

Date : August 03, 2020

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

**Internal code** : 20G24-PTH02

**Customer identification** : Cedarwood Virginia - Berje - C70106202R

**Type** : Essential oil

**Source** : *Juniperus virginiana*

**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** : Fanny Charlier, B. Sc., chimiste à l'entraînement

**Analysis date** : July 28, 2020

Checked and approved by :

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Alexis St-Gelais, M. Sc., chimiste 2013-174

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*PHYSICOCHEMICAL DATA*

**Physical aspect:** Faintly yellow liquid

**Refractive index:** 1.5048 ± 0.0003 (20 °C; method PC-MAT-016)

*ISO 4724:2004 - OIL OF CEDARWOOD, VIRGINIAN*

| <b>Compound</b>             | <b>Min. %</b> | <b>Max. %</b> | <b>Observed %</b> | <b>Complies?</b> |
|-----------------------------|---------------|---------------|-------------------|------------------|
| Widdrol                     | 2             | 5             | 2                 | Yes              |
| α-Cedrol                    | 16            | 25            | 17                | Yes              |
| Cuparene                    | 1.5           | 7.0           | 1.5               | Yes              |
| cis-Thujopsene              | 10            | 25            | 20                | Yes              |
| α-Cedrene + β-funebrene     | 20            | 35            | 24                | Yes              |
| β-Cedrene + β-caryophyllene | 4             | 8             | 5                 | Yes              |
| <b>Refractive index</b>     | 1.5010        | 1.5100        | 1.5048            | Yes              |

*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                  |
|----------------------------|-------|------------------------|
| Unknown                    | 0.01  | Monoterpene            |
| $\alpha$ -Pinene           | 0.13  | Monoterpene            |
| Camphene                   | tr    | Monoterpene            |
| $\alpha$ -Fenchene         | 0.01  | Monoterpene            |
| Thuja-2,4(10)-diene        | 0.01  | Monoterpene            |
| $\beta$ -Pinene            | 0.01  | Monoterpene            |
| $\alpha$ -Methylstyrene    | 0.01  | Normonoterpene         |
| Myrcene                    | 0.01  | Monoterpene            |
| $\Delta^3$ -Carene         | 0.01  | Monoterpene            |
| para-Cymene                | 0.01  | Monoterpene            |
| Limonene                   | 0.02  | Monoterpene            |
| $\gamma$ -Terpinene        | tr    | Monoterpene            |
| Unknown                    | tr    | Oxygenated monoterpene |
| para-Cymenene              | 0.01  | Monoterpene            |
| Terpinolene                | 0.01  | Monoterpene            |
| $\alpha$ -Campholenal      | tr    | Monoterpenic aldehyde  |
| <i>trans</i> -Pinocarveol  | 0.02  | Monoterpenic alcohol   |
| Camphor                    | 0.01  | Monoterpenic ketone    |
| Citronellal                | 0.01  | Monoterpenic aldehyde  |
| Borneol                    | 0.02  | Monoterpenic alcohol   |
| Terpinen-4-ol              | 0.03  | Monoterpenic alcohol   |
| meta-Cymen-8-ol            | 0.01  | Monoterpenic alcohol   |
| para-Cymen-8-ol            | 0.03  | Monoterpenic alcohol   |
| $\alpha$ -Terpineol        | 0.03  | Monoterpenic alcohol   |
| Myrtenol                   | 0.03  | Monoterpenic alcohol   |
| Verbenone                  | 0.04  | Monoterpenic ketone    |
| <i>trans</i> -Carveol      | 0.01  | Monoterpenic alcohol   |
| Carvacrol methyl ether     | 0.03  | Monoterpenic ether     |
| Bornyl acetate             | 0.02  | Monoterpenic ester     |
| Brasila-1,10-diene         | 0.04  | Sesquiterpene          |
| Carvacrol                  | 0.02  | Monoterpenic alcohol   |
| African-1-ene              | 0.08  | Sesquiterpene          |
| $\alpha$ -Terpinyl acetate | 0.06  | Monoterpenic ester     |
| Cyclosativene II           | 0.16  | Sesquiterpene          |
| 2-epi- $\alpha$ -Funebrene | 0.76  | Sesquiterpene          |
| $\alpha$ -Duprezianene     | 0.75  | Sesquiterpene          |
| Isolongifolene             | 0.08  | Sesquiterpene          |
| $\beta$ -Elemene           | 0.19  | Sesquiterpene          |
| $\alpha$ -Funebrene        | 0.29  | Sesquiterpene          |
| $\alpha$ -Chamipinene      | 0.18  | Sesquiterpene          |
| Unknown                    | 0.18  | Sesquiterpene          |
| $\beta$ -Funebrene         | 1.62  | Sesquiterpene          |
| $\beta$ -Cedrene           | 4.12  | Sesquiterpene          |
| $\alpha$ -Cedrene          | 22.54 | Sesquiterpene          |
| $\beta$ -Caryophyllene     | 0.55  | Sesquiterpene          |

|                            |       |                          |
|----------------------------|-------|--------------------------|
| β-Duprezianene             | 0.62  | Sesquiterpene            |
| cis-Thujopsene             | 20.42 | Sesquiterpene            |
| Isobazzanene               | 0.19  | Sesquiterpene            |
| trans-α-Bergamotene        | 0.11  | Sesquiterpene            |
| β-Barbatene                | 0.08  | Sesquiterpene            |
| Prezizaene                 | 0.24  | Sesquiterpene            |
| α-Himachalene              | 0.26  | Sesquiterpene            |
| 7,8-Dehydro-α-acoradiene?  | 0.25  | Sesquiterpene            |
| Cadina-4,11-diene          | 0.11  | Sesquiterpene            |
| α-Humulene                 | 0.12  | Sesquiterpene            |
| Thujopsadiene?             | 0.11  | Sesquiterpene            |
| α-Acoradiene               | 0.29  | Sesquiterpene            |
| (E)-β-Farnesene            | 1.01  | Sesquiterpene            |
| β-Acoradiene               | 0.02  | Sesquiterpene            |
| Thujopsene isomer          | 0.38  | Sesquiterpene            |
| β-Chamigrene               | 0.26  | Sesquiterpene            |
| Unknown                    | 1.27  | Sesquiterpene            |
| γ-Himachalene              | 0.08  | Sesquiterpene            |
| Unknown                    | 0.27  | Sesquiterpene            |
| ar-Curcumene               | 0.15  | Sesquiterpene            |
| Valencene                  | 0.07  | Sesquiterpene            |
| Pseudowiddrene             | 1.35  | Sesquiterpene            |
| α-Chamigrene               | 1.04  | Sesquiterpene            |
| β-Himachalene              | 0.45  | Sesquiterpene            |
| α-Cuprenene                | 1.16  | Sesquiterpene            |
| Cuparene                   | 1.50  | Sesquiterpene            |
| 1,2-Dihydrocuparene        | 0.31  | Sesquiterpene            |
| α-Alaskene                 | 0.37  | Sesquiterpene            |
| α-Dehydro-ar-himachalene   | 0.03  | Sesquiterpene            |
| Unknown                    | 0.46  | Sesquiterpene            |
| 1,4-Dihydrocuparene        | 0.13  | Sesquiterpene            |
| β-Curcumene                | 0.10  | Sesquiterpene            |
| 7-epi-α-Selinene           | 0.08  | Sesquiterpene            |
| γ-Dehydro-ar-himachalene   | 0.03  | Sesquiterpene            |
| δ-Cadinene                 | 0.22  | Sesquiterpene            |
| β-Sesquiphellandrene       | 0.24  | Sesquiterpene            |
| γ-Cuprenene                | 0.69  | Sesquiterpene            |
| Unknown                    | 0.24  | Oxygenated sesquiterpene |
| ar-Himachalene             | 0.16  | Sesquiterpene            |
| δ-Cuprenene epimer I       | 0.11  | Sesquiterpene            |
| Unknown                    | 0.13  | Oxygenated sesquiterpene |
| δ-Cuprenene epimer II      | 0.11  | Sesquiterpene            |
| Unknown                    | 0.13  | Oxygenated sesquiterpene |
| Unknown                    | 0.04  | Oxygenated sesquiterpene |
| Caryophyllenyl alcohol     | 0.08  | Sesquiterpenic alcohol   |
| Unknown                    | 0.18  | Oxygenated sesquiterpene |
| Caryophyllene oxide        | 0.02  | Sesquiterpenic ether     |
| Caryophyllene oxide isomer | 0.01  | Sesquiterpenic ether     |
| allo-Cedrol                | 0.27  | Sesquiterpenic alcohol   |
| α-Cedrol                   | 17.21 | Sesquiterpenic alcohol   |
| Widdrol                    | 1.65  | Sesquiterpenic alcohol   |
| epi-Cedrol                 | 0.29  | Sesquiterpenic alcohol   |

|   |               |                          |
|---|---------------|--------------------------|
| Unknown                                     | 0.02          | Oxygenated sesquiterpene |
| 10-epi-Cubenol                              | 0.09          | Sesquiterpenic alcohol   |
| Unknown                                     | 0.12          | Oxygenated sesquiterpene |
| $\alpha$ -Acorenol                          | 0.39          | Sesquiterpenic alcohol   |
| $\beta$ -Acorenol                           | 0.16          | Sesquiterpenic alcohol   |
| Unknown                                     | 0.09          | Oxygenated sesquiterpene |
| Unknown                                     | 0.28          | Oxygenated sesquiterpene |
| Unknown                                     | 0.58          | Oxygenated sesquiterpene |
| Himachalol                                  | 0.20          | Sesquiterpenic alcohol   |
| Unknown                                     | 0.01          | Oxygenated sesquiterpene |
| Unknown                                     | 0.19          | Oxygenated sesquiterpene |
| Unknown                                     | 0.21          | Oxygenated sesquiterpene |
| Cedrenol analog                             | 0.35          | Sesquiterpenic alcohol   |
| 14-Hydroxy-9-epi-( <i>E</i> )-caryophyllene | 0.12          | Sesquiterpenic alcohol   |
| 1,7-diepi- $\alpha$ -Cedrenal?              | 0.12          | Sesquiterpenic aldehyde  |
| Khusiol                                     | 0.09          | Sesquiterpenic alcohol   |
| Cedr-8-en-13-ol                             | 0.22          | Sesquiterpenic alcohol   |
| $\alpha$ -Bisabolol                         | 0.32          | Sesquiterpenic alcohol   |
| $\alpha$ -Cedrenol                          | 0.13          | Sesquiterpenic alcohol   |
| Unknown                                     | 0.25          | Oxygenated sesquiterpene |
| Mayurone?                                   | 0.03          | Norsesquiterpenic ketone |
| Thujopsenal                                 | 0.17          | Sesquiterpenic aldehyde  |
| Unknown                                     | 0.06          | Oxygenated sesquiterpene |
| Thujopsenal analog                          | 0.03          | Sesquiterpenic aldehyde  |
| Unknown                                     | 0.03          | Oxygenated sesquiterpene |
| Cuparenal                                   | 0.04          | Sesquiterpenic aldehyde  |
| Unknown                                     | 0.16          | Oxygenated sesquiterpene |
| Cedryl acetate                              | 0.05          | Sesquiterpenic ester     |
| Unknown                                     | 0.02          | Oxygenated sesquiterpene |
| Unknown                                     | 0.03          | Oxygenated sesquiterpene |
| $\beta$ -Acoradienol?                       | 0.03          | Sesquiterpenic alcohol   |
| Unknown                                     | 0.08          | Oxygenated sesquiterpene |
| Unknown                                     | 0.04          | Oxygenated sesquiterpene |
| Unknown                                     | 0.04          | Oxygenated sesquiterpene |
| Unknown                                     | 0.07          | Oxygenated sesquiterpene |
| Nootkatone analog                           | 0.01          | Sesquiterpenic ketone    |
| Manool                                      | 0.07          | Diterpenic alcohol       |
| 7,13-Abietadiene                            | 0.01          | Diterpene                |
| <b>Consolidated total</b>                   | <b>92.18%</b> |                          |

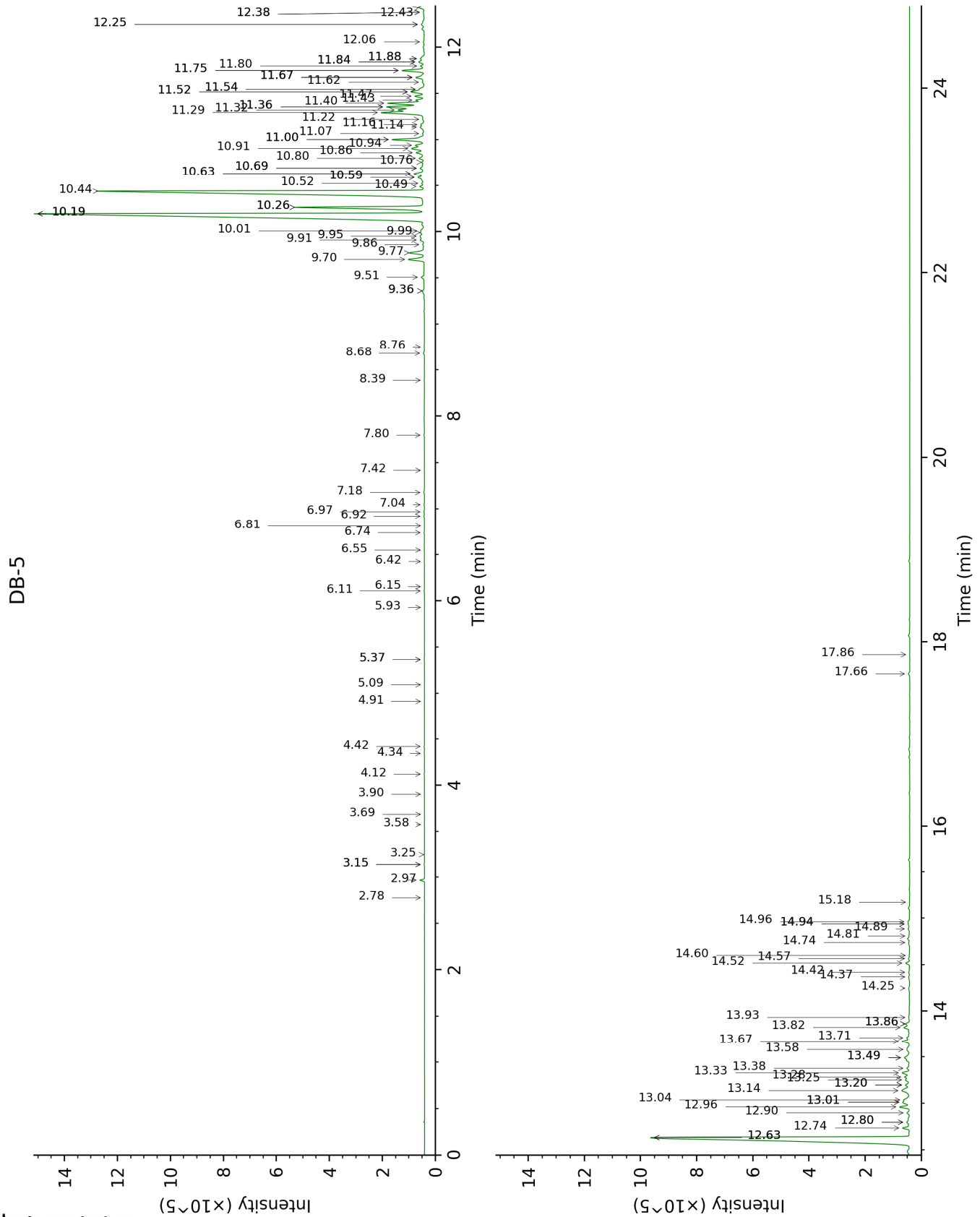
tr: The compound has been detected below 0.005% of total signal.

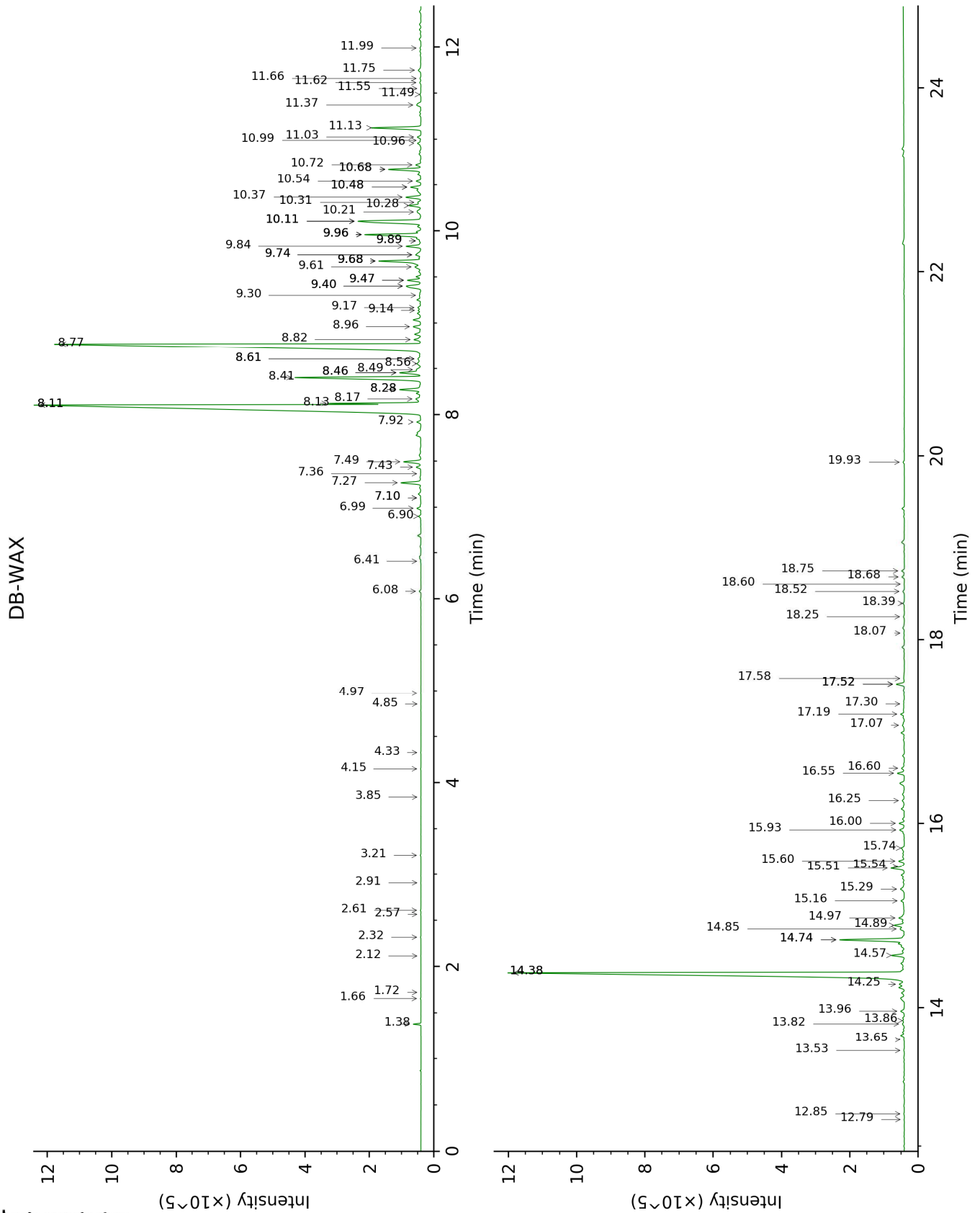
Note: no correction factor was applied

**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.

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FULL ANALYSIS DATA

| Identification  | Column DB-5 |      |        | Column DB-WAX |      |        |
|---|-------------|------|--------|---------------|------|--------|
|   | R.T         | R.I  | %      | R.T           | R.I  | %      |
| Unknown [m/z 105, 79 (80), 91 (78), 77 (69), 78 (56), 93 (46), 120 (44)... 136 (4)] | 2.78        | 917  | 0.01   | 2.57          | 1106 | 0.01   |
| α-Pinene  | 2.97        | 929  | 0.13   | 1.38          | 989  | 0.12   |
| Camphene  | 3.15*       | 941  | 0.02   | 1.72          | 1025 | tr     |
| α-Fenchene  | 3.15*       | 941  | [0.02] | 1.66          | 1018 | 0.01   |
| Thuja-2,4(10)-diene   | 3.25        | 948  | 0.01   | 2.32          | 1084 | 0.01   |
| β-Pinene  | 3.58        | 970  | 0.01   | 2.12          | 1064 | 0.01   |
| α-Methylstyrene   | 3.69        | 977  | 0.01   | 4.98          | 1285 | 0.01   |
| Myrcene   | 3.90        | 992  | 0.01   | 2.91          | 1132 | 0.01   |
| Δ3-Carene   | 4.12        | 1006 | 0.01   | 2.61          | 1109 | 0.01   |
| para-Cymene   | 4.34        | 1021 | 0.01   | 4.15          | 1226 | 0.01   |
| Limonene  | 4.42        | 1025 | 0.02   | 3.21          | 1156 | 0.01   |
| γ-Terpinene   | 4.91        | 1056 | tr     | 3.84          | 1204 | 0.01   |
| Unknown [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]   | 5.09        | 1068 | tr     | 4.85          | 1277 | tr     |
| para-Cymenene   | 5.37*       | 1085 | 0.02   | 6.41          | 1388 | 0.01   |
| Terpinolene   | 5.37*       | 1085 | [0.02] | 4.33          | 1239 | 0.01   |
| α-Campholenal   | 5.93        | 1122 | tr     | 7.10*         | 1438 | 0.03   |
| trans-Pinocarveol   | 6.11        | 1133 | 0.02   | 9.30          | 1607 | 0.07   |
| Camphor   | 6.15        | 1136 | 0.01   | 7.36          | 1457 | 0.01   |
| Citronellal   | 6.42        | 1154 | 0.01   | 7.10*         | 1438 | [0.03] |
| Borneol   | 6.55        | 1162 | 0.02   | 9.89*         | 1654 | 0.04   |
| Terpinen-4-ol   | 6.74        | 1174 | 0.03   | 8.61*         | 1553 | 0.14   |
| meta-Cymen-8-ol   | 6.81        | 1179 | 0.01   | 11.55         | 1792 | 0.01   |
| para-Cymen-8-ol   | 6.92        | 1186 | 0.03   | 11.62         | 1798 | 0.04   |
| α-Terpineol   | 6.97        | 1189 | 0.03   | 9.89*         | 1654 | [0.04] |
| Myrtenol  | 7.04        | 1194 | 0.03   | 10.99         | 1745 | 0.02   |
| Verbenone   | 7.18        | 1203 | 0.04   | 9.74*         | 1642 | 0.25   |
| trans-Carveol   | 7.42        | 1219 | 0.01   | 11.49         | 1786 | 0.04   |
| Carvacrol methyl ether  | 7.80        | 1242 | 0.03   | 8.61*         | 1553 | [0.14] |
| Bornyl acetate  | 8.39        | 1282 | 0.02   | 8.28*         | 1528 | 0.63   |
| Brasila-1,10-diene  | 8.68        | 1302 | 0.04   | 6.08          | 1364 | 0.04   |
| Carvacrol   | 8.76        | 1306 | 0.02   | 15.54         | 2160 | 0.05   |
| African-1-ene   | 9.36*       | 1349 | 0.14   | 6.90          | 1424 | 0.08   |
| α-Terpinyl acetate  | 9.36*       | 1349 | [0.14] | 9.74*         | 1642 | [0.25] |
| Cyclosativene II  | 9.51        | 1360 | 0.16   | 6.99          | 1430 | 0.12   |
| 2-epi-α-Funebrene   | 9.70        | 1373 | 0.76   | 7.27          | 1450 | 0.60   |
| α-Duprezianene  | 9.77        | 1378 | 0.75   | 7.49          | 1467 | 0.54   |
| Isolongifolene  | 9.86        | 1384 | 0.08   | 7.44          | 1463 | 0.14   |
| β-Elemene   | 9.91        | 1388 | 0.19   | 8.49†         | 1544 | [0.85] |
| α-Funebrene   | 9.95        | 1391 | 0.29   | 7.92          | 1501 | 0.12   |
| α-Chamipinene   | 9.99        | 1394 | 0.18   | 8.11*         | 1515 | 26.06  |

|  |         |      |         |        |      |         |
|--|---------|------|---------|--------|------|---------|
| Unknown [m/z 107, 91 (86), 93 (83), 79 (81), 162 (74), 41 (73), 133 (72)... 204 (13)]  | 10.01   | 1395 | 0.18    | 8.17   | 1520 | 0.21    |
| β-Funebrene  | 10.19*  | 1408 | 28.29   | 8.13   | 1516 | 1.62    |
| β-Cedrene  | 10.19*  | 1408 | [28.29] | 8.41   | 1538 | 4.12    |
| α-Cedrene  | 10.19*  | 1408 | [28.29] | 8.11*  | 1515 | [26.06] |
| β-Caryophyllene  | 10.26*  | 1413 | 5.31    | 8.46*† | 1542 | 0.85    |
| β-Duprezianene   | 10.26*  | 1413 | [5.31]  | 8.28*  | 1528 | [0.63]  |
| cis-Thujopsene   | 10.44   | 1426 | 20.42   | 8.77   | 1566 | 19.99   |
| Isobazzanene   | 10.49   | 1430 | 0.19    | 8.56   | 1549 | 0.19    |
| trans-α-Bergamotene  | 10.52   | 1433 | 0.11    | 8.46*† | 1542 | [0.85]  |
| β-Barbatene  | 10.59*  | 1438 | 0.39    | 9.14   | 1594 | 0.08    |
| Prezizaene   | 10.59*  | 1438 | [0.39]  | 8.82   | 1570 | 0.24    |
| α-Himachalene  | 10.63*  | 1441 | 0.54    | 8.96   | 1580 | 0.26    |
| 7,8-Dehydro-α-acoradiene?  | 10.63*  | 1441 | [0.54]  | 9.61   | 1632 | 0.25    |
| Cadina-4,11-diene  | 10.69*  | 1445 | 0.23    | 9.17   | 1597 | 0.11    |
| α-Humulene   | 10.69*  | 1445 | [0.23]  | 9.40*  | 1615 | 0.65    |
| Thujopsadiene?   | 10.76   | 1450 | 0.11    | 10.21  | 1679 | 0.11    |
| α-Acoradiene   | 10.80   | 1453 | 0.29    | 9.40*  | 1615 | [0.65]  |
| (E)-β-Farnesene  | 10.86†  | 1458 | 1.04    | 9.68*  | 1637 | 1.35    |
| β-Acoradiene   | 10.91†  | 1461 | [1.04]  | 9.47*  | 1620 | 0.40    |
| Thujopsene isomer  | 10.94   | 1464 | 0.38    | 9.47*  | 1620 | [0.40]  |
| β-Chamigrene   | 11.00*  | 1468 | 1.52    | 9.68*  | 1637 | [1.35]  |
| Unknown [m/z 91, 105 (93), 161 (77), 93 (73), 119 (71), 133 (69)... 204 (31)]          | 11.00*  | 1468 | [1.52]  |        |      |         |
| γ-Himachalene  | 11.07   | 1473 | 0.08    | 9.68*  | 1637 | [1.35]  |
| Unknown [m/z 189, 91 (95), 105 (93), 133 (84), 119 (75), 41 (59), 93 (46)... 204 (33)] | 11.14†  | 1478 | 0.42    | 9.96*  | 1660 | 1.69    |
| ar-Curcumene   | 11.16†  | 1480 | [0.42]  | 10.72  | 1722 | 0.15    |
| Valencene  | 11.22   | 1485 | 0.07    | 9.96*  | 1660 | [1.69]  |
| Pseudowiddrene   | 11.30†  | 1490 | 3.03    | 9.96*  | 1660 | [1.69]  |
| α-Chamigrene   | 11.32†  | 1492 | [3.03]  | 10.11* | 1671 | 2.58    |
| β-Himachalene  | 11.36*  | 1495 | 1.61    | 9.84   | 1650 | 0.45    |
| α-Cuprenene  | 11.36*  | 1495 | [1.61]  | 10.11* | 1671 | [2.58]  |
| Cuparene   | 11.40   | 1498 | 1.50    | 11.13  | 1756 | 1.38    |
| 1,2-Dihydrocuparene  | 11.43   | 1500 | 0.31    | 10.28  | 1685 | 0.36    |
| α-Alaskene   | 11.47   | 1503 | 0.37    | 10.11* | 1671 | [2.58]  |
| α-Dehydro-ar-himachalene   | 11.52*† | 1507 | 0.87    | 11.66  | 1801 | 0.03    |
| Unknown [m/z 121, 123 (45), 91 (24), 107 (24), 122 (24),                               | 11.52*† | 1507 | [0.87]  | 10.37  | 1692 | 0.46    |

|  |         |      |         |        |      |         |
|--|---------|------|---------|--------|------|---------|
| 95 (23)... 204 (11)]   |         |      |         |        |      |         |
| 1,4-Dihydrocuparene  | 11.54*† | 1509 | [0.87]  | 10.54  | 1707 | 0.13    |
| β-Curcumene  | 11.54*† | 1509 | [0.87]  | 10.31  | 1688 | 0.10    |
| 7-epi-α-Selinene   | 11.62   | 1515 | 0.08    | 10.48* | 1702 | 0.30    |
| γ-Dehydro-ar-himachalene   | 11.67*  | 1519 | 0.49    | 11.99  | 1830 | 0.03    |
| δ-Cadinene   | 11.67*  | 1519 | [0.49]  | 10.48* | 1702 | [0.30]  |
| β-Sesquiphellandrene   | 11.67*  | 1519 | [0.49]  | 10.68* | 1718 | 0.93    |
| γ-Cuprenene  | 11.75*  | 1525 | 0.92    | 10.68* | 1718 | [0.93]  |
| Unknown [m/z 91, 107 (97), 105 (93), 41 (92), 109 (78), 43 (78), 121 (76), 135 (75)... 220 (21)] | 11.75*  | 1525 | [0.92]  |        |      |         |
| ar-Himachalene   | 11.80   | 1529 | 0.16    | 11.75  | 1809 | 0.13    |
| δ-Cuprenene epimer I   | 11.84*  | 1532 | 0.28    | 10.96  | 1742 | 0.11    |
| Unknown [m/z 43, 95 (81), 207 (61), 41 (55), 55 (50)... 222 (3)]                                 | 11.84*  | 1532 | [0.28]  | 13.96  | 2008 | 0.13    |
| δ-Cuprenene epimer II  | 11.88*  | 1535 | 0.23    | 11.03  | 1748 | 0.11    |
| Unknown [m/z 106, 41 (86), 43 (84), 149 (75), 69 (75), 91 (63), 93 (61)... 220 (1)]              | 11.88*  | 1535 | [0.23]  | 11.37  | 1777 | 0.13    |
| Unknown [m/z 91, 119 (98), 121 (91), 105 (85), 43 (82), 41 (76)... 205 (37), 220 (16)]           | 12.06   | 1549 | 0.04    | 13.53  | 1968 | 0.02    |
| Caryophyllenyl alcohol   | 12.25*  | 1564 | 0.22    | 13.82  | 1995 | 0.08    |
| Unknown [m/z 95, 191 (52), 107 (50), 121 (32), 81 (31)...]                                       | 12.25*  | 1564 | [0.22]  | 14.25  | 2036 | 0.18    |
| Caryophyllene oxide  | 12.38*  | 1574 | 0.08    | 12.85  | 1906 | 0.02    |
| Caryophyllene oxide isomer   | 12.38*  | 1574 | [0.08]  | 12.79  | 1900 | 0.01    |
| allo-Cedrol  | 12.43   | 1578 | 0.27    | 14.38* | 2048 | 17.48   |
| α-Cedrol   | 12.63*  | 1594 | 18.86   | 14.38* | 2048 | [17.48] |
| Widdrol  | 12.63*  | 1594 | [18.86] | 14.74* | 2082 | 1.92    |
| epi-Cedrol   | 12.74   | 1602 | 0.29    | 14.89  | 2097 | 0.32    |
| Unknown [m/z 138, 110 (77), 137 (75), 107 (62), 91 (61), 93 (60), 109 (57)... 220 (34)]          | 12.80*  | 1608 | 0.16    | 13.65  | 1979 | 0.02    |

|   |        |      |        |        |      |      |
|---|--------|------|--------|--------|------|------|
| 10-epi-Cubenol  | 12.80* | 1608 | [0.16] | 13.86  | 1999 | 0.09 |
| Unknown [m/z 107, 41 (86), 123 (85), 82 (79), 95 (77), 93 (76), 91 (73), 69 (71)... 220 (13)]             | 12.90  | 1616 | 0.12   | 14.85  | 2093 | 0.16 |
| $\alpha$ -Acorenol  | 12.96  | 1621 | 0.39   | 14.57  | 2066 | 0.37 |
| $\beta$ -Acorenol   | 13.01* | 1625 | 0.37   | 14.97  | 2105 | 0.16 |
| Unknown [m/z 132, 175 (22), 119 (18), 91 (18), 157 (18)... 219 (10)]                                      | 13.01* | 1625 | [0.37] | 15.74  | 2180 | 0.09 |
| Unknown [m/z 105, 93 (78), 95 (75), 131 (72), 119 (71), 132 (70), 91 (67), 120 (49)... 202 (39), 220 (9)] | 13.04  | 1627 | 0.28   | 16.00  | 2208 | 0.15 |
| Unknown [m/z 132, 91 (24), 119 (22), 105 (21), 133 (17), 117 (16)... 219 (3)]                             | 13.14  | 1636 | 0.58   |        |      |      |
| Himachalol  | 13.20* | 1640 | 0.21   | 15.28  | 2136 | 0.20 |
| Unknown [m/z 123, 81 (77), 95 (77), 107 (72), 41 (72), 93 (66), 55 (64)... 220? (13)]                     | 13.20* | 1640 | [0.21] |        |      |      |
| Unknown [m/z 41, 91 (96), 79 (88), 69 (82), 123 (80), 93 (80)... 220 (8)]                                 | 13.25  | 1645 | 0.19   | 17.52* | 2366 | 0.24 |
| Unknown [m/z 43, 81 (84), 41 (64), 67 (62), 95 (58), 79 (58)... 204 (48), 220 (2)]                        | 13.28  | 1648 | 0.21   | 15.60  | 2166 | 0.17 |
| Cedrenol analog   | 13.33  | 1651 | 0.35   | 16.55  | 2263 | 0.21 |
| 14-Hydroxy-9-epi-( <i>E</i> )-caryophyllene   | 13.38  | 1655 | 0.12   | 16.60  | 2269 | 0.10 |
| 1,7-diepi- $\alpha$ -Cedrenal?  | 13.49* | 1665 | 0.32   | 15.16  | 2123 | 0.12 |
| Khusiol   | 13.49* | 1665 | [0.32] | 16.25  | 2233 | 0.09 |
| Cedr-8-en-13-ol   | 13.58  | 1672 | 0.22   | 17.07  | 2318 | 0.11 |
| $\alpha$ -Bisabolol   | 13.67  | 1680 | 0.32   | 15.51  | 2158 | 0.42 |
| $\alpha$ -Cedrenol  | 13.71  | 1683 | 0.13   | 17.19  | 2331 | 0.11 |
| Unknown [m/z 91, 105 (87), 123 (74), 135 (70), 107 (60), 79 (59)... 220 (13)]                             | 13.82  | 1692 | 0.25   |        |      |      |
| Mayurone?   | 13.86* | 1695 | 0.18   | 17.30  | 2343 | 0.03 |
| Thujopsenal   | 13.86* | 1695 | [0.18] | 15.93  | 2200 | 0.17 |
| Unknown [m/z 105,   | 13.93  | 1701 | 0.06   | 17.58  | 2373 | 0.06 |

|   |        |               |        |        |               |        |
|---|--------|---------------|--------|--------|---------------|--------|
| 69 (77), 91 (66), 119 (65), 111 (56), 107 (45), 55 (45)... 220? (2)]                    |        |               |        |        |               |        |
| Thujopsenal analog  | 14.25  | 1728          | 0.03   | 17.52* | 2366          | [0.24] |
| Unknown [m/z 105, 91 (83), 79 (78), 135 (67), 107 (56), 67 (53)... 220 (9)]             | 14.37  | 1739          | 0.03   |        |               |        |
| Cuparenal   | 14.42  | 1743          | 0.04   |        |               |        |
| Unknown [m/z 105, 69 (79), 111 (66), 119 (60), 91 (50), 55 (41)... 203 (11), 220 (1)]   | 14.52  | 1752          | 0.16   |        |               |        |
| Cedryl acetate  | 14.57  | 1756          | 0.05   | 14.74* | 2082          | [1.92] |
| Unknown [m/z 91, 105 (74), 93 (67), 79 (59), 133 (54), 41 (47), 107 (46)...]            | 14.60  | 1759          | 0.02   | 18.60  | 2485          | 0.01   |
| Unknown [m/z 121, 136 (47), 119 (27), 91 (27), 105 (22), 41 (21)... 220 (4)]            | 14.74  | 1771          | 0.03   | 18.52  | 2476          | 0.05   |
| β-Acoradienol?  | 14.81  | 1777          | 0.03   | 18.25  | 2446          | 0.03   |
| Unknown [m/z 189, 91 (48), 133 (40), 105 (40), 41 (34), 187 (34)... 220 (5)]            | 14.89  | 1784          | 0.08   | 18.75  | 2501          | 0.08   |
| Unknown [m/z 148, 141 (99), 91 (74), 105 (52), 41 (42), 121 (42), 133 (37)... 218 (32)] | 14.94* | 1788          | 0.07   | 19.93  | 2638          | 0.04   |
| Unknown [m/z 120, 121 (93), 93 (85), 105 (74), 119 (68), 91 (58), 123 (49)... 220 (8)]  | 14.94* | 1788          | [0.07] | 18.40  | 2462          | 0.04   |
| Unknown [m/z 121, 136 (53), 91 (22), 93 (19), 79 (15), 105 (13)... 220 (3)]             | 14.96  | 1791          | 0.07   | 18.68  | 2494          | 0.08   |
| Nootkatone analog   | 15.18  | 1809          | 0.01   | 18.07  | 2426          | 0.02   |
| Manool  | 17.66  | 2042          | 0.07   |        |               |        |
| 7,13-Abietadiene  | 17.86  | 2063          | 0.01   | 17.52* | 2366          | [0.24] |
| <b>Total identified</b>   |        | <b>94.76%</b> |        |        | <b>90.26%</b> |        |
| <b>Total reported</b>   |        | <b>97.51%</b> |        |        | <b>92.37%</b> |        |

\*: 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