



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: D80103

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

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF DAVANA OIL | % |
|--|------|
| cis-DAVANONE | 42.1 |
| BICYCLOGERMACRENE | 10.7 |
| ETHYL (E)-CINNAMATE | 4.0 |
| ARTEDOUGLASIA OXIDE C | 1.7 |
| SPATHULENOL | 1.7 |
| DAVANONE B | 1.5 |
| β-SELINENE | 1.5 |
| α-MUUROLOL | 1.2 |
| ARTEDOUGLASIA OXIDE A | 1.2 |
| GERMACRENE D | 1.1 |
| GERANYL ACETATE | 1.1 |
| T-CADINOL | 1.0 |

Comments from Robert Tisserand: Beautiful fruity, apricot odor profile. Contains 44% davanone, the major constituent.

Date : February 9, 2017

SAMPLE IDENTIFICATION

Internal code : 17A30-PTH2-1-DM

Customer identification : Davana - Indian - #D80103610R

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).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-02-08

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 | 2.26 | 848 | 0.10 | 0.12 | 993 | 1.48 | Aliphatic ester |
| Ethyl isovalerate | 2.35 | 855 | 0.07 | 0.07 | 1014 | 1.66 | Aliphatic ester |
| 5-Ethyl-2-methyl-2-vinyltetrahydrofuran | 3.08 | 909 | 0.08 | 0.07 | 1011 | 1.62 | Furan |
| 2-Methyl-2,5-divinyltetrahydrofuran | 3.19 | 915 | 0.06 | | | | Furan |
| α -Pinene | 3.40 | 928 | 0.01 | 0.01 | 955 | 1.23 | Monoterpene |
| Unknown arbusculone derivative I | 3.70 | 946 | 0.37 | 0.38 | 1073 | 2.19 | Furan |
| Propyl 2-methylbutyrate | 3.75 | 949 | 0.20 | 0.18 | 1095 | 2.37 | Aliphatic ester |
| Propyl isovalerate | 3.86 | 955 | 0.12 | 0.13 | 1110 | 2.56 | Aliphatic ester |
| 5,5-Dimethyl-2(5H)-furanone | 4.10 | 970 | 0.05 | 10.87 | 1640 | 15.42* | Lactone |
| Benzaldehyde | 4.15 | 972 | 0.08 | 0.07 | 1427 | 7.60 | Simple phenolic |
| Myrcene | 4.44 | 990 | 0.01 | 0.01 | 1122 | 2.73 | Monoterpene |
| Isobutyl 2-methylbutyrate | 4.75 | 1007 | 0.05 | 0.05 | 1130 | 2.84 | Aliphatic ester |
| Unknown arbusculone derivative II | 4.84 | 1012 | 0.16 | 0.14 | 1165 | 3.31 | Furan |
| α -Terpinene | 4.90 | 1016 | 0.04 | 0.03 | 1125 | 2.77 | Monoterpene |
| para-Cymene | 5.07 | 1025 | 0.18 | 0.18 | 1211 | 3.95 | Monoterpene |
| Unknown arbusculone derivative III | 5.11* | 1027 | 0.24 | 0.22 | 1196 | 3.72 | Furan |
| Limonene | 5.11* | 1027 | [0.24] | 0.04 | 1150 | 3.11 | Monoterpene |
| 1,8-Cineole | 5.22 | 1033 | 0.02 | 0.03 | 1158 | 3.21 | Monoterp. ether |
| trans- β -Ocimene | 5.48 | 1047 | 0.01 | 0.01 | 1204 | 3.84 | Monoterpene |
| Lavender lactone | 5.58 | 1053 | 0.07 | 0.08 | 1606 | 13.59 | Lactone |
| cis-Arbusculone | 5.66* | 1057 | 0.12 | 0.04 | 1379 | 6.56 | Furan |
| γ -Terpinene | 5.66* | 1057 | [0.12] | 0.09 | 1192 | 3.66 | Monoterpene |
| trans-Arbusculone | 5.96 | 1074 | 0.13 | 0.13 | 1407 | 7.11 | Furan |
| Terpinolene | 6.14 | 1083 | 0.02 | 0.02 | 1226 | 4.16 | Monoterpene |
| Linalool | 6.55 | 1104 | 0.45 | 0.47 | 1498 | 9.36 | Monoterp. alcohol |
| 2-Methylbutyl 2-methylbutyrate | 6.59 | 1105 | 0.33 | 0.29 | 1235 | 4.30 | Aliphatic ester |
| Isoamyl isovalerate | 6.73 | 1111 | 0.17 | 0.15 | 1251 | 4.54 | Aliphatic ester |
| cis-para-Menth-2-en-1-ol | 7.10 | 1124 | 0.03 | 0.02 | 1506 | 9.65 | Monoterp. alcohol |
| Terpinen-4-ol | 8.60 | 1179 | 0.25 | 0.25 | 1527 | 10.49 | Monoterp. alcohol |
| nor-Davanone | 10.24 | 1224 | 0.21 | 0.35 | 1569 | 12.06 | Furan |
| Methyl hydrocinnamate | 12.50 | 1274 | 0.03 | | | | Phenylpropanoid ester |
| Geranial | 12.62 | 1276 | 0.02 | 0.02 | 1647 | 15.79 | Monoterp. aldehyde |
| Methyl (Z)-cinnamate | 14.26 | 1309 | 0.15 | 0.23 | 1824 | 27.19 | Phenylpropanoid ester |
| Bicycloelemene | 14.84 | 1318 | 0.07 | 0.07 | 1419 | 7.41 | Sesquiterpene |

| | | | | | | | |
|--|--------|------|--------|---------|------|--------|-----------------------|
| Ethyl hydrocinnamate | 16.84 | 1348 | 0.12 | | | | Phenylpropanoid ester |
| Eugenol | 16.97 | 1350 | 0.08 | 1.03 | 2068 | 39.45* | Phenylpropanoid |
| β-Elemene | 18.62 | 1375 | 0.19 | 0.25 | 1524 | 10.37 | Sesquiterpene |
| Geranyl acetate | 18.81 | 1378 | 1.07 | 1.09 | 1691 | 18.11 | Monoterp. ester |
| Ethyl (Z)-cinnamate | 19.11 | 1382 | 0.68 | 5.08 | 1888 | 31.87* | Phenylpropanoid ester |
| Davanafuran isomer | 19.37 | 1386 | 0.82 | | | | Furan |
| Methyl (E)-cinnamate | 19.61 | 1390 | 0.11 | 44.23 | 1953 | 35.16* | Phenylpropanoid ester |
| β-Caryophyllene | 20.27 | 1400 | 0.16 | 0.18 | 1515 | 10.02 | Sesquiterpene |
| cis-threo-Davanafuran | 20.91 | 1408 | 0.40 | | | | Furan |
| Aromadendrene | 21.62 | 1416 | 0.27 | 0.34 | 1519 | 10.16 | Sesquiterpene |
| α-Humulene | 23.01 | 1433 | 0.14 | 0.14 | 1578 | 12.42 | Sesquiterpene |
| allo-Aromadendrene | 23.27 | 1436 | 0.56 | 0.51 | 1556 | 11.58 | Sesquiterpene |
| Unknown davanone analog | 24.40 | 1450 | 0.12 | | | | Sesquiterp. ketone |
| Germacrene D | 25.19 | 1459 | 1.14 | 0.98 | 1616 | 14.13 | Sesquiterpene |
| β-Selinene | 25.79 | 1466 | 1.46 | 1.46 | 1621 | 14.41 | Sesquiterpene |
| Ethyl (E)-cinnamate | 26.06* | 1470 | 4.26 | 3.95 | 2013 | 37.69 | Phenylpropanoid ester |
| Viridiflorene | 26.06* | 1470 | [4.26] | 0.51 | 1610 | 13.82 | Sesquiterpene |
| Bicyclgermacrene | 26.61 | 1476 | 10.65 | [10.87] | 1640 | 15.42* | Sesquiterpene |
| Davana ether I | 27.27 | 1484 | 1.91 | | | | Sesquiterp. ether |
| γ-Cadinene | 28.19 | 1495 | 0.39 | 0.34 | 1663 | 16.65 | Sesquiterpene |
| β-Bisabolene | 28.34 | 1497 | 0.19 | 0.11 | 1658 | 16.41 | Sesquiterpene |
| δ-Cadinene | 29.05* | 1506 | 3.34 | 0.21 | 1669 | 16.98 | Sesquiterpene |
| Davana ether II | 29.05* | 1506 | [3.34] | | | | Sesquiterp. ether |
| Artedouglasia oxide C | 29.26 | 1509 | 1.70 | | | | Sesquiterp. ketone |
| Artedouglasia oxide A | 29.47 | 1512 | 1.15 | | | | Sesquiterp. ketone |
| Davanone B isomer | 32.44 | 1554 | 0.44 | | | | Sesquiterp. ketone |
| Davanone B | 32.97 | 1561 | 1.53 | [5.08] | 1888 | 31.87* | Sesquiterp. ketone |
| Spathulenol | 33.37 | 1567 | 1.69 | 1.33 | 2017 | 37.82 | Sesquiterp. alcohol |
| (E)-Nerolidol | 33.49 | 1568 | 0.37 | 0.45 | 1981 | 36.47 | Sesquiterp. alcohol |
| Davanone D | 33.80 | 1573 | 0.50 | | | | Sesquiterp. ketone |
| cis-Davanone | 34.76 | 1586 | 42.07 | [44.23] | 1953 | 35.16* | Sesquiterp. ketone |
| Unknown (m/z = 95, 67 (59), 93 (41), 41 (32), 109 (32)...)) | 35.96 | 1605 | 0.78 | | | | |
| Isospathulenol | 36.46 | 1617 | 0.26 | 0.27 | 2150 | 41.76 | Sesquiterp. alcohol |
| τ-Cadinol | 37.08 | 1632 | 1.04 | [1.03] | 2068 | 39.45* | Sesquiterp. alcohol |
| τ-Muurolol | 37.19 | 1635 | 0.24 | 0.19 | 2085 | 39.97 | Sesquiterp. alcohol |
| β-Eudesmol | 37.41 | 1640 | 0.57 | 0.75 | 2109 | 40.67* | Sesquiterp. alcohol |
| α-Muurolol | 37.50 | 1643 | 1.16 | 1.19 | 2097 | 40.33 | Sesquiterp. alcohol |
| α-Eudesmol | 37.64* | 1646 | 0.39 | [0.75] | 2109 | 40.67* | Sesquiterp. alcohol |

| | | | | | | | |
|---|--------|------|---------------|---------------|------|-------|---------------------|
| Unknown (m/z = 95, 67 (59), 41 (43), 93 (40), 161 (38)... 204 (14), 219 (3), 234 (1)) | 37.64* | 1646 | [0.39] | | | | |
| α -Cadinol | 37.78 | 1649 | 0.49 | 0.53 | 2123 | 41.05 | Sesquiterp. alcohol |
| Unknown (m/z = 163, 43 (47), 121 (16)... 234 (6)) | 38.92 | 1677 | 1.40 | 1.04 | 2289 | 45.14 | |
| β -Davanone-2-ol | 40.45 | 1719 | 0.38 | 0.36 | 2508 | 49.74 | Sesquiterp. alcohol |
| Total identified | | | 85.94% | 80.30% | | | |

*: 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 : Orange liquid

Refractive index : 1.4890 \pm 0.0003 (20 °C)

CONCLUSION

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



