Date : 2026-05-04

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 26C03-PTH04
Customer Identification : Sweet Orange - Mexico - O20119
Type : Essential Oil
Source : *Citrus sinensis*
Customer : Plant Therapy

Checked an 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

This report is an update of the version first issued on 2026-03-09 to make a correction in the sample identification section.

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 : Sylvain Mercier, M. Sc., Chimiste 2014-005
Date : 2026-03-05

Physicochemical data

Refractive index : 1.4736 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Kassandra Baker
Date : 2026-03-03

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-Pinene	0.53	Monoterpene
β-Pinene	0.03	Monoterpene
Sabinene	0.20	Monoterpene
Myrcene	1.97	Monoterpene
Pseudolimonene	0.01	Monoterpene
Octanal	0.11	Aliphatic aldehyde
α-Phellandrene	0.04	Monoterpene
Δ3-Carene	0.15	Monoterpene
1,8-Cineole	tr	Monoterpenic ether
Limonene	94.90	Monoterpene
para-Cymene	0.01	Monoterpene
β-Phellandrene	0.27	Monoterpene
(*E*)-β-Ocimene	0.03	Monoterpene
γ-Terpinene	0.01	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
Octanol	0.05	Aliphatic alcohol
Terpinolene	0.03	Monoterpene
Linalool	0.33	Monoterpenic alcohol
Nonanal	0.03	Aliphatic aldehyde
cis-Limonene oxide	0.01	Monoterpenic ether
trans-Limonene oxide	0.02	Monoterpenic ether
Citronellal	0.03	Monoterpenic aldehyde
α-Terpineol	0.08	Monoterpenic alcohol
Decanal	0.25	Aliphatic aldehyde
Octyl acetate	0.02	Aliphatic ester
Nerol	0.01	Monoterpenic alcohol
Citronellol	0.02	Monoterpenic alcohol
Neral	0.04	Monoterpenic aldehyde
Perillaldehyde	0.01	Monoterpenic aldehyde
Geranial	0.05	Monoterpenic aldehyde
Decanol	0.01	Aliphatic alcohol
Limonen-10-ol	0.01	Monoterpenic alcohol
Undecanal	0.01	Aliphatic aldehyde
α-Copaene	0.02	Sesquiterpene
Geranyl acetate	0.03	Monoterpenic ester
Dodecanal	0.03	Aliphatic aldehyde
β-Caryophyllene	0.02	Sesquiterpene
β-Copaene	0.02	Sesquiterpene
Germacrene D	0.03	Sesquiterpene
Valencene	0.02	Sesquiterpene

γ-Cadinene	0.02	Sesquiterpene
δ-Cadinene	0.03	Sesquiterpene
β-Sinensal	0.02	Sesquiterpenic aldehyde
α-Sinensal	0.02	Sesquiterpenic aldehyde
Palmitic acid	0.04	Aliphatic acid
Linoleic acid	0.02	Aliphatic acid
Oleic acid	0.02	Aliphatic acid
Stearic acid	0.03	Aliphatic acid
Tangeretin isomer	0.04	Flavonoid
Tangeretin	0.05	Flavonoid
3,3',4',5,6,7,8-Heptamethoxyflavone	0.12	Flavonoid
Nobiletin	0.04	Flavonoid
Consolidated total	**99.89**	

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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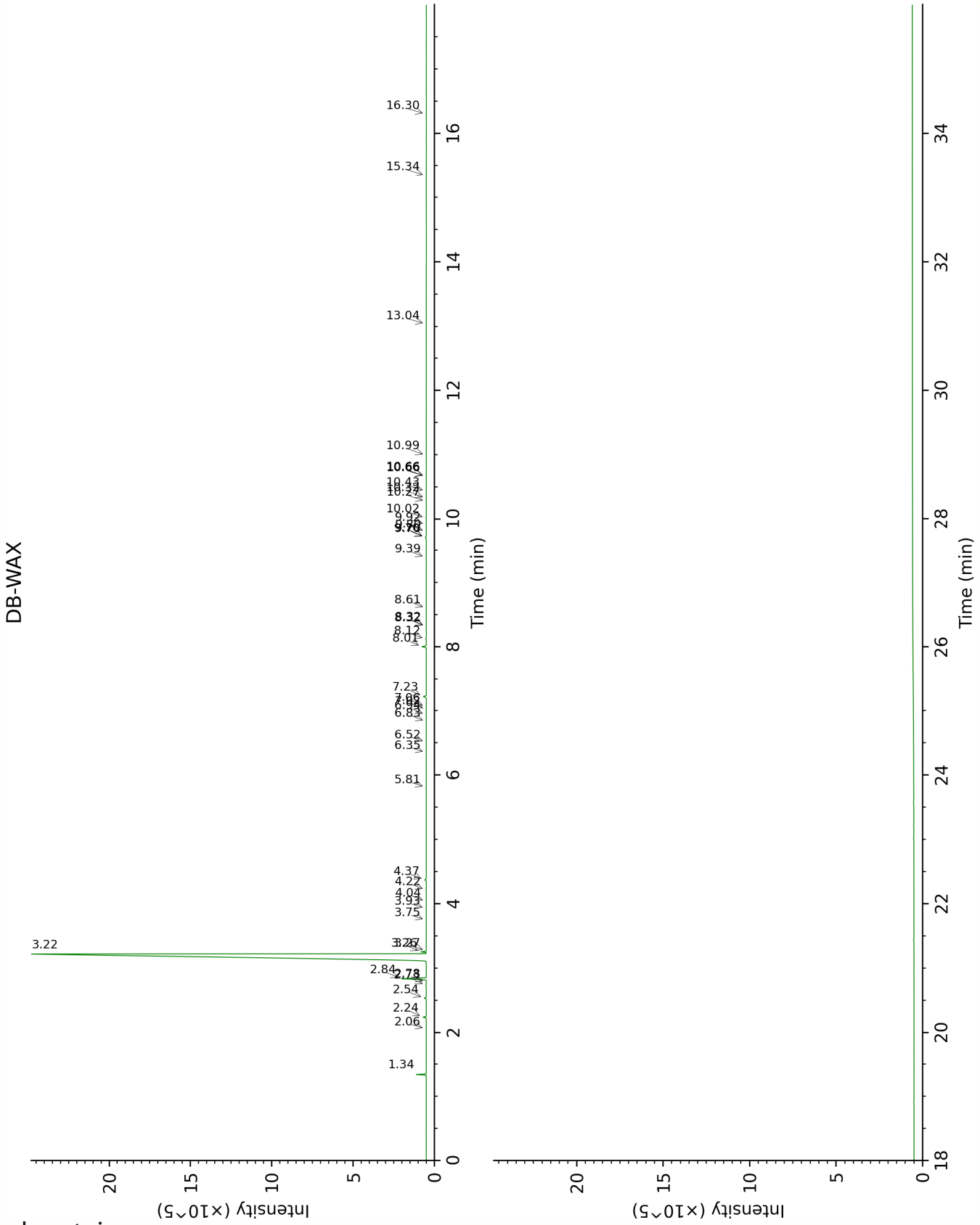
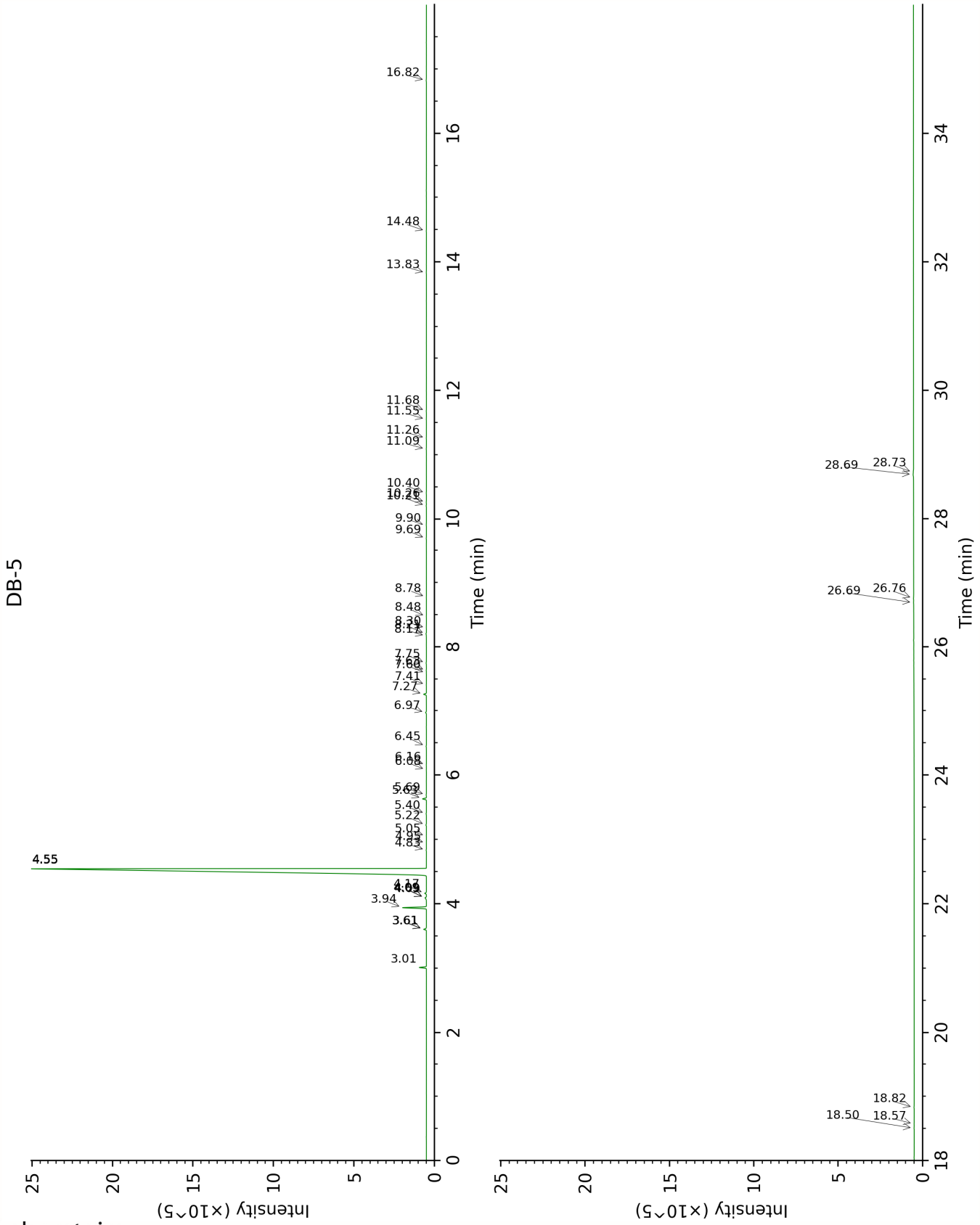

DB-WAX
Intensity (×10^5)
Time (min)
3.22
2.84
16.30
15.34
13.04
10.99
10.66
10.02
9.39
8.61
8.32
8.12
8.01
7.23
6.83
6.52
6.35
5.81
4.37
4.22
4.04
3.93
3.75
2.54
2.24
2.06
1.34


DB-5
Intensity (×10^5)
Time (min)
4.55
3.94
3.61
3.01
16.82
14.48
13.83
11.68
11.55
11.26
11.09
10.40
9.90
9.69
8.78
8.48
7.75
7.41
7.27
6.97
6.45
5.40
5.22
5.05
28.69
28.73
26.69
26.76
18.82
18.50
18.57

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
α-Pinene	1.34	989.9	0.52	3.01	931.1	0.53
β-Pinene	2.06	1065.2	0.03	3.61*	970.9	[0.23]
Sabinene	2.24	1083.3	0.20	3.61*	970.9	[0.23]
Myrcene	2.84	1133.8	1.98	3.94	993.5	1.97
Pseudolimonene	2.78	1129.3	0.01	4.09*	1003.7	[0.16]
Octanal	4.37	1251.5	0.11	4.09*	1003.7	[0.16]
α-Phellandrene	2.73	1125.5	0.04	4.09*	1003.7	[0.16]
Δ3-Carene	2.54	1110.2	0.15	4.16	1008.2	0.15
1,8-Cineole	3.27	1168.0	tr	4.55*	1032.4	[95.03]
Limonene	3.22	1163.9	94.90	4.55*	1032.4	[95.03]
para-Cymene	4.04	1226.8	0.01	4.55*	1032.4	[95.03]
β-Phellandrene	3.26	1166.7	0.27	4.55*	1032.4	[95.03]
(*E*)-β-Ocimene	3.93	1218.7	0.02	4.84	1050.7	0.03
γ-Terpinene	3.75	1205.4	0.01	4.95	1057.8	0.01
cis-Sabinene hydrate	6.83	1427.4	0.01	5.06	1064.7	0.01
Octanol	8.12	1524.8	0.06	5.22	1075.5	0.05
Terpinolene	4.22	1239.9	0.03	5.40	1086.8	0.03
Linalool	8.01	1515.7	0.33	5.63	1101.4	0.33
Nonanal	5.81	1352.6	0.03	5.69	1105.4	0.03
cis-Limonene oxide	6.35	1391.8	0.01	6.08	1130.5	0.01
trans-Limonene oxide	6.52	1403.8	0.02	6.16	1135.5	0.02
Citronellal	6.94	1435.1	0.04	6.45	1154.2	0.03
α-Terpineol	9.70*	1650.0	[0.10]	6.97	1188.2	0.08
Decanal	7.23	1457.3	0.24	7.27	1207.5	0.25
Octyl acetate	7.02	1441.6	0.01	7.41	1217.4	0.02
Nerol	10.99	1757.3	0.01	7.60	1229.9	0.01
Citronellol	10.66*	1729.4	[0.03]	7.64	1232.5	0.02
Neral	9.39	1624.8	0.04	7.75	1240.4	0.04
Perillaldehyde	10.66*	1729.4	[0.03]	8.17	1269.1	0.01
Geranial	10.02	1675.8	0.05	8.21	1271.5	0.05
Decanol	10.66*	1729.4	[0.03]	8.30	1277.7	0.01
Limonen-10-ol	13.04	1939.2	0.02	8.48	1289.9	0.01
Undecanal	8.61	1562.4	0.01	8.78	1307.3	0.01
α-Copaene	7.06	1444.4	0.02	9.69	1372.1	0.02
Geranyl acetate	10.43	1710.0	0.02	9.90	1387.1	0.03
Dodecanal	9.92	1667.4	0.03	10.21	1409.3	0.03
β-Caryophyllene	8.32*†	1540.2	[0.01]	10.26	1413.4	0.02
β-Copaene	8.32*†	1540.2	[0.01]	10.40	1424.0	0.02
Germacrene D	9.70*	1650.0	[0.10]	11.09	1475.3	0.03
Valencene	9.80	1657.8	0.02	11.26	1488.3	0.02
γ-Cadinene	10.27	1696.4	0.01	11.55	1510.2	0.02
δ-Cadinene	10.32	1700.6	0.03	11.68	1520.6	0.03
β-Sinensal	15.34	2161.3	0.02	13.83	1694.7	0.02

α-Sinensal	16.30	2259.5	0.02	14.48	1750.5	0.02
Palmitic acid				16.82	1964.6	0.04
Linoleic acid				18.50	2130.7	0.02
Oleic acid				18.57	2137.5	0.02
Stearic acid				18.82	2163.9	0.03
Tangeretin isomer				26.69	3120.3	0.04
Tangeretin				26.76	3127.6	0.05
3,3',4',5,6,7,8-Heptamethoxyflavone				28.69	3309.4	0.12
Nobiletin				28.73	3312.0	0.04
Total reported		99.47%			99.74%	

*: 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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