



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: D80104

ESSENTIAL OIL: DAVANA
BOTANICAL NAME: ARTEMISIA PALLENS
ORIGIN: INDIA

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF DAVANA OIL | % |
|--|-------|
| cis-DAVANONE | 44.70 |
| BICYCLOGERMACRENE | 8.51 |
| ETHYL (E)-CINNAMATE | 4.56 |
| DAVANA ETHER II | 3.52 |
| ETHYL (Z)-CINNAMATE | 3.52 |
| α -MUUROL | 2.01 |
| ARTEDOUGLASIA OXIDE A | 1.81 |
| DAVANA ETHER I | 1.68 |
| DAVANONE D | 1.64 |
| ARTEDOUGLASIA OXIDE C | 1.43 |
| DAVANONE B | 1.39 |
| β -SELINENE | 1.33 |
| GERMACRENE D | 1.04 |

Comments from Robert Tisserand: Green-fruity odor quality with hints of fresh fig. Constituents are in expected amounts.

Date : November 20, 2017

SAMPLE IDENTIFICATION

Internal code : 17K15-PTH5-1-CC

Customer identification : Davana - India - D8010473R

Type : Essential oil

Source : *Artemisia pallens*

Customer : Plant Therapy

ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-11-20

Checked and approved by :

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

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IDENTIFIED COMPOUNDS

| Identification | Column: BP5 | | | Column: WAX | | | Molecular Class |
|---|-------------|------|--------|-------------|------|--------|-----------------------|
| | R.T. | R.I. | % | % | R.I. | R.T. | |
| Ethyl 2-methylbutyrate | 2.25 | 846 | 0.15 | 0.15 | 990 | 1.35 | Aliphatic ester |
| Ethyl isovalerate | 2.34 | 853 | 0.10 | 0.10 | 1009 | 1.52 | Aliphatic ester |
| 5-Ethyl-2-methyl-2-vinyltetrahydrofuran | 3.09 | 907 | 0.08 | 0.06 | 1005 | 1.48 | Furan |
| 2-Methyl-2,5-divinyltetrahydrofuran | 3.21 | 914 | 0.06 | | | | Furan |
| α -Pinene | 3.42 | 927 | 0.01 | | | | Monoterpene |
| Unknown arbusculone derivative I | 3.71 | 944 | 0.34 | 0.33 | 1057 | 2.01 | Furan |
| Propyl 2-methylbutyrate | 3.75 | 946 | 0.23 | 0.20 | 1073 | 2.20 | Aliphatic ester |
| Propyl isovalerate | 3.86 | 952 | 0.17 | 0.18 | 1104 | 2.39* | Aliphatic ester |
| 5,5-Dimethyl-2(5H)-furanone | 4.11 | 967 | 0.13 | 9.08 | 1641 | 14.72* | Lactone |
| Benzaldehyde | 4.20 | 973 | 0.01 | 0.15 | 1428 | 7.37 | Simple phenolic |
| Myrcene | 4.48 | 989 | 0.01 | [0.18] | 1104 | 2.39* | Monoterpene |
| Isobutyl 2-methylbutyrate | 4.75 | 1004 | 0.04 | 0.11 | 1119 | 2.60* | Aliphatic ester |
| Unknown arbusculone derivative II | 4.86 | 1011 | 0.13 | 0.13 | 1156 | 3.08 | Furan |
| α -Terpinene | 4.94 | 1015 | 0.05 | [0.11] | 1119 | 2.60* | Monoterpene |
| para-Cymene | 5.13* | 1025 | 0.36 | 0.17 | 1206 | 3.74* | Monoterpene |
| Limonene | 5.13* | 1025 | [0.36] | 0.05 | 1144 | 2.92 | Monoterpene |
| cis- β -Ocimene | 5.35 | 1037 | tr | 0.28 | 1185 | 3.47* | Monoterpene |
| trans- β -Ocimene | 5.53 | 1047 | 0.01 | [0.17] | 1206 | 3.74* | Monoterpene |
| Lavender lactone | 5.63 | 1052 | 0.09 | 0.62 | 1613 | 13.30* | Lactone |
| cis-Arbusculone | 5.69 | 1056 | 0.03 | 0.04 | 1368 | 6.21 | Furan |
| γ -Terpinene | 5.72 | 1057 | 0.11 | [0.28] | 1185 | 3.47* | Monoterpene |
| trans-Arbusculone | 6.06 | 1076 | 0.10 | 0.06 | 1410 | 6.93 | Furan |
| Terpinolene | 6.20 | 1083 | 0.03 | 0.01 | 1221 | 3.97 | Monoterpene |
| 2-Methylbutyl 2-methylbutyrate | 6.61 | 1103 | 0.22 | 0.22 | 1231 | 4.12 | Aliphatic ester |
| Linalool | 6.70 | 1106 | 0.44 | 0.41 | 1489 | 8.80* | Monoterp. alcohol |
| Isoamyl isovalerate | 6.76 | 1108 | 0.12 | 0.10 | 1248 | 4.36 | Aliphatic ester |
| 2-Methylbutyl isovalerate | 6.79 | 1110 | 0.15 | | | | Aliphatic ester |
| cis-para-Menth-2-en-1-ol | 7.23 | 1126 | 0.02 | [0.41] | 1489 | 8.80* | Monoterp. alcohol |
| trans-para-Menth-2-en-1-ol | 7.80 | 1146 | 0.04 | 0.78 | 1557 | 11.13* | Monoterp. alcohol |
| Terpinen-4-ol | 8.81 | 1183 | 0.23 | 0.52 | 1521 | 9.79* | Monoterp. alcohol |
| nor-Davanone | 10.40 | 1224 | 0.16 | [0.78] | 1557 | 11.13* | Furan |
| Methyl hydrocinnamate | 12.44 | 1269 | 0.03 | | | | Phenylpropanoid ester |
| Geranial | 12.69 | 1274 | 0.03 | 0.05 | 1654 | 15.42 | Monoterp. aldehyde |
| Methyl (Z)-cinnamate | 14.69 | 1312 | 0.14 | 1.62 | 1815 | 25.40 | Phenylpropanoid ester |
| Bicycloelemene | 15.03 | 1317 | 0.08 | 0.07 | 1420 | 7.18 | Sesquiterpene |

| | | | | | | | |
|---|--------|------|--------|---------|------|--------|------------------------|
| Ethyl hydrocinnamate | 17.20 | 1350 | 0.13 | | | | Phenylpropanoid |
| Eugenol | 17.70 | 1357 | 0.16 | 0.14 | 2039 | 37.95 | Phenylpropanoid |
| β -Elemene | 18.94 | 1376 | 0.24 | [0.52] | 1521 | 9.79* | Sesquiterpene |
| Geranyl acetate | 19.37* | 1382 | 1.68 | 0.69 | 1688 | 17.19 | Monoterp. ester |
| Ethyl (Z)-cinnamate | 19.37* | 1382 | [1.68] | 3.52 | 1887 | 30.61* | Phenylpropanoid ester |
| Davanafuran isomer | 19.68 | 1387 | 0.11 | | | | Furan |
| Methyl (E)-cinnamate | 20.02 | 1392 | 0.79 | 46.76 | 1952 | 34.32* | Phenylpropanoid ester |
| β -Caryophyllene | 20.60 | 1400 | 0.18 | 0.12 | 1518 | 9.68 | Sesquiterpene |
| cis-threo-Davanafuran | 21.26 | 1408 | 0.46 | | | | Furan |
| Aromadendrene | 22.01 | 1417 | 0.34 | 0.41 | 1526 | 9.98 | Sesquiterpene |
| α -Humulene | 23.41 | 1434 | 0.12 | 0.06 | 1578 | 11.90 | Sesquiterpene |
| allo-Aromadendrene | 23.68 | 1437 | 0.57 | [0.78] | 1557 | 11.13* | Sesquiterpene |
| Unknown davanone analog | 24.59 | 1448 | 0.13 | | | | Furan |
| γ -Muurolene | 25.19 | 1455 | 0.12 | [0.62] | 1613 | 13.30* | Sesquiterpene |
| Germacrene D | 25.66 | 1461 | 1.04 | 1.39 | 1623 | 13.83 | Sesquiterpene |
| β -Selinene | 26.30 | 1468 | 1.33 | [9.08] | 1641 | 14.72* | Sesquiterpene |
| Viridiflorene | 26.50 | 1471 | 0.63 | 0.77 | 1619 | 13.59 | Sesquiterpene |
| Ethyl (E)-cinnamate | 26.84 | 1475 | 4.56 | 4.65 | 2005 | 36.73 | Phenylpropanoid ester |
| Bicyclogermacrene | 27.08 | 1478 | 8.51 | [9.08] | 1641 | 14.72* | Sesquiterpene |
| Davana ether I | 27.71 | 1485 | 1.68 | | | | Sesquiterp. ether |
| β -Bisabolene | 28.76* | 1497 | 0.61 | 0.07 | 1661 | 15.80 | Sesquiterpene |
| γ -Cadinene | 28.76* | 1497 | [0.61] | 0.36 | 1665 | 16.00 | Sesquiterpene |
| δ -Cadinene | 29.51* | 1508 | 3.74 | 0.22 | 1671 | 16.32 | Sesquiterpene |
| Davana ether II | 29.51* | 1508 | [3.74] | | | | Sesquiterp. ether |
| Artedouglasia oxide C | 29.73 | 1511 | 1.43 | | | | Sesquiterp. ketone |
| Artedouglasia oxide A | 31.31 | 1533 | 1.81 | | | | Sesquiterp. ketone |
| Davanone B isomer | 32.82 | 1554 | 0.44 | | | | Sesquiterp. ketone |
| Davanone B | 33.33 | 1562 | 1.39 | [3.52] | 1887 | 30.61* | Sesquiterp. ketone |
| Spathulenol | 33.71 | 1567 | 0.36 | 0.28 | 2023 | 37.41 | Sesquiterp. alcohol |
| Davanone D | 34.27 | 1575 | 1.64 | | | | Sesquiterp. ketone |
| cis-Davanone | 35.14 | 1587 | 44.70 | [46.76] | 1952 | 34.32* | Sesquiterp. ketone |
| Unknown (m/z = 95, 67 (59), 93 (41), 41 (32), 109 (32)...)) | 36.30 | 1607 | 0.67 | | | | |
| Isospathulenol | 36.78 | 1619 | 0.37 | 0.44 | 2145 | 41.11 | Sesquiterp. alcohol |
| τ -Cadinol | 37.60 | 1639 | 1.14 | 1.31 | 2066 | 38.76 | Sesquiterp. alcohol |
| α -Muurolol | 37.86 | 1646 | 2.01 | 2.17 | 2093 | 39.64 | Sesquiterp. alcohol |
| β -Eudesmol | 37.93 | 1648 | 0.55 | 1.11 | 2103 | 39.97 | Sesquiterp. alcohol |
| Unknown (m/z = 95, 67 (59), 41 (43), 93 (40), 161 (38)... 204 (14), 219 (3), 234 (1))) | 38.05 | 1651 | 0.23 | | | | Oxygenated sesquiterp. |
| α -Cadinol | 38.14 | 1653 | 0.60 | 0.71 | 2117 | 40.36 | Sesquiterp. alcohol |

| | | | | | | | |
|---|---------------|------|------|---------------|------|-------|------------------------|
| Unknown (m/z = 163, 43 (47), 121 (16)... 234 (6)) | 39.32 | 1682 | 1.78 | 1.45 | 2283 | 44.49 | Oxygenated sesquiterp. |
| β -Davanone-2-ol | 40.97 | 1729 | 0.46 | 0.46 | 2497 | 49.01 | Sesquiterp. alcohol |
| Total identified | 87.93% | | | 81.13% | | | |

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

OTHER DATA

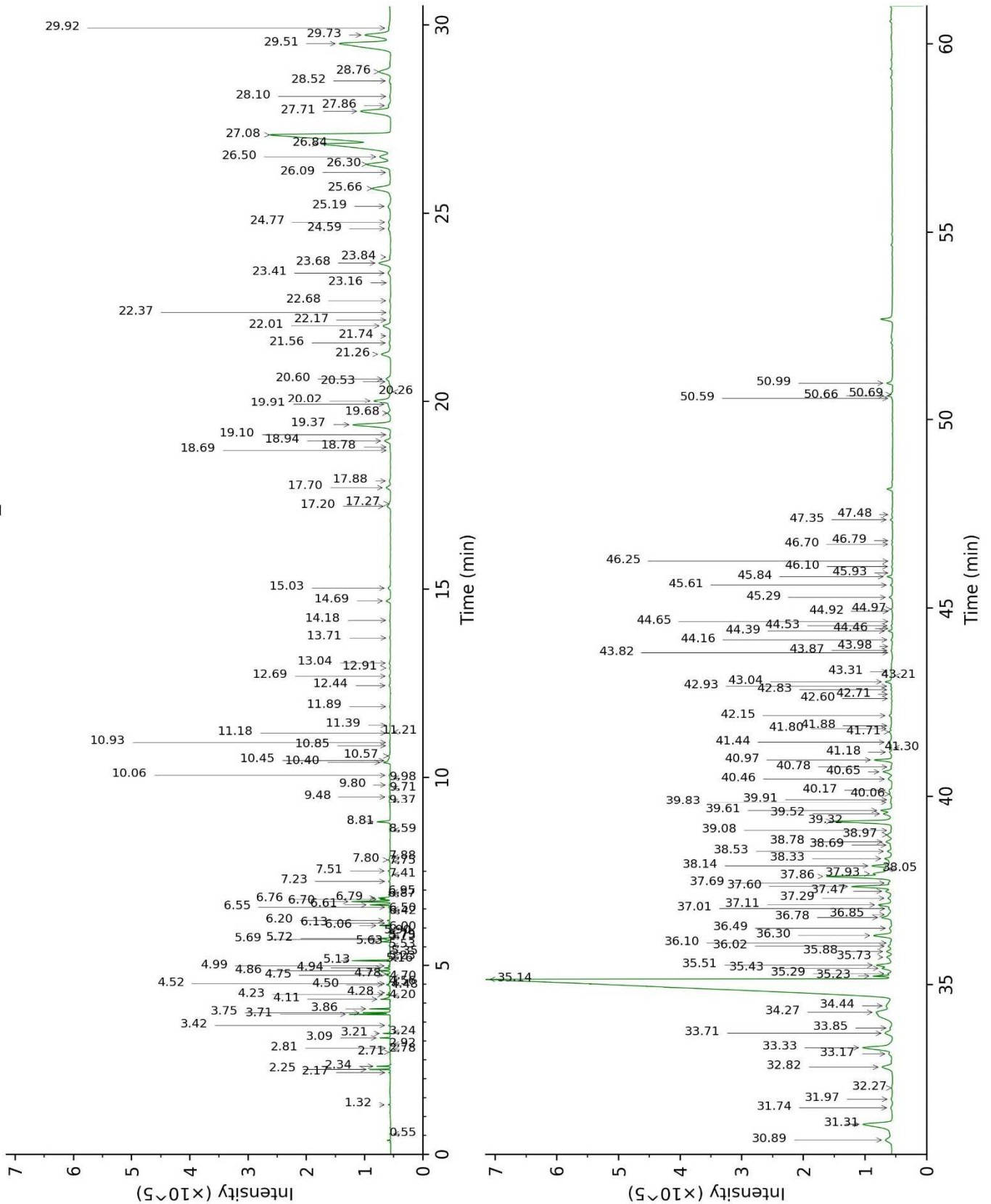
Physical aspect : Light orange liquid

Refractive index : 1.4890 ± 0.0003 (20 °C)

CONCLUSION

No adulterant, contaminant or diluent were detected using this method.

17K15-PTH5-1-CC_BP5



17K15-PTH5-1-CC_WAX

