Date : 2026-07-21

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26G09-PTH01
Customer Identification : Orange Blood - Italy - O10117R
Type : Essential Oil
Source : *Citrus sinensis*
Customer : Plant Therapy

Checked and approved by:

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

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia. This report is digitally signed, it is only considered valid if the digital signature is intact. The results only describe the samples that were submitted to the assays. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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Gas Chromatographic Analysis

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID
ISO
Results : See analysis summary (next page)
Analyst : Jean-Christophe Fortin, M. Sc.
Date : 2026-07-20

Physicochemical data

Refractive index : 1.4738 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2026-07-10

Conclusion

No adulterant, contaminant or diluent has been detected using this method.

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Analysis Summary - Consolidated Contents

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
α-Thujene	0.01	Monoterpene
α-Pinene	0.53	Monoterpene
β-Pinene	0.10	Monoterpene
Sabinene	0.31	Monoterpene
Myrcene	1.84	Monoterpene
α-Phellandrene	0.03	Monoterpene
Octanal	0.20	Aliphatic aldehyde
Δ3-Carene	0.12	Monoterpene
Limonene	93.21	Monoterpene
β-Phellandrene	0.26	Monoterpene
(*Z*)-β-Ocimene	tr	Monoterpene
(*E*)-β-Ocimene	0.04	Monoterpene
γ-Terpinene	0.06	Monoterpene
Octanol	0.02	Aliphatic alcohol
Terpinolene	0.02	Monoterpene
Linalool	0.24	Monoterpenic alcohol
Nonanal	0.02	Aliphatic aldehyde
trans-para-Mentha-2,8-dien-1-ol	0.01	Monoterpenic alcohol
cis-Limonene oxide	0.02	Monoterpenic ether
trans-Limonene oxide	0.03	Monoterpenic ether
Citronellal	0.05	Monoterpenic aldehyde
α-Terpineol	0.02	Monoterpenic alcohol
Decanal	0.19	Aliphatic aldehyde
trans-Carveol	0.01	Monoterpenic alcohol
Octyl acetate	0.02	Aliphatic ester
Nerol	0.02	Monoterpenic alcohol
cis-Carveol	0.02	Monoterpenic alcohol
Neral	0.04	Monoterpenic aldehyde
Perillaldehyde	0.02	Monoterpenic aldehyde
Geranial	0.04	Monoterpenic aldehyde
Decanol	0.01	Aliphatic alcohol
Limonen-10-ol	0.01	Monoterpenic alcohol
Undecanal	0.01	Aliphatic aldehyde
Neryl acetate	0.02	Monoterpenic ester
α-Copaene	0.02	Sesquiterpene
Geranyl acetate	0.02	Monoterpenic ester
β-Elemene	0.02	Sesquiterpene
Dodecanal	0.06	Aliphatic aldehyde
β-Caryophyllene	0.02	Sesquiterpene
β-Copaene	0.03	Sesquiterpene

(*E*)-β-Farnesene	0.02	Sesquiterpene
Germacrene D	0.02	Sesquiterpene
Valencene	0.08	Sesquiterpene
γ-Cadinene	0.03	Sesquiterpene
δ-Cadinene	0.02	Sesquiterpene
α-Elemol	0.01	Sesquiterpenic alcohol
β-Sinensal	0.05	Sesquiterpenic aldehyde
α-Sinensal	0.03	Sesquiterpenic aldehyde
Myristic acid	0.02	Aliphatic acid
Nootkatone	0.03	Sesquiterpenic ketone
Palmitic acid	0.11	Aliphatic acid
Linoleic acid	0.05	Aliphatic acid
Oleic acid	0.04	Aliphatic acid
Stearic acid	0.51	Aliphatic acid
Tangeretin isomer	0.02	Flavonoid
Tangeretin	0.13	Flavonoid
3,3',4',5,6,7,8-Heptamethoxyflavone	0.06	Flavonoid
Nobiletin	0.05	Flavonoid
Consolidated total	**98.99**	

tr: The compound has been detected below 0.005% of the total signal

Note: no correction factor was applied

About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm is set to prioritize data from the most standard DB-5 column, and smallest values so as to avoid overestimating individual content. This process is semi-automatic. Advanced users are invited to consult the "Full analysis data" table after the chromatograms in this report to access the full untreated data and perform their own calculations if needed.

Unknowns: Unknown compounds' mass spectral data is presented in the "Full analysis data" table. The occurrence of unknown compounds is to be expected in many samples, and does not denote particular problems unless noted otherwise in the conclusion.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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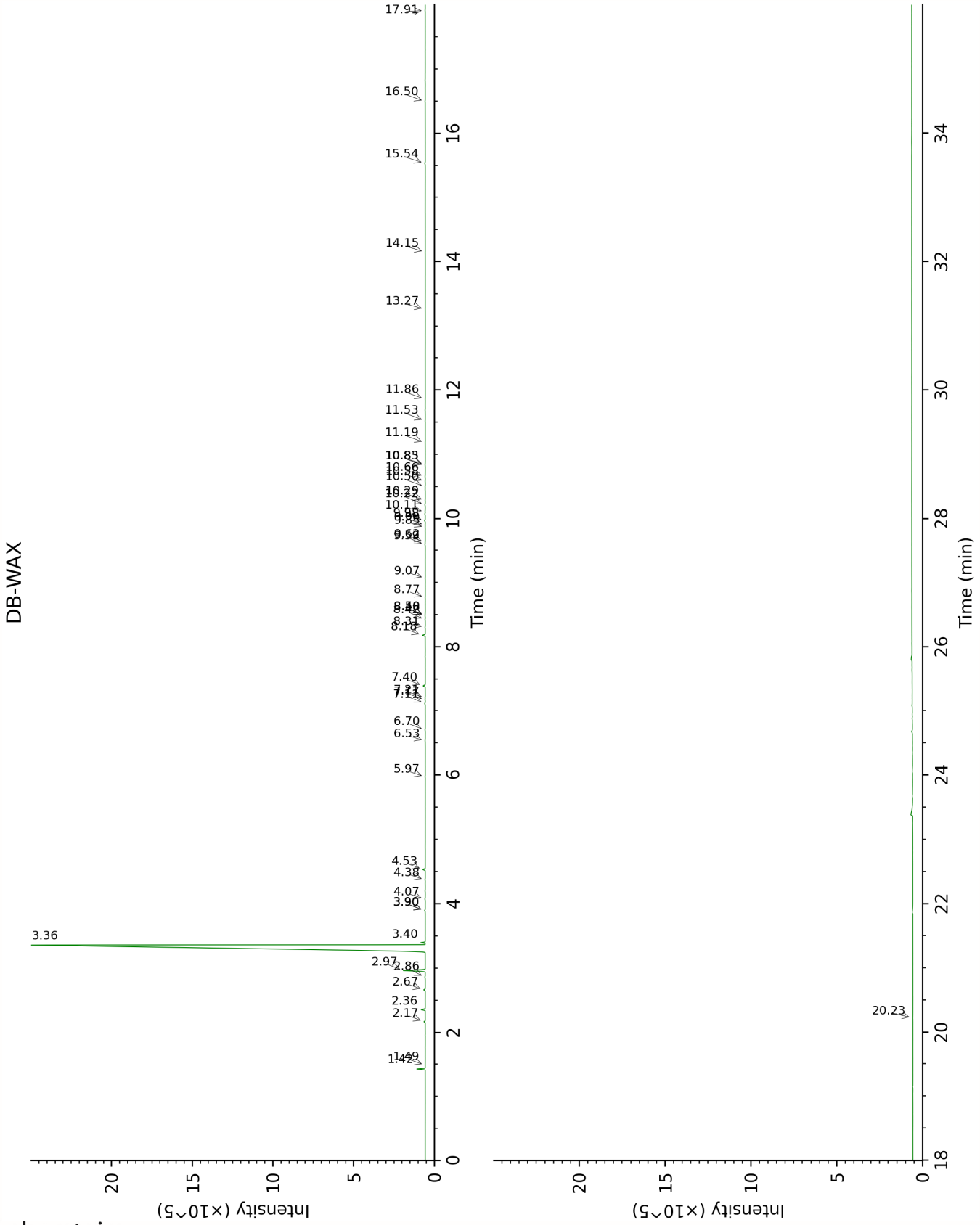
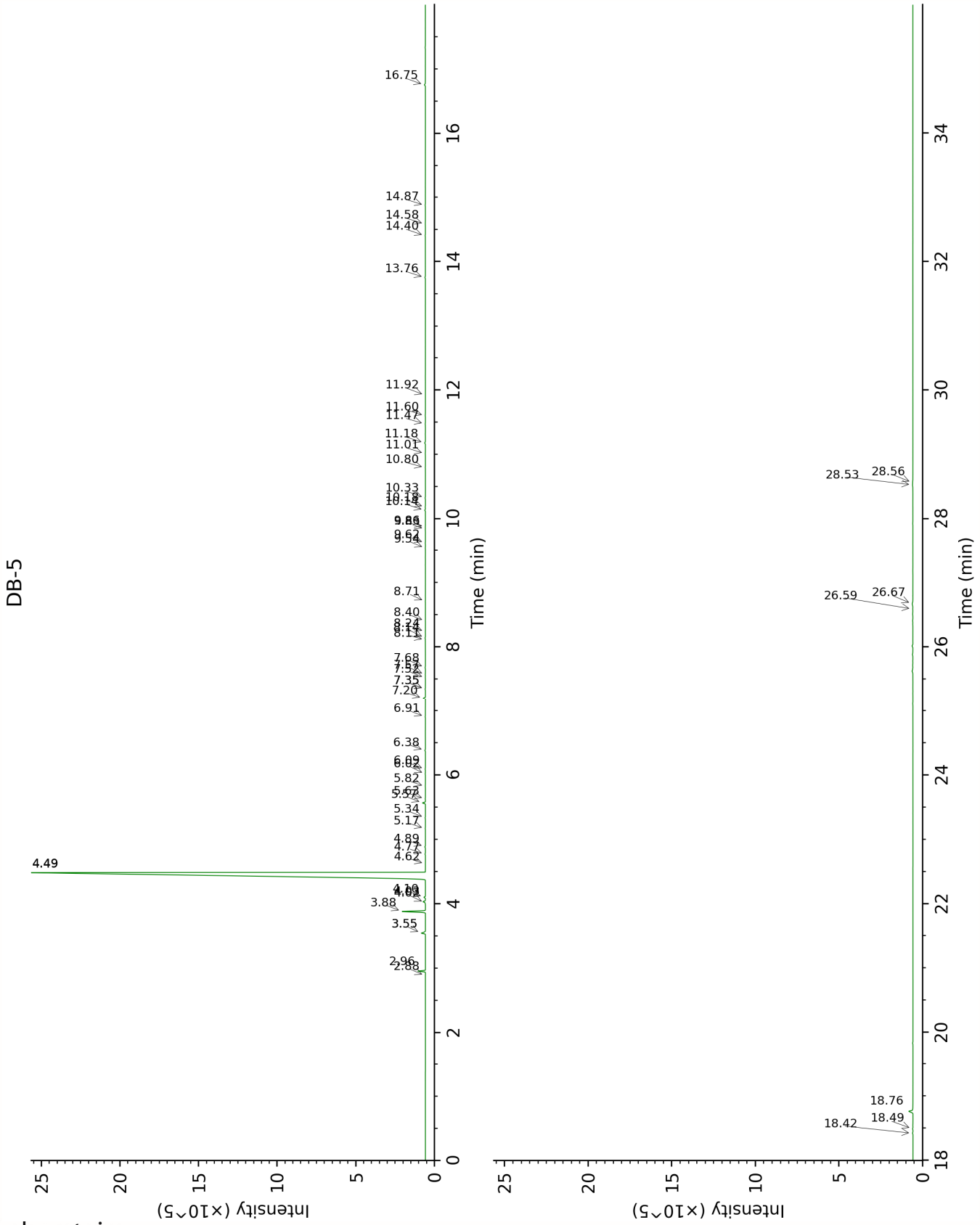

DB-WAX
Intensity (×10^5)
Time (min)
3.36
20.23


DB-5
Intensity (×10^5)
Time (min)
4.49
3.88
3.55
2.96
2.88
16.75
14.87
14.58
14.40
13.76
11.92
11.60
11.47
11.18
11.01
10.80
10.33
8.71
8.40
7.68
7.35
7.20
6.91
6.38
5.82
5.34
5.17
4.89
4.77
4.62
28.53
28.56
26.59
26.67
18.76
18.49
18.42

FULL ANALYSIS DATA

α-Thujene	**Column DB-WAX**			**Column DB-5**		
	1.48	997.7	0.01	2.88	926.8	0.01
α-Pinene	1.42	989.8	0.52	2.96	931.7	0.53
β-Pinene	2.17	1065.6	0.10	3.55*	971.6	[0.39]
Sabinene	2.36	1084.1	0.31	3.55*	971.6	[0.39]
Myrcene	2.97	1133.8	1.85	3.88	994.3	1.84
α-Phellandrene	2.86	1125.8	0.04	4.02	1003.5	0.03
Octanal	4.53	1250.6	0.19	4.03	1004.5	0.20
Δ3-Carene	2.66	1110.3	0.13	4.10	1009.0	0.12
Limonene	3.36	1164.4	93.21	4.49*	1033.3	[93.63]
β-Phellandrene	3.40	1167.3	0.26	4.49*	1033.3	[93.63]
(*Z*)-β-Ocimene	3.90*	1205.1	[0.05]	4.62	1041.8	tr
(*E*)-β-Ocimene	4.07	1217.8	0.03	4.77	1051.5	0.04
γ-Terpinene	3.90*	1205.1	[0.05]	4.89	1058.6	0.06
Octanol	8.31	1526.9	0.03	5.17	1076.6	0.02
Terpinolene	4.38	1239.2	0.03	5.34	1087.4	0.02
Linalool	8.18	1517.4	0.24	5.57	1102.0	0.24
Nonanal	5.97	1356.5	0.02	5.63	1106.0	0.02
trans-para-Mentha-2,8-dien-1-ol	9.07	1585.2	0.01	5.82	1118.3	0.01
cis-Limonene oxide	6.53	1396.0	0.03	6.02	1130.7	0.02
trans-Limonene oxide	6.70	1408.2	0.03	6.09	1135.7	0.03
Citronellal	7.11	1438.1	0.05	6.38	1154.4	0.05
α-Terpineol	9.90	1651.5	0.02	6.91	1188.1	0.02
Decanal	7.40	1459.1	0.18	7.20	1207.3	0.19
trans-Carveol	11.52	1785.8	0.01	7.35*	1217.0	[0.03]
Octyl acetate	7.18	1442.8	0.02	7.35*	1217.0	[0.03]
Nerol	11.19	1757.3	0.01	7.52	1228.8	0.02
cis-Carveol	11.86	1815.1	0.01	7.57	1232.2	0.02
Neral	9.59	1626.5	0.03	7.68	1239.6	0.04
Perillaldehyde	10.85	1729.0	0.02	8.11	1268.3	0.02
Geranial	10.22	1676.9	0.04	8.14	1270.6	0.04
Decanol	10.83	1727.2	0.01	8.24	1277.0	0.01
Limonen-10-ol	13.27	1940.8	0.01	8.40	1288.4	0.01
Undecanal	8.77	1562.3	0.01	8.71	1308.9	0.01
Neryl acetate	10.29	1682.4	0.01	9.54	1367.8	0.02
α-Copaene	7.21	1445.3	0.02	9.62	1373.3	0.02
Geranyl acetate	10.66	1713.4	0.02	9.83	1388.4	0.02
β-Elemene	8.50	1541.4	0.02	9.86	1391.0	0.02
Dodecanal	10.11	1668.5	0.03	10.14	1410.6	0.06
β-Caryophyllene	8.48	1540.4	0.02	10.18	1414.1	0.02
β-Copaene	8.42	1535.9	0.03	10.33	1425.0	0.03
(*E*)-β-Farnesene	9.62	1629.3	0.02	10.80	1460.1	0.02
Germacrene D	9.85	1647.5	0.02	11.01	1476.3	0.02

Valencene	9.98	1657.4	0.07	11.18	1488.9	0.08
γ-Cadinene	10.50	1699.9	0.02	11.48	1511.1	0.03
δ-Cadinene	10.58	1706.9	0.02	11.60	1521.1	0.02
α-Elemol	14.15	2023.6	0.01	11.92	1546.3	0.01
β-Sinensal	15.54	2159.3	0.06	13.76	1695.7	0.05
α-Sinensal	16.50	2257.7	0.03	14.40	1751.5	0.03
Myristic acid	20.23	2680.9	0.02	14.58	1767.1	0.02
Nootkatone	17.91	2410.4	0.02	14.87	1792.3	0.03
Palmitic acid				16.75	1966.3	0.11
Linoleic acid				18.42	2132.3	0.05
Oleic acid				18.49	2139.5	0.04
Stearic acid				18.76	2167.8	0.51
Tangeretin isomer				26.59	3133.0	0.02
Tangeretin				26.67	3142.3	0.13
3,3',4',5,6,7,8-Heptamethoxyflavone				28.53	3325.4	0.06
Nobiletin				28.56	3327.9	0.05
Total reported		97.97%			99.13%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is taken into account in the consolidated total

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

tr: The compound has been detected below 0.005% of total signal.

Note: no correction factor was applied
R.T.: Retention time (minutes)
R.I.: Retention index

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