... 238 (t)]				16.81	1965.8	0.01
Total reported		91.21%			97.28%	

\*: 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