



PLANT THERAPY
100% PURE ESSENTIAL OILS

GC/MS BATCH NUMBER: P70103

ESSENTIAL OIL: PINE
BOTANICAL NAME: PINUS SYLESTRIS
ORIGIN: AUSTRIA

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF PINE OIL | % |
|--|------|
| α -PINENE | 52.0 |
| Δ^3 -CARENE | 10.9 |
| LIMONENE | 8.3 |
| β -PINENE | 9.0 |
| MYRCENE | 4.3 |
| CAMPHENE | 2.5 |
| BORNYL ACETATE | 2.2 |
| p-CYMENE | 1.7 |
| β -PHELLANDRENE | 1.6 |
| β -CARYOPHYLLENE | 1.6 |

Comments from Robert Tisserand: Pleasant green pine odor, partly because of relatively high bornyl acetate. There are no concerns with the lab report.

Date : January 27, 2017

SAMPLE IDENTIFICATION

Internal code : 17A23-PTH7-1-DM

Customer identification : Pine - P7010364R

Type : Essential Oil

Source : *Pinus sylvestris*

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 : 2017-01-27

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. | |
| Santene | 2.56 | 874 | 0.06 | 0.07 | 888 | 1.00 | Normonoterpene |
| Tricyclene | 3.15 | 916 | 0.21 | 0.21 | 921 | 1.14 | Monoterpene |
| α -Thujene | 3.24 | 921 | 0.04 | 0.06 | 961 | 1.32 | Monoterpene |
| α -Pinene | 3.42 | 932 | 52.04 | 52.24 | 960 | 1.31 | Monoterpene |
| Camphene | 3.64* | 946 | 2.56 | 2.53 | 996 | 1.57 | Monoterpene |
| α -Fenchene | 3.64* | 946 | [2.56] | 0.09 | 986 | 1.50 | Monoterpene |
| Thuja-2,4(10)-diene | 3.73 | 951 | 0.05 | 0.07 | 1066 | 2.12* | Monoterpene |
| Sabinene | 4.06 | 972 | 0.03 | [0.07] | 1066 | 2.12* | Monoterpene |
| β -Pinene | 4.14 | 977 | 9.03 | 8.86 | 1048 | 1.97 | Monoterpene |
| Myrcene | 4.42 | 995 | 4.27 | 4.21 | 1120 | 2.73 | Monoterpene |
| 2-Carene | 4.53 | 1001 | 0.10 | 0.08 | 1090 | 2.32 | Monoterpene |
| Pseudolimonene | 4.63 | 1006 | 0.09 | 0.10 | 1109 | 2.58 | Monoterpene |
| Δ 3-Carene | 4.71 | 1009 | 10.89 | 10.83 | 1101 | 2.47 | Monoterpene |
| α -Terpinene | 4.86 | 1017 | 0.54 | 0.57 | 1126 | 2.81 | Monoterpene |
| Limonene | 5.12* | 1030 | 10.03 | 8.25 | 1146 | 3.08 | Monoterpene |
| para-Cymene | 5.12* | 1030 | [10.03] | 1.68 | 1212 | 3.99 | Monoterpene |
| β -Phellandrene | 5.14 | 1032 | 1.58 | 1.96 | 1151 | 3.15* | Monoterpene |
| 1,8-Cineole | 5.16 | 1033 | 0.13 | [1.96] | 1151 | 3.15* | Monoterp. ether |
| <i>cis</i> - β -Ocimene | 5.27 | 1038 | 0.01 | 0.01 | 1190 | 3.66 | Monoterpene |
| <i>trans</i> - β -Ocimene | 5.45 | 1048 | 0.02 | 0.01 | 1204 | 3.87 | Monoterpene |
| γ -Terpinene | 5.63 | 1057 | 0.07 | 0.07 | 1192 | 3.69 | Monoterpene |
| Terpinolene | 6.11 | 1082 | 0.61 | 0.58 | 1226 | 4.20 | Monoterpene |
| para-Cymenene | 6.33 | 1093 | 0.03 | 0.03 | 1369 | 6.43 | Monoterpene |
| α -Pinene oxide | 6.43 | 1098 | 0.02 | 0.01 | 1302 | 5.36 | Monoterp. ether |
| Linalool | 6.64 | 1106 | 0.01 | 0.02 | 1498 | 9.46 | Monoterp. alcohol |
| <i>trans</i> -Pinocarveol | 7.54 | 1139 | 0.09 | 0.08 | 1571 | 12.24 | Monoterp. alcohol |
| Camphor | 7.65 | 1143 | 0.01 | 0.01 | 1421 | 7.53 | Monoterp. ketone |
| Camphene hydrate | 7.89 | 1152 | 0.03 | 0.03 | 1529 | 10.67 | Monoterp. alcohol |
| Borneol | 8.56 | 1177 | 0.17 | 0.18 | 1617 | 14.42 | Monoterp. alcohol |
| Terpinen-4-ol | 8.67 | 1181 | 0.08 | 0.04 | 1527 | 10.59 | Monoterp. alcohol |
| Cryptone | 9.18 | 1198 | 0.02 | 0.02 | 1562 | 11.92 | Monoterp. ketone |
| α -Terpineol | 9.37* | 1202 | 0.88 | 0.70 | 1622 | 14.66 | Monoterp. alcohol |
| para-Cymen-8-ol | 9.37* | 1202 | [0.88] | 0.09 | 1767 | 23.45 | Monoterp. alcohol |
| Thymol methyl ether | 10.44 | 1226 | 0.06 | 0.04 | 1522 | 10.40 | Monoterp. ether |
| Bornyl acetate | 12.71 | 1277 | 2.16 | 2.11 | 1505 | 9.73 | Monoterp. ester |
| α -Cubebene | 15.52 | 1326 | 0.06 | 0.10 | 1401 | 7.04 | Sesquiterpene |
| α -Ylangene | 16.88 | 1347 | 0.02 | 0.01 | 1411 | 7.28 | Sesquiterpene |
| α -Copaene | 17.33 | 1354 | 0.07 | 0.07 | 1426 | 7.64 | Sesquiterpene |
| Longifolene | 19.27 | 1382 | 0.65 | 0.62 | 1486 | 9.10 | Sesquiterpene |
| β -Caryophyllene | 20.22 | 1396 | 1.61 | 1.58 | 1515 | 10.14 | Sesquiterpene |
| α -Humulene | 22.96 | 1429 | 0.11 | 0.13 | 1577 | 12.50 | Sesquiterpene |

| | | | | | | | |
|-------------------------|-------|------|---------------|---------------|------|-------|---------------------|
| δ -Cadinene | 28.85 | 1501 | 0.08 | 0.07 | 1668 | 17.09 | Sesquiterpene |
| Caryophyllene oxide | 33.48 | 1564 | 0.25 | 0.18 | 1842 | 28.83 | Sesquiterp. ether |
| Bulnesol | 38.18 | 1655 | 0.05 | 0.05 | 2104 | 40.68 | Sesquiterp. alcohol |
| Isopimaradiene? | 46.74 | 1933 | 0.02 | | | | Diterpene |
| Total identified | | | 98.84% | 98.65% | | | |

*: 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

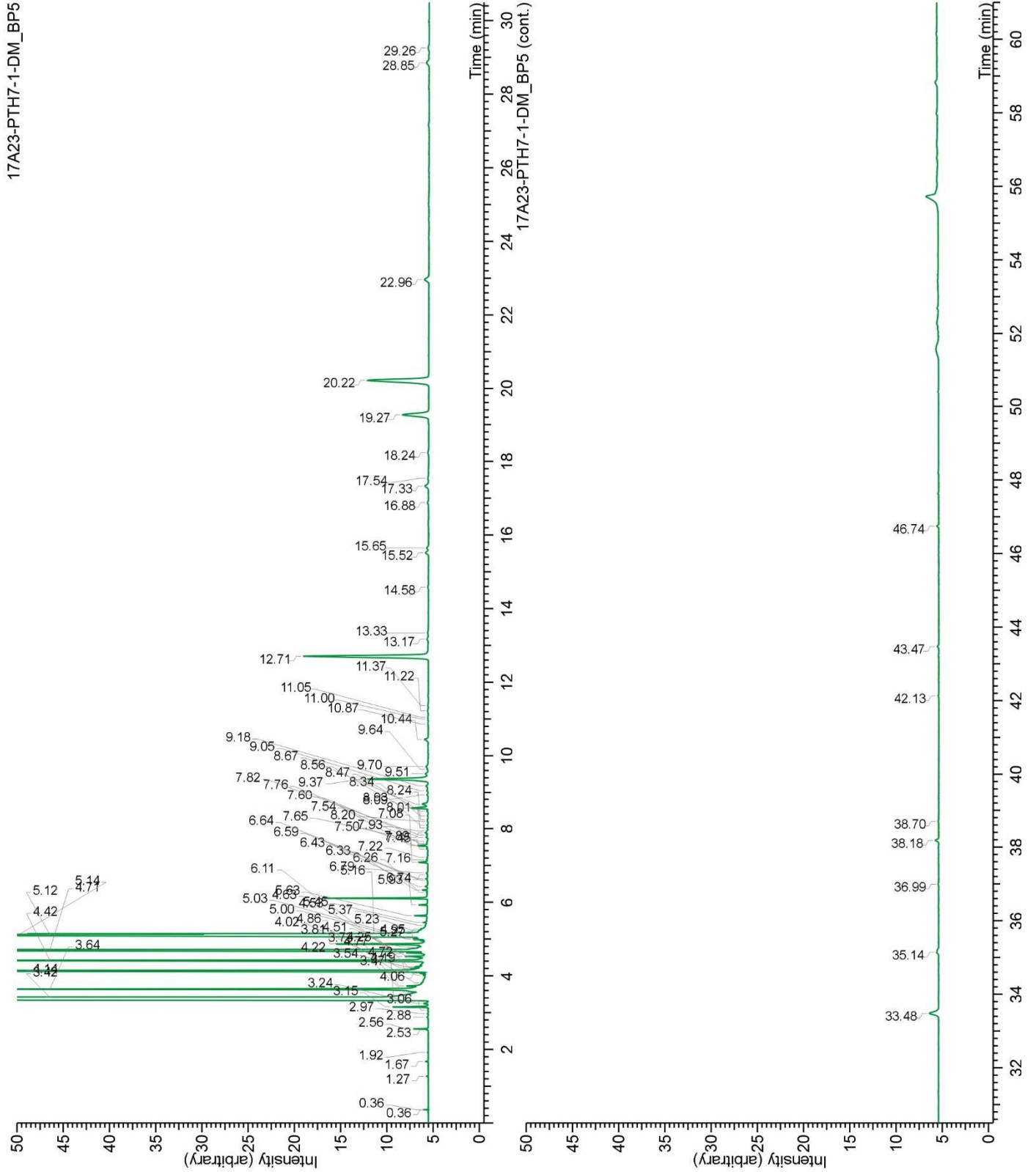
OTHER DATA

Physical aspect : Clear liquid

Refractive index : 1.4720 ± 0.0003 (20 °C)

CONCLUSION

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



17A23-PTH7-1-DM_WAX

