



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: T20103

ESSENTIAL OIL: TEA TREE

BOTANICAL NAME: MELALEUCA ALTERNIFOLIA

ORIGIN: AUSTRALIA

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF TEA TREE OIL | % |
|--|------|
| TERPINEN-4-OL | 43.0 |
| γ-TERPINENE | 19.1 |
| α-TERPINENE | 8.5 |
| p-CYMENE | 3.6 |
| TERPINOLENE | 3.2 |
| α-TERPINEOL | 2.7 |
| β-PHELLANDRENE | 2.3 |
| α-PINENE | 2.3 |
| AROMADENDRENE | 1.1 |
| δ-CADINENE | 1.1 |
| VIRIDIFLORENE | 1.0 |

Comments from Robert Tisserand: Super-clean, green-metallic odor profile, and and meets all 15 key ISO constituents.

Date : December 22, 2016

SAMPLE IDENTIFICATION

Internal code : 16L15-PTH20-1-DM

Customer identification : Tea Tree - T2010367R

Type : Essential oil

Source : *Melaleuca alternifolia*

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 : 2016-12-22

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. | |
| Ethanol | 0.33 | 496 | 0.41 | 0.42 | 783 | 0.50 | Aliphatic alcohol |
| <i>cis</i> -Hex-3-en-1-ol | 2.53 | 867 | 0.03 | 0.03 | 1309 | 4.46 | Aliphatic alcohol |
| α -Thujene | 3.28 | 920 | 0.79 | 1.05 | 954 | 0.89 | Monoterpene |
| α -Pinene | 3.39 | 926 | 2.34 | 2.07 | 947 | 0.87 | Monoterpene |
| α -Fenchene | 3.65 | 942 | 0.01 | 0.01 | 997 | 1.07 | Monoterpene |
| Camphene | 3.67 | 944 | 0.01 | 0.01 | 1012 | 1.14 | Monoterpene |
| Sabinene | 4.11 | 970 | 0.21 | 0.19 | 1054 | 1.48 | Monoterpene |
| β -Pinene | 4.17 | 973 | 0.68 | 0.65 | 1038 | 1.36 | Monoterpene |
| Myrcene | 4.45 | 991 | 0.73 | 0.75 | 1114 | 1.96 | Monoterpene |
| α -Phellandrene | 4.73* | 1007 | 0.45 | 0.39 | 1108 | 1.91 | Monoterpene |
| Δ 3-Carene | 4.73* | 1007 | [0.45] | 0.01 | 1083 | 1.71 | Monoterpene |
| α -Terpinene | 4.94 | 1018 | 8.52 | 8.57 | 1124 | 2.08 | Monoterpene |
| <i>para</i> -Cymene | 5.14 | 1029 | 3.58 | 3.70 | 1206 | 3.03* | Monoterpene |
| Limonene | 5.16 | 1030 | 0.57 | 0.59 | 1140 | 2.27 | Monoterpene |
| β -Phellandrene | 5.21* | 1033 | 3.34 | 2.34 | 1143 | 2.31 | Monoterpene |
| 1,8-Cineole | 5.21* | 1033 | [3.34] | 1.46 | 1145 | 2.33 | Monoterp. ether |
| <i>cis</i> - β -Ocimene | 5.33 | 1040 | tr | 19.05 | 1193 | 2.89* | Monoterpene |
| <i>trans</i> - β -Ocimene | 5.51 | 1050 | 0.01 | [3.70] | 1206 | 3.03* | Monoterpene |
| γ -Terpinene | 5.75 | 1063 | 19.12 | [19.05] | 1193 | 2.89* | Monoterpene |
| <i>cis</i> -Sabinene hydrate | 6.07 | 1080 | 0.03 | 0.04 | 1400 | 5.75 | Monoterp. alcohol |
| Terpinolene | 6.19 | 1086 | 3.16 | 3.25 | 1224 | 3.27 | Monoterpene |
| <i>para</i> -Cymenene | 6.40 | 1098 | 0.08 | 0.08 | 1363 | 5.22 | Monoterpene |
| Linalool | 6.72 | 1110 | 0.11 | 0.35 | 1483 | 7.23* | Monoterp. alcohol |
| <i>cis</i> - <i>para</i> -Menth-2-en-1-ol | 7.24 | 1129 | 0.18 | [0.35] | 1483 | 7.23* | Monoterp. alcohol |
| <i>cis</i> - <i>para</i> -Mentha-2,8-dien-1-ol | 7.68 | 1145 | 0.07 | 0.06 | 1600 | 10.30 | Monoterp. alcohol |
| Unknown (m/z = 109, 124 (39), 119 (35), 43 (35), 91 (31)...)) | 7.78 | 1149 | 0.05 | | | | |
| <i>trans</i> - <i>para</i> -Menth-2-en-1-ol | 7.84 | 1151 | 0.09 | 0.13 | 1562 | 9.16 | Monoterp. alcohol |
| Terpinen-4-ol | 9.04 | 1196 | 43.01 | 43.91 | 1531 | 8.23* | Monoterp. alcohol |
| <i>para</i> -Cymen-8-ol | 9.46 | 1206 | 0.06 | 0.04 | 1755 | 17.05 | Monoterp. alcohol |
| α -Terpineol | 9.58 | 1208 | 2.69 | 2.62 | 1618 | 10.83* | Monoterp. alcohol |
| <i>trans</i> -Piperitol | 10.05 | 1219 | 0.08 | 0.10 | 1658 | 12.50 | Monoterp. alcohol |
| <i>cis</i> -Ascaridol glycol | 11.77 | 1258 | 0.04 | | | | Monoterp. alcohol |
| <i>trans</i> -Ascaridol glycol | 13.62 | 1297 | 0.08 | | | | Monoterp. alcohol |
| α -Cubebene | 15.87 | 1332 | 0.07 | 0.06 | 1395 | 5.67 | Sesquiterpene |
| α -Terpinyl acetate | 16.61 | 1343 | 0.06 | [2.62] | 1618 | 10.83* | Monoterp. ester |
| α -Ylangene | 17.17 | 1352 | 0.06 | 0.04 | 1423 | 6.11 | Sesquiterpene |
| α -Copaene | 17.59 | 1358 | 0.18 | 0.12 | 1447 | 6.55 | Sesquiterpene |
| β -Elemene | 18.86 | 1378 | 0.02 | [43.91] | 1531 | 8.23* | Sesquiterpene |

| | | | | | | | |
|--------------------------------------|--------|------|---------------|---------------|------|--------|---------------------|
| α -Gurjunene | 19.55 | 1388 | 0.38 | 0.27 | 1475 | 7.08 | Sesquiterpene |
| β -Caryophyllene | 20.49 | 1401 | 0.42 | [43.91] | 1531 | 8.23* | Sesquiterpene |
| Methyleugenol | 21.43 | 1413 | 0.08 | 0.06 | 1914 | 27.12 | Phenylpropanoid |
| Aromadendrene | 21.89 | 1418 | 1.06 | 1.23 | 1542 | 8.55* | Sesquiterpene |
| <i>trans</i> - α -Bergamotene | 22.03 | 1420 | 0.16 | [1.23] | 1542 | 8.55* | Sesquiterpene |
| Seychellene | 22.29 | 1423 | 0.04 | 0.63 | 1548 | 8.73* | Sesquiterpene |
| <i>cis</i> -Muurolo-3,5-diene | 22.54 | 1426 | 0.13 | [0.63] | 1548 | 8.73* | Sesquiterpene |
| <i>cis</i> -Cadin-1(6),4-diene | 22.87 | 1430 | 0.10 | [0.63] | 1548 | 8.73* | Sesquiterpene |
| α -Humulene | 23.29 | 1435 | 0.07 | 0.06 | 1581 | 9.74 | Sesquiterpene |
| allo-Aromadendrene | 23.54 | 1438 | 0.57 | 0.51 | 1570 | 9.40 | Sesquiterpene |
| <i>trans</i> -Cadin-1(6),4-diene | 24.95 | 1455 | 0.31 | 0.34 | 1591 | 10.03 | Sesquiterpene |
| α -Amorphene | 25.94 | 1467 | 0.09 | [2.62] | 1618 | 10.83* | Sesquiterpene |
| β -Selinene | 26.13 | 1469 | 0.09 | [2.62] | 1618 | 10.83* | Sesquiterpene |
| Viridiflorene | 26.35 | 1471 | 1.01 | 0.98 | 1627 | 11.11 | Sesquiterpene |
| Bicyclgermacrene | 26.77* | 1476 | 0.65 | 0.44 | 1649 | 12.08 | Sesquiterpene |
| α -Selinene | 26.77* | 1476 | [0.65] | 0.18 | 1636 | 11.49 | Sesquiterpene |
| α -Muurolole | 27.55 | 1486 | 0.18 | 0.16 | 1654 | 12.31 | Sesquiterpene |
| γ -Cadinene | 28.61 | 1499 | 0.03 | 0.03 | 1663 | 12.70 | Sesquiterpene |
| δ -Cadinene | 29.29* | 1508 | 1.14 | 1.07 | 1681 | 13.50* | Sesquiterpene |
| <i>trans</i> -Calamenene | 29.29* | 1508 | [1.14] | 0.09 | 1741 | 16.24 | Sesquiterpene |
| Zonarene | 29.45 | 1510 | 0.21 | 0.16 | 1676 | 13.26 | Sesquiterpene |
| <i>trans</i> -Cadin-1,4-diene | 29.67 | 1514 | 0.12 | [1.07] | 1681 | 13.50* | Sesquiterpene |
| α -Cadinene | 30.41 | 1524 | 0.15 | 0.12 | 1701 | 14.36 | Sesquiterpene |
| α -Elemol | 32.97 | 1559 | 0.05 | 0.08 | 2014 | 33.19 | Sesquiterp. alcohol |
| Spathulenol | 34.06 | 1574 | 0.06 | 0.06 | 2022 | 33.64 | Sesquiterp. alcohol |
| Globulol | 34.38 | 1578 | 0.17 | 0.16 | 1970 | 30.65 | Sesquiterp. alcohol |
| Viridiflorol | 34.88 | 1585 | 0.12 | 0.08 | 1979 | 31.19 | Sesquiterp. alcohol |
| Guaiol | 35.02 | 1587 | 0.08 | 0.11 | 2004 | 32.62 | Sesquiterp. alcohol |
| 1,10-diepi-Cubenol | 36.45 | 1616 | 0.07 | 0.10 | 1951 | 29.55 | Sesquiterp. alcohol |
| 1-epi-Cubenol | 36.63 | 1620 | 0.12 | 0.12 | 1955 | 29.78 | Sesquiterp. alcohol |
| Cubenol | 37.13 | 1632 | 0.06 | 0.04 | 1947 | 29.29 | Sesquiterp. alcohol |
| τ -Cadinol | 37.24 | 1635 | 0.06 | 0.07 | 2076 | 36.11 | Sesquiterp. alcohol |
| τ -Muurolool | 37.70 | 1646 | 0.01 | 0.01 | 2088 | 36.48 | Sesquiterp. alcohol |
| α -Muurolool | 37.82 | 1649 | 0.02 | 0.02 | 2103 | 37.00 | Sesquiterp. alcohol |
| Total identified | | | 98.68% | 99.27% | | | |

*: 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 : Clear liquid

Refractive index : 1.4750 ± 0.0003 (20 °C)

CONCLUSION

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



