

Date : May 15, 2023

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 23E11-PTH01

Customer identification : Myrrh - Somaliland - M40113R

Type : Essential oil

Source : *Commiphora myrrha*

Customer : Plant Therapy

ANALYSIS

Method: PC-MAT-014  - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.

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

Analysis date : May 15, 2023

Checked and approved by :

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

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*P*HYSICO*C*HEMICAL *D*ATA

Physical aspect: Yellow viscous liquid

Refractive index: 1.5202 ± 0.0003 (20 °C; method PC-MAT-016)

*C*ONCLUSION

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 |
|-----------------------------|-------|----------------------|
| para-Xylene | 0.01 | Simple phenolic |
| α-Pinene | 0.01 | Monoterpene |
| Camphepane | 0.01 | Monoterpene |
| Myrcene | 0.01 | Monoterpene |
| para-Cymene | tr | Monoterpene |
| Limonene | 0.02 | Monoterpene |
| (E)-β-Ocimene | 0.02 | Monoterpene |
| Linalool | 0.01 | Monoterpenic alcohol |
| Dimethylbenzofuran isomer I | 0.01 | Furan |
| Bornyl acetate | 0.03 | Monoterpenic ester |
| δ-Elemene isomer | 0.03 | Sesquiterpene |
| δ-Elemene | 0.93 | Sesquiterpene |
| α-Cubebene | 0.04 | Sesquiterpene |
| α-Ylangene | 0.02 | Sesquiterpene |
| α-Copaene | 0.08 | Sesquiterpene |
| β-Bourbonene | 0.34 | Sesquiterpene |
| cis-β-Elemene | 0.18 | Sesquiterpene |
| 1,5-diepi-β-Bourbonene | 0.04 | Sesquiterpene |
| β-Cubebene | 0.02 | Sesquiterpene |
| β-Elemene | 7.55 | Sesquiterpene |
| Cyperene | 0.02 | Sesquiterpene |
| β-Caryophyllene | 0.28 | Sesquiterpene |
| cis-α-Bergamotene | 0.03 | Sesquiterpene |
| β-Ylangene | 0.12 | Sesquiterpene |
| α-Santalene | 0.03 | Sesquiterpene |
| β-Copaene | 0.13 | Sesquiterpene |
| γ-Elemene | 2.14 | Sesquiterpene |
| trans-α-Bergamotene | 0.03 | Sesquiterpene |
| Isogermacrene D | 0.09 | Sesquiterpene |
| Unknown | 0.06 | Sesquiterpene |
| α-Humulene | 0.18 | Sesquiterpene |
| allo-Aromadendrene | 0.02 | Sesquiterpene |
| Unknown | 0.04 | Sesquiterpene |
| 4,5-diepi-Aristolochene | 0.05 | Sesquiterpene |
| Unknown | 0.05 | Sesquiterpene |
| trans-Cadina-1(6),4-diene | 0.04 | Sesquiterpene |
| Selina-4,11-diene | 0.17 | Sesquiterpene |
| γ-Muurolene | 0.15 | Sesquiterpene |
| Germacrene D | 0.68 | Sesquiterpene |
| β-Selinene | 0.71 | Sesquiterpene |
| Unknown | 0.08 | Sesquiterpene |
| δ-Selinene | 0.08 | Sesquiterpene |
| α-Selinene | 0.77 | Sesquiterpene |
| Curzerene | 36.51 | Sesquiterpenic ether |
| Germacrene A | 0.18 | Sesquiterpene |

| | | |
|----------------------------------|---------------|--------------------------|
| ϵ -Amorphene | 0.14 | Sesquiterpene |
| δ -Guaiene | 0.04 | Sesquiterpene |
| γ -Cadinene | 0.19 | Sesquiterpene |
| δ -Cadinene | 0.36 | Sesquiterpene |
| Selina-4(15),7(11)-diene | 0.24 | Sesquiterpene |
| Selina-4,7(11)-diene? | 0.14 | Sesquiterpene |
| Selina-3,7(11)-diene | 0.29 | Sesquiterpene |
| α -Elemol | 0.28 | Sesquiterpenic alcohol |
| Germacrene B | 2.54 | Sesquiterpene |
| 1,5-Epoxyalval-4(14)-ene | 0.03 | Sesquiterpenic ether |
| Furanoeudesma-1,4-diene | 0.62 | Sesquiterpenic ether |
| Unknown | 0.06 | Oxygenated sesquiterpene |
| β -Elemenone | 0.29 | Sesquiterpenic ketone |
| Unknown | 0.06 | Oxygenated sesquiterpene |
| Selin-6-en-4 α -ol isomer | 0.05 | Sesquiterpenic alcohol |
| Furanoeudesma-1,3-diene | 20.89 | Sesquiterpenic ether |
| Alismol | 0.18 | Sesquiterpenic alcohol |
| Lindestrene | 6.34 | Sesquiterpenic ether |
| γ -Eudesmol | 0.19 | Sesquiterpenic alcohol |
| τ -Cadinol | tr | Sesquiterpenic alcohol |
| τ -Muurolol | 0.06 | Sesquiterpenic alcohol |
| α -Muurolol | 0.14 | Sesquiterpenic alcohol |
| α -Eudesmol | 0.09 | Sesquiterpenic alcohol |
| Furanodiene | 0.54 | Sesquiterpenic ether |
| Atractylone? | 0.59 | Sesquiterpenic ether |
| Unknown | 0.31 | Unknown |
| α -Elemyl acetate | 0.87 | Sesquiterpenic ester |
| Unknown | 1.73 | Oxygenated sesquiterpene |
| Germacrone | 0.36 | Sesquiterpenic ketone |
| Juniper camphor | 0.07 | Sesquiterpenic alcohol |
| Unknown | 0.03 | Oxygenated sesquiterpene |
| Aromadendrane-4,10-diol | 0.15 | Sesquiterpenic alcohol |
| 2-Methoxyfuranodiene | 2.36 | Sesquiterpenic ether |
| Benzyl benzoate | 0.03 | Phenolic ester |
| Unknown | 0.02 | Unknown |
| Unknown | 0.06 | Sesquiterpenic ester |
| Unknown | 0.05 | Sesquiterpenic ester |
| Isofuranodienone | 0.06 | Sesquiterpenic ketone |
| Cryptomeridiol | 0.12 | Sesquiterpenic alcohol |
| Unknown | 0.48 | Oxygenated sesquiterpene |
| 2-Acetoxyfuranodiene? | 1.91 | Sesquiterpenic ester |
| Myrranolide C? | 0.06 | Sesquiterpenic alcohol |
| Unknown | 0.31 | Unknown |
| Cembrenol | 0.03 | Diterpenic alcohol |
| Serratol | 0.02 | Diterpenic alcohol |
| Consolidated total | 95.38% | |

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

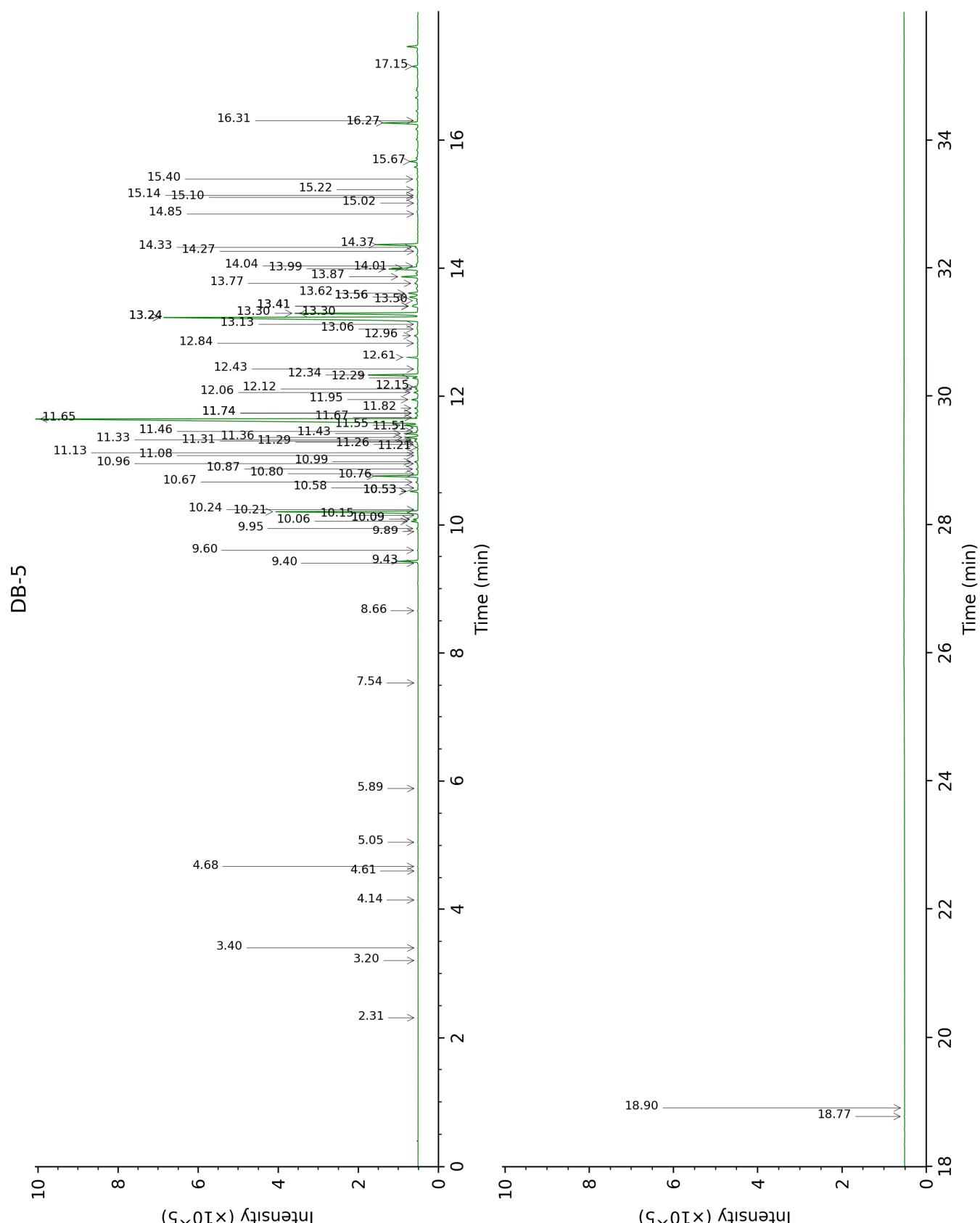
Note: no correction factor was applied

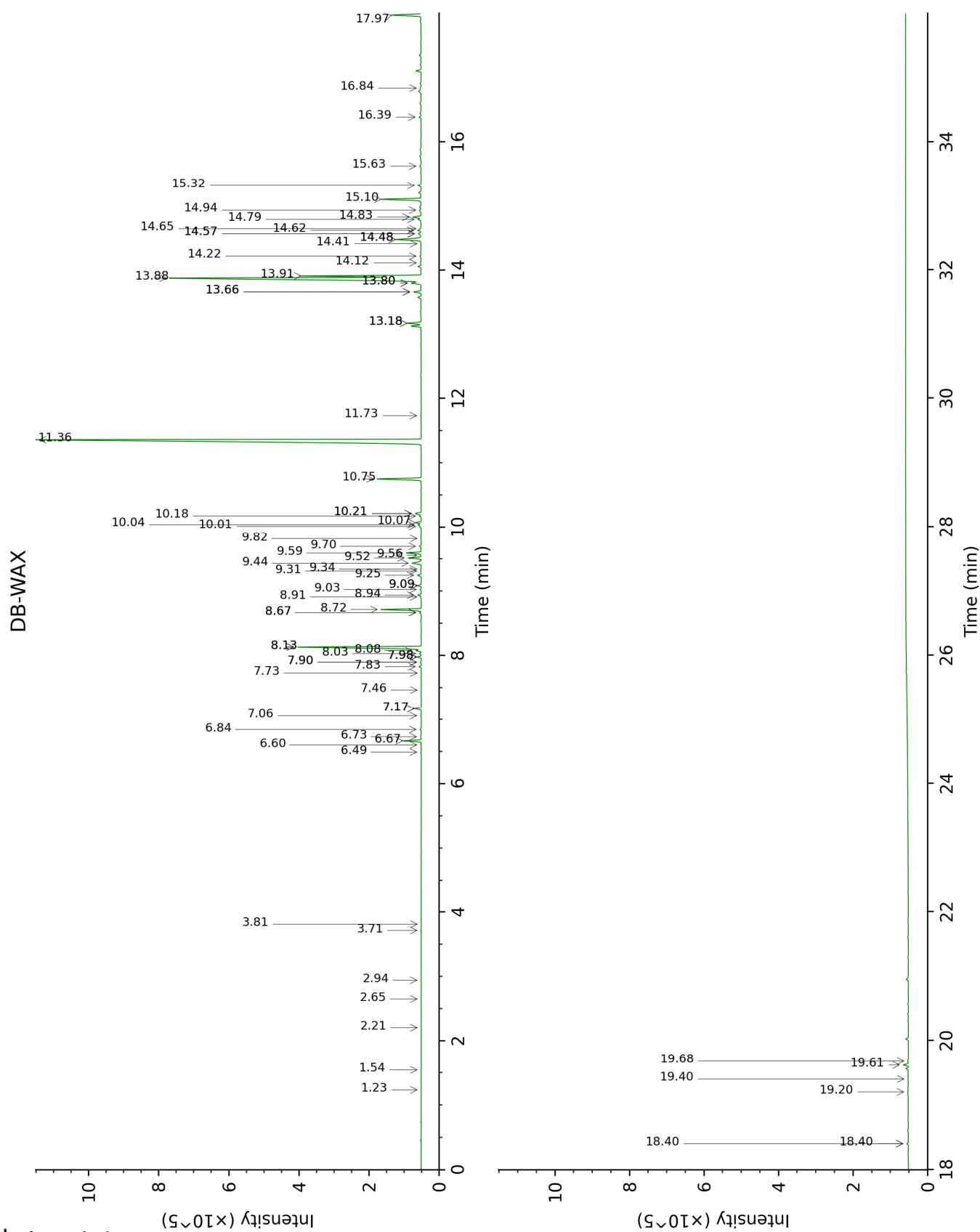
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm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

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





FULL ANALYSIS DATA

| Identification | Column DB-5 | | | Column DB-WAX | | |
|---|-------------|------|--------|---------------|------|--------|
| | R.T | R.I | % | R.T | R.I | % |
| para-Xylene | 2.32 | 865 | 0.01 | 2.21 | 1095 | 0.01 |
| α-Pinene | 3.20 | 931 | 0.01 | 1.23 | 990 | 0.01 |
| Camphepane | 3.40 | 944 | 0.01 | 1.54 | 1026 | 0.01 |
| Myrcene | 4.14 | 993 | 0.01 | 2.65 | 1133 | 0.02 |
| para-Cymene | 4.60 | 1022 | tr | 3.81 | 1227 | 0.01 |
| Limonene | 4.68 | 1027 | 0.02 | 2.94 | 1157 | 0.03 |
| (E)-β-Ocimene | 5.05 | 1050 | 0.02 | 3.72 | 1220 | 0.03 |
| Linalool | 5.89 | 1102 | 0.01 | 7.73 | 1514 | 0.01 |
| Dimethylbenzofuran isomer I | 7.54 | 1207 | 0.01 | | | |
| Bornyl acetate | 8.66 | 1282 | 0.03 | 7.98* | 1533 | 0.21 |
| δ-Elemene isomer | 9.40 | 1333 | 0.03 | 6.60 | 1428 | 0.04 |
| δ-Elemene | 9.43 | 1335 | 0.93 | 6.67 | 1433 | 0.91 |
| α-Cubebene | 9.60 | 1347 | 0.04 | 6.49 | 1420 | 0.04 |
| α-Ylangene | 9.89 | 1368 | 0.02 | 6.73 | 1438 | 0.06 |
| α-Copaene | 9.95 | 1372 | 0.08 | 6.84 | 1446 | 0.08 |
| β-Bourbonene | 10.06 | 1379 | 0.34 | 7.17* | 1471 | 0.35 |
| cis-β-Elemene | 10.09* | 1382 | 0.25 | 7.98* | 1533 | [0.21] |
| 1,5-diepi-β-Bourbonene | 10.09* | 1382 | [0.25] | 7.06 | 1462 | 0.04 |
| β-Cubebene | 10.16 | 1386 | 0.02 | 7.46 | 1493 | 0.01 |
| β-Elemene | 10.21 | 1390 | 7.55 | 8.13*† | 1545 | [7.98] |
| Cyperene | 10.24 | 1392 | 0.02 | 7.17* | 1471 | [0.35] |
| β-Caryophyllene | 10.53* | 1413 | 0.43 | 8.08† | 1541 | 7.98 |
| cis-α-Bergamotene | 10.53* | 1413 | [0.43] | 7.90* | 1526 | 0.06 |
| β-Ylangene | 10.53* | 1413 | [0.43] | 7.83 | 1521 | 0.12 |
| α-Santalene | 10.58 | 1416 | 0.03 | 7.90* | 1526 | [0.06] |
| β-Copaene | 10.67 | 1423 | 0.13 | 8.03 | 1537 | 0.10 |
| γ-Elemene | 10.76 | 1430 | 2.14 | 8.72 | 1591 | 2.17 |
| trans-α-Bergamotene | 10.80 | 1433 | 0.03 | 8.13*† | 1545 | [7.98] |
| Isogermacrene D | 10.87 | 1438 | 0.09 | 8.67* | 1587 | 0.11 |
| Unknown [m/z 93, 107 (85), 105 (82), 189 (79), 91 (69), 81 (68), 79 (60), 161 (55)... 204 (31)] | 10.96 | 1445 | 0.06 | 9.82 | 1681 | 0.02 |
| α-Humulene | 10.99 | 1447 | 0.18 | 8.94 | 1609 | 0.19 |
| allo-Aromadendrene | 11.08 | 1454 | 0.02 | 8.67* | 1587 | [0.11] |
| Unknown [m/z 161, 105 (68), 119 (54), 91 (52), 93 (41), 79 (39)... 204 (6)] | 11.13 | 1457 | 0.04 | | | |
| 4,5-diepi-Aristolochene | 11.21 | 1463 | 0.05 | 9.09* | 1621 | 0.19 |
| Unknown [m/z 121, 93 (86), 161 (61), 105 (46), 91 (43), 119 | 11.26 | 1467 | 0.05 | 9.03 | 1616 | 0.06 |

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| | | | | | |
|---|--------|------|---------|---------|------|
| (310, 136 (27)... 204 (19)] | | | | | |
| <i>trans</i> -Cadina-1(6),4-diene | 11.29 | 1469 | 0.04 | 8.91 | 1606 |
| Selina-4,11-diene | 11.31 | 1471 | 0.17 | 9.09* | 1621 |
| γ -Murolene | 11.33 | 1472 | 0.15 | 9.25 | 1634 |
| Germacrene D | 11.36 | 1475 | 0.68 | 9.44 | 1649 |
| β -Selinene | 11.42 | 1479 | 0.71 | 9.52 | 1656 |
| Unknown [m/z 79, 107 (99), 91 (88), 93 (86), 81 (78), 105 (73), 41 (73)... 204? (12)] | 11.46 | 1482 | 0.08 | 9.34 | 1642 |
| δ -Selinene | 11.51 | 1486 | 0.08 | 9.31 | 1639 |
| α -Selinene | 11.55 | 1489 | 0.77 | 9.59 | 1662 |
| Curzerene | 11.65† | 1496 | 36.10 | 11.36 | 1813 |
| Germacrene A | 11.67† | 1498 | [36.10] | 10.04 | 1699 |
| ϵ -Amorphene | 11.74* | 1503 | 0.18 | 9.70 | 1671 |
| δ -Guaiene | 11.74* | 1503 | [0.18] | 9.56 | 1659 |
| γ -Cadinene | 11.82 | 1509 | 0.19 | 10.01 | 1697 |
| δ -Cadinene | 11.95 | 1519 | 0.36 | 10.07 | 1702 |
| Selina-4(15),7(11)-diene | 12.06 | 1528 | 0.24 | 10.22* | 1714 |
| Selina-4,7(11)-diene? | 12.12 | 1532 | 0.14 | 10.18 | 1711 |
| Selina-3,7(11)-diene | 12.15 | 1535 | 0.29 | 10.22* | 1714 |
| α -Elemol | 12.29 | 1546 | 0.28 | 13.66* | 2025 |
| Germacrene B | 12.34 | 1549 | 2.54 | 10.75 | 1760 |
| 1,5-Epoxyosalval-4(14)-ene | 12.43 | 1557 | 0.03 | 11.73 | 1846 |
| Furanoeudesma-1,4-diene | 12.61 | 1571 | 0.62 | 13.18*† | 1979 |
| Unknown [m/z 43, 119 (94), 93 (68), 105 (64), 91 (60), 162 (59), 147 (59)... 220 (9)] | 12.84 | 1589 | 0.06 | 13.80* | 2038 |
| β -Elemenone | 12.96 | 1598 | 0.29 | 13.66* | 2025 |
| Unknown [m/z 43, 81 (97), 135 (71), 95 (62), 204 (61), 71 (59), 207 (56)... 222 (3)] | 13.06 | 1606 | 0.06 | 14.12 | 2069 |
| Selin-6-en-4 α -ol isomer | 13.13 | 1612 | 0.05 | 14.41 | 2098 |
| Furanoeudesma-1,3-diene | 13.24* | 1621 | 21.07 | 13.88† | 2046 |
| Alismol | 13.24* | 1621 | [21.07] | 15.32 | 2190 |
| Lindestrene | 13.30* | 1626 | 6.53 | 13.91† | 2049 |
| γ -Eudesmol | 13.30* | 1626 | [6.53] | 14.57* | 2113 |
| τ -Cadinol | 13.41* | 1636 | 0.52 | 14.48* | 2104 |
| τ -Murolol | 13.41* | 1636 | [0.52] | 14.65 | 2121 |
| α -Murolol | 13.50 | 1642 | 0.14 | 14.79 | 2136 |
| α -Eudesmol | 13.56* | 1647 | 0.63 | 14.94 | 2150 |
| Furanodiene | 13.56* | 1647 | [0.63] | 13.80* | 2038 |
| Atractylone? | 13.62 | 1652 | 0.59 | | |

| | | | | | | |
|---|-------|---------------|------|---------|---------------|--------|
| Unknown [m/z 43, 93 (76), 161 (76), 121 (51), 107 (51), 81 (38), 105 (37)…] | 13.77 | 1665 | 0.31 | | | |
| α-Elemyl acetate | 13.87 | 1673 | 0.87 | 13.18*† | 1979 | [1.38] |
| Unknown [m/z 108, 216 (29), 93 (26), 109 (21), 91 (21)] | 13.99 | 1683 | 1.73 | 14.48* | 2104 | [1.73] |
| Germacrone | 14.01 | 1685 | 0.36 | 14.83 | 2139 | 0.51 |
| Juniper camphor | 14.04 | 1687 | 0.07 | 15.63 | 2221 | 0.09 |
| Unknown [m/z 93, 81 (90), 95 (86), 91 (83), 41 (83), 107 (81)… 220 (29), 238? (4)] | 14.26 | 1706 | 0.03 | 16.84 | 2351 | 0.05 |
| Aromadendrane-4,10-diol | 14.33 | 1711 | 0.15 | 16.39 | 2302 | 0.12 |
| 2-Methoxyfuranodiene | 14.37 | 1715 | 2.36 | 15.10 | 2167 | 2.31 |
| Benzyl benzoate | 14.85 | 1756 | 0.03 | 18.40* | 2526 | 0.09 |
| Unknown [m/z 161, 189 (92), 204 (80), 43 (35), 133 (31), 105 (29)…] | 15.02 | 1771 | 0.02 | 14.22 | 2079 | 0.09 |
| Unknown [m/z 161, 189 (59), 204 (54), 43 (50), 107 (28), 149 (24), 122 (24)…] | 15.10 | 1778 | 0.06 | 14.62 | 2119 | 0.22 |
| Unknown [m/z 161, 43 (96), 204 (71), 189 (53), 105 (34), 133 (32), 91 (29)…] | 15.14 | 1781 | 0.05 | 14.57* | 2113 | [0.24] |
| Isofuranodienone | 15.22 | 1789 | 0.06 | | | |
| Cryptomeridiol | 15.40 | 1804 | 0.12 | 19.40 | 2645 | 0.04 |
| Unknown [m/z 108, 109 (74), 106 (58), 148 (48), 43 (42), 91 (40), 105 (29), 230 (26)… 274 (13)] | 15.67 | 1829 | 0.48 | | | |
| 2-Acetoxyfuranodiene? | 16.27 | 1883 | 1.91 | 17.97 | 2477 | 1.73 |
| Myrranolide C? | 16.31 | 1886 | 0.06 | 18.40* | 2526 | [0.09] |
| Unknown [m/z 197, 108 (83), 212 (50), 43 (42), 169 (38), 183 (31), 155 (30), 79 (26), 105 (26)] | 17.15 | 1966 | 0.31 | 19.62 | 2671 | 0.29 |
| Cembrenol | 18.77 | 2125 | 0.03 | 19.68 | 2678 | 0.07 |
| Serratol | 18.90 | 2139 | 0.02 | 19.20 | 2620 | 0.06 |
| Total identified | | 91.93% | | | 93.64% | |
| Total reported | | 95.28% | | | 94.48% | |

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not 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