



**PLANT THERAPY**  
100% PURE ESSENTIAL OILS

## GC/MS BATCH NUMBER: R50104

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**ESSENTIAL OIL:** ROSEMARY ORGANIC  
**BOTANICAL NAME:** ROMARINUS OFFICINALIS  
**ORIGIN:** TUNISIA

| KEY CONSTITUENTS PRESENT IN THIS BATCH OF ROSEMARY ORGANIC OIL | %    |
|--|------|
| 1,8-CINEOLE + LIMONENE   | 45.7 |
| $\alpha$ -PINENE   | 13.9 |
| CAMPHOR  | 13.6 |
| $\beta$ -PINENE  | 5.4  |
| CAMPHENE   | 4.8  |
| $\beta$ -CARYOPHYLLENE   | 3.3  |
| BORNEOL  | 2.4  |
| $\alpha$ -TERPINEOL  | 1.7  |
| p-CYMENE   | 1.4  |
| MYRCENE  | 1.4  |
| LINALOOL   | 1.0  |

Comments from Robert Tisserand: Very fine sweet, green odor quality. All thirteen key ISO constituents are within range.

**Date :** July 5, 2017

*SAMPLE IDENTIFICATION*

**Internal code :** 17G04-PTH8-1-DM

**Customer identification :** Rosemary Organic - R5010416R

**Type :** Essential oil

**Source :** *Rosmarinus officinalis*

**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 :** 2017-07-05

Checked and approved by :

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Sylvain Mercier, M. Sc., chimiste 2014-005

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IDENTIFIED COMPOUNDS

| Identification                      | Column: BP5 |      |         | Column: WAX |      |        | Molecular Class    |
|-------------------------------------|-------------|------|---------|-------------|------|--------|--------------------|
|                                     | R.T.        | R.I. | %       | %           | R.I. | R.T.   |                    |
| <i>cis</i> -Hex-3-en-1-ol           | 2.51        | 868  | 0.01    | 0.01        | 1337 | 5.31   | Aliphatic alcohol  |
| Tricyclene                          | 3.24        | 918  | 0.21    | 0.17        | 923  | 0.94   | Monoterpene        |
| $\alpha$ -Thujene                   | 3.33        | 924  | 0.18    | 13.84       | 951  | 1.05*  | Monoterpene        |
| $\alpha$ -Pinene                    | 3.47        | 932  | 13.87   | [13.84]     | 951  | 1.05*  | Monoterpene        |
| Camphene                            | 3.74*       | 948  | 4.87    | 4.76        | 1002 | 1.29   | Monoterpene        |
| $\alpha$ -Fenchene                  | 3.74*       | 948  | [4.87]  | 0.10        | 990  | 1.23   | Monoterpene        |
| Thuja-2,4(10)-diene                 | 3.82        | 952  | 0.05    | 0.19        | 1059 | 1.75*  | Monoterpene        |
| Sabinene                            | 4.16        | 973  | 0.06    | [0.19]      | 1059 | 1.75*  | Monoterpene        |
| $\beta$ -Pinene                     | 4.23        | 977  | 5.43    | 5.24        | 1044 | 1.62   | Monoterpene        |
| Myrcene                             | 4.50        | 993  | 1.36    | 1.30        | 1117 | 2.30   | Monoterpene        |
| Octan-3-one                         | 4.54        | 996  | 0.08    | 0.07        | 1196 | 3.32   | Aliphatic ketone   |
| Octen-3-ol                          | 4.58        | 998  | 0.23    | 0.21        | 1393 | 6.17   | Aliphatic alcohol  |
| $\alpha$ -Phellandrene              | 4.77*       | 1009 | 0.21    | 0.14        | 1109 | 2.23   | Monoterpene        |
| $\Delta$ 3-Carene                   | 4.77*       | 1009 | [0.21]  | 0.04        | 1089 | 2.05   | Monoterpene        |
| $\alpha$ -Terpinene                 | 4.97        | 1019 | 0.49    | 0.53        | 1124 | 2.39   | Monoterpene        |
| 1,8-Cineole                         | 5.32*       | 1039 | 46.45   | 45.67       | 1153 | 2.77*  | Monoterp. ether    |
| Limonene                            | 5.32*       | 1039 | [46.45] | [45.67]     | 1153 | 2.77*  | Monoterpene        |
| <i>para</i> -Cymene                 | 5.32*       | 1039 | [46.45] | 1.37        | 1206 | 3.44   | Monoterpene        |
| <i>cis</i> - $\beta$ -Ocimene       | 5.38        | 1042 | 0.08    | 0.74        | 1187 | 3.20*  | Monoterpene        |
| <i>trans</i> - $\beta$ -Ocimene     | 5.55        | 1051 | 0.03    | 0.03        | 1199 | 3.37   | Monoterpene        |
| $\gamma$ -Terpinene                 | 5.74        | 1062 | 0.73    | [0.74]      | 1187 | 3.20*  | Monoterpene        |
| <i>cis</i> -Linalool oxide (fur.)   | 6.02        | 1077 | 0.01    | 0.01        | 1373 | 5.87   | Monoterp. alcohol  |
| <i>cis</i> -Sabinene hydrate        | 6.07        | 1079 | 0.05    | 0.05        | 1403 | 6.34*  | Monoterp. alcohol  |
| Terpinolene                         | 6.22        | 1088 | 0.33    | 0.31        | 1223 | 3.66   | Monoterpene        |
| <i>trans</i> -Linalool oxide (fur.) | 6.33        | 1094 | 0.01    | [0.05]      | 1403 | 6.34*  | Monoterp. alcohol  |
| Fenchone                            | 6.37        | 1096 | 0.01    | 0.02        | 1318 | 5.03   | Monoterp. ketone   |
| <i>para</i> -Cymenene               | 6.43        | 1099 | 0.05    | 0.04        | 1366 | 5.76   | Monoterpene        |
| Linalool                            | 6.73*       | 1111 | 1.01    | 1.02        | 1488 | 8.10   | Monoterp. alcohol  |
| <i>trans</i> -Sabinene hydrate      | 6.73*       | 1111 | [1.01]  | 0.06        | 1478 | 7.85   | Monoterp. alcohol  |
| endo-Fenchol                        | 7.14        | 1125 | 0.01    | 0.01        | 1515 | 8.73   | Monoterp. alcohol  |
| $\alpha$ -Campholenal               | 7.20        | 1128 | 0.04    |             |      |        | Monoterp. aldehyde |
| <i>trans</i> -Pinocarveol           | 7.69        | 1145 | 0.07    | 0.06        | 1564 | 10.21  | Monoterp. alcohol  |
| Camphor                             | 7.85        | 1151 | 13.57   | 13.84       | 1426 | 6.69*  | Monoterp. ketone   |
| Pinocarvone                         | 8.16        | 1163 | 0.04    | 0.06        | 1468 | 7.63   | Monoterp. ketone   |
| Borneol                             | 8.66*       | 1181 | 2.76    | 2.39        | 1614 | 12.02* | Monoterp. alcohol  |
| $\delta$ -Terpineol                 | 8.66*       | 1181 | [2.76]  | 0.42        | 1593 | 11.27  | Monoterp. alcohol  |
| Terpinen-4-ol                       | 8.83        | 1187 | 0.64    | 3.90        | 1526 | 8.97*  | Monoterp. alcohol  |
| $\alpha$ -Terpineol                 | 9.50        | 1207 | 1.72    | 1.71        | 1622 | 12.33  | Monoterp. alcohol  |
| Verbenone                           | 9.86        | 1215 | 0.09    | [2.39]      | 1614 | 12.02* | Monoterp. ketone   |
| Bornyl acetate                      | 12.95       | 1284 | 0.49    | 0.49        | 1500 | 8.36   | Monoterp. ester    |
| $\alpha$ -Ylangene                  | 17.30       | 1355 | 0.05    | [13.84]     | 1426 | 6.69*  | Sesquiterpene      |

|                         |       |      |               |               |      |        |                   |
|-------------------------|-------|------|---------------|---------------|------|--------|-------------------|
| $\alpha$ -Copaene       | 17.76 | 1362 | 0.10          | 0.14          | 1439 | 6.94   | Sesquiterpene     |
| $\beta$ -Caryophyllene  | 20.73 | 1406 | 3.34          | [3.90]        | 1526 | 8.97*  | Sesquiterpene     |
| Aromadendrene           | 21.61 | 1416 | 0.03          | [3.90]        | 1526 | 8.97*  | Sesquiterpene     |
| $\alpha$ -Humulene      | 23.46 | 1438 | 0.33          | 0.32          | 1584 | 10.93  | Sesquiterpene     |
| Germacrene D            | 25.52 | 1463 | 0.07          | [2.39]        | 1614 | 12.02* | Sesquiterpene     |
| $\alpha$ -Muurolene     | 27.68 | 1489 | 0.03          | 0.04          | 1653 | 13.57  | Sesquiterpene     |
| $\gamma$ -Cadinene      | 28.75 | 1502 | 0.05          | 0.04          | 1672 | 14.58  | Sesquiterpene     |
| $\beta$ -Bisabolene     | 28.91 | 1505 | 0.06          | 0.06          | 1663 | 14.13  | Sesquiterpene     |
| $\delta$ -Cadinene      | 29.41 | 1511 | 0.09          | 0.11          | 1677 | 14.82  | Sesquiterpene     |
| Caryophyllene oxide     | 33.83 | 1573 | 0.09          | 0.07          | 1851 | 25.19  | Sesquiterp. ether |
| <b>Total identified</b> |       |      | <b>99.48%</b> | <b>99.58%</b> |      |        |                   |

\*: 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

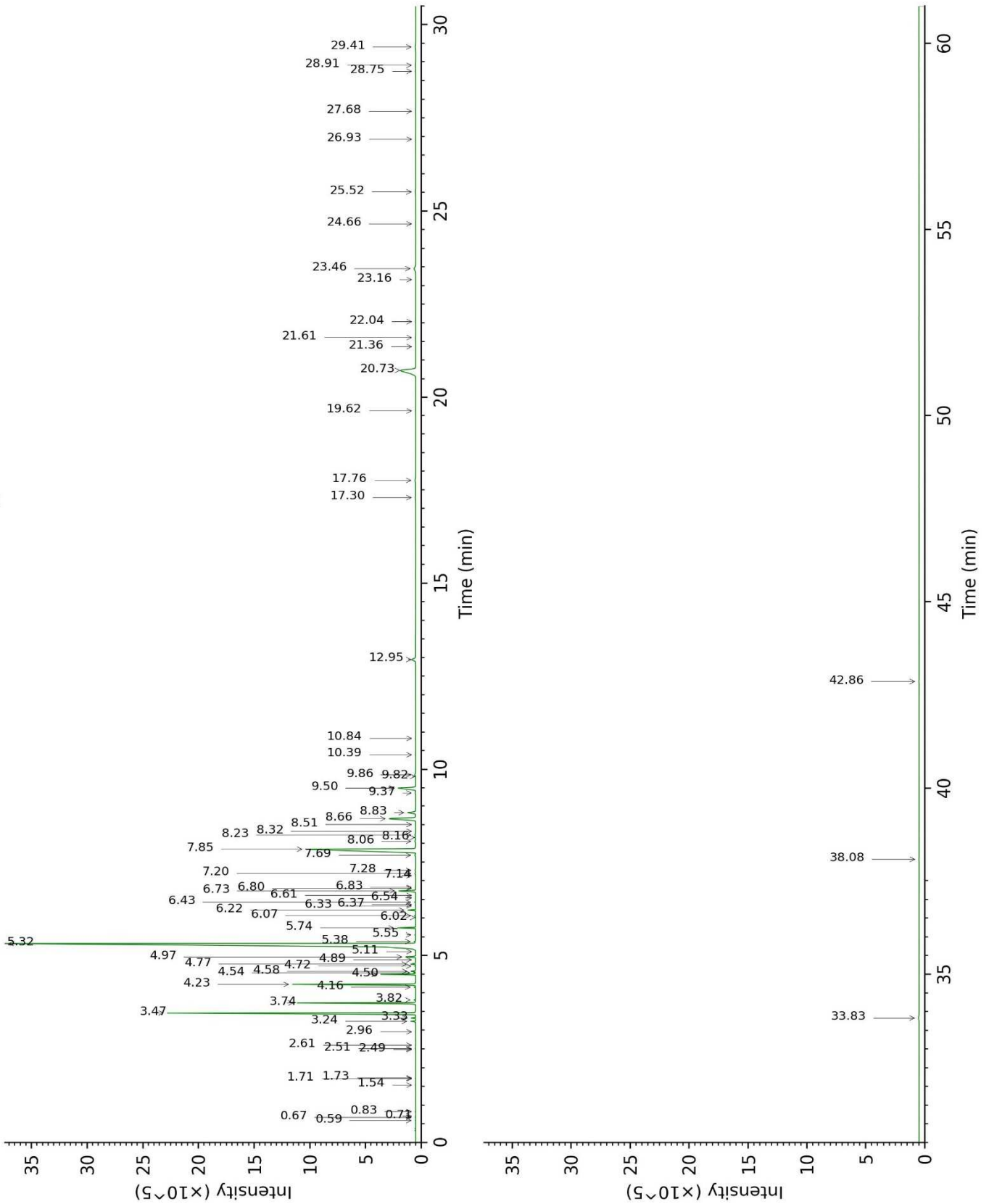
**Physical aspect :** Clear liquid

**Refractive index :** 1.4655  $\pm$  0.0003 (20 °C)

#### CONCLUSION

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

17G04-PTH8-1-DM\_BP5



17G04-PTH8-1-DM\_WAX

