



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: L70105

ESSENTIAL OIL: LEMON ORGANIC
BOTANICAL NAME: CITRUS X LIMON
ORIGIN: USA

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF LEMON ORGANIC OIL | % |
|---|------|
| LIMONENE | 69.2 |
| β-PINENE | 9.4 |
| γ-TERPINENE | 7.9 |
| SABINENE | 1.6 |
| α-PINENE | 1.6 |
| MYRCENE | 1.5 |
| GERANIAL | 1.1 |

Comments from Robert Tisserand: Effervescent sweet lemon odor quality. All 12 key ISO constituents for Coastal type lemon oil are within range.

Date : May 31, 2017

SAMPLE IDENTIFICATION

Internal code : 17E23-PTH1-1-DM

Customer identification : Organic Lemon - USA - L7010566R

Type : Essential oil

Source : *Citrus x limon*

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 : 2017-05-31

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. | |
| Tricyclene | 3.22 | 917 | 0.01 | tr | 915 | 0.96 | Monoterpene |
| α -Thujene | 3.30 | 922 | 0.35 | 0.39 | 948 | 1.10 | Monoterpene |
| α -Pinene | 3.41 | 928 | 1.58 | 1.55 | 938 | 1.06 | Monoterpene |
| Camphene | 3.70 | 945 | 0.05 | 0.05 | 1005 | 1.32 | Monoterpene |
| Sabinene | 4.13 | 971 | 1.62 | 1.66 | 1057 | 1.81 | Monoterpene |
| β -Pinene | 4.21 | 976 | 9.39 | 9.49 | 1043 | 1.68 | Monoterpene |
| Myrcene | 4.47 | 991 | 1.53 | 1.49 | 1112 | 2.36 | Monoterpene |
| α -Phellandrene | 4.74* | 1007 | 0.04 | 0.04 | 1105 | 2.27 | Monoterpene |
| Δ 3-Carene | 4.74* | 1007 | [0.04] | 0.01 | 1086 | 2.09 | Monoterpene |
| Octanal | 4.85 | 1013 | 0.07 | 0.06 | 1228 | 3.87 | Aliphatic aldehyde |
| α -Terpinene | 4.93 | 1017 | 0.16 | 0.21 | 1119 | 2.44 | Monoterpene |
| Limonene | 5.27* | 1036 | 68.44 | 69.17 | 1148 | 2.81 | Monoterpene |
| 1,8-Cineole | 5.27* | 1036 | [68.44] | 0.43 | 1149 | 2.82 | Monoterp. ether |
| para-Cymene | 5.27* | 1036 | [68.44] | 0.23 | 1203 | 3.53 | Monoterpene |
| cis- β -Ocimene | 5.35 | 1040 | 0.05 | 8.12 | 1187 | 3.32* | Monoterpene |
| trans- β -Ocimene | 5.52 | 1050 | 0.08 | 0.07 | 1197 | 3.45 | Monoterpene |
| γ -Terpinene | 5.74 | 1061 | 7.94 | [8.12] | 1187 | 3.32* | Monoterpene |
| cis-Sabinene hydrate | 6.02 | 1077 | 0.04 | 0.04 | 1399 | 6.44 | Monoterp. alcohol |
| Terpinolene | 6.18 | 1086 | 0.35 | 0.34 | 1219 | 3.74 | Monoterpene |
| Linalool | 6.63 | 1107 | 0.15 | 0.13 | 1485 | 8.30 | Monoterp. alcohol |
| Nonanal | 6.75 | 1111 | 0.08 | 0.08 | 1332 | 5.40 | Aliphatic aldehyde |
| cis-Limonene oxide | 7.30 | 1132 | 0.01 | tr | 1366 | 5.92 | Monoterp. ether |
| trans-Limonene oxide | 7.42 | 1136 | tr | tr | 1378 | 6.11 | Monoterp. ether |
| Citronellal | 7.92 | 1154 | 0.09 | 0.08 | 1412 | 6.64 | Monoterp. aldehyde |
| Terpinen-4-ol | 8.70 | 1183 | 0.04 | 0.02 | 1540 | 9.75 | Monoterp. alcohol |
| α -Terpineol | 9.33 | 1203 | 0.18 | 0.19 | 1620 | 12.67 | Monoterp. alcohol |
| Decanal | 9.73 | 1212 | 0.05 | 0.04 | 1435 | 7.10 | Aliphatic aldehyde |
| Nerol | 10.43 | 1228 | 0.10 | 0.09 | 1726 | 18.00 | Monoterp. alcohol |
| Neral | 11.05 | 1241 | 0.66 | 0.67 | 1593 | 11.71 | Monoterp. aldehyde |
| Geraniol | 11.70 | 1256 | 0.11 | 0.12 | 1777 | 21.23 | Monoterp. alcohol |
| Geranial | 12.55 | 1275 | 1.07 | 1.07 | 1647 | 13.91 | Monoterp. aldehyde |
| Undecanal | 14.58 | 1314 | 0.02 | 0.02 | 1542 | 9.83 | Aliphatic aldehyde |
| Citronellyl acetate | 17.12 | 1352 | 0.03 | 0.03 | 1605 | 12.13 | Monoterp. ester |
| Neryl acetate | 17.73 | 1362 | 0.63 | 1.39 | 1655 | 14.37* | Monoterp. ester |
| Geranyl acetate | 19.21 | 1384 | 0.43 | 0.45 | 1685 | 15.93 | Monoterp. ester |
| β -Caryophyllene | 20.44 | 1402 | 0.27 | 0.24 | 1515 | 8.99 | Sesquiterpene |
| trans- α -Bergamotene | 22.03 | 1421 | 0.43 | 0.48 | 1524 | 9.21 | Sesquiterpene |
| α -Humulene | 23.20 | 1435 | 0.02 | 0.02 | 1575 | 11.04 | Sesquiterpene |
| trans- β -Farnesene | 24.34 | 1449 | 0.04 | 0.04 | 1610 | 12.34 | Sesquiterpene |
| Bicyclogermacrene | 26.63 | 1476 | 0.06 | 0.05 | 1639 | 13.50 | Sesquiterpene |
| β -Bisabolene | 28.67 | 1501 | 0.68 | [1.39] | 1655 | 14.37* | Sesquiterpene |

| | | | | | | | |
|-------------------------|-------|------|---------------|---------------|------|-------|---------------------|
| Spathulenol | 33.66 | 1571 | 0.02 | 0.02 | 2026 | 36.35 | Sesquiterp. alcohol |
| α -Bisabolol | 39.36 | 1688 | 0.03 | 0.03 | 2131 | 39.86 | Sesquiterp. alcohol |
| Citropten | 47.88 | 1985 | 0.11 | | | | Coumarin |
| Oxypeucedanin | 58.24 | 2472 | 0.07 | | | | Coumarin |
| Total identified | | | 97.08% | 98.61% | | | |

*: 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

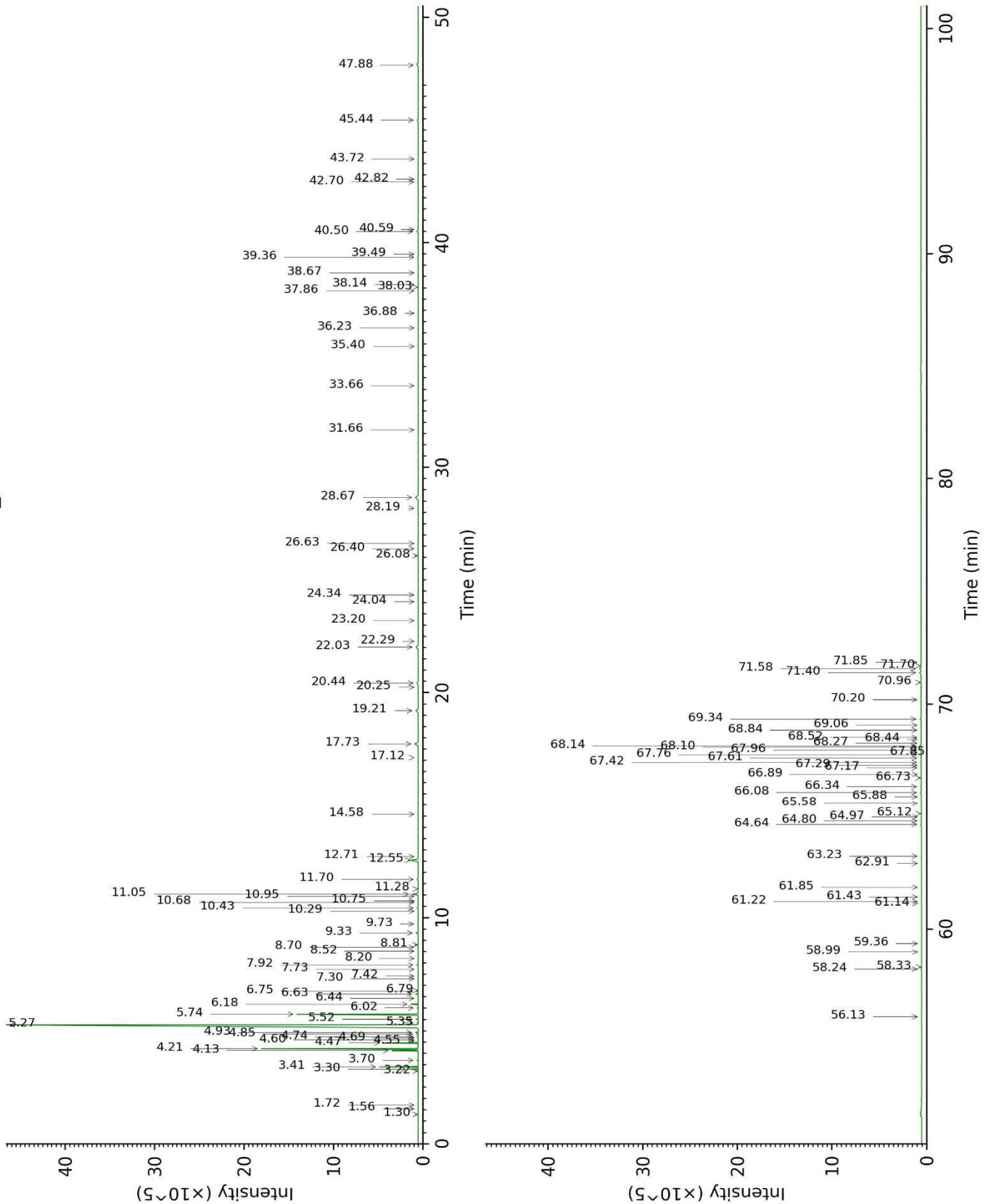
Physical aspect : Yellow liquid

Refractive index : 1.4728 ± 0.0003 (20 °C)

CONCLUSION

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

17E23-PTH1-1-DM_BP5



17E23-PTH1-1-DM_WAX

