

Date : 2024-05-02

CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24D18-NSO01

Customer Identification : Orange Sweet - Lot No: 001690

Type : Essential Oil

Source : *Citrus sinensis*

Customer : Natural Sourcing LLC

Checked and approved by:

Alexis St-Gelais, Ph. D., Chimiste 2013-174

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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 : 2024-05-02

PHYSICOCHEMICAL DATA

Refractive index : 1.4737 ± 0.0003 (20 °C)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2024-04-23

CONCLUSION

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

ANALYSIS SUMMARY - CONSOLIDATED CONTENTS

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

Identification	%	Class
α -Pinene	0.55	Monoterpene
Thuja-2,4(10)-diene	0.03	Monoterpene
β -Pinene	0.05	Monoterpene
Sabinene	0.14	Monoterpene
Myrcene	1.84	Monoterpene
α -Phellandrene	0.04	Monoterpene
Octanal	0.20	Aliphatic aldehyde
Pseudolimonene	tr	Monoterpene
Δ^3 -Carene	0.11	Monoterpene
β -Phellandrene	0.26	Monoterpene
Limonene	93.97	Monoterpene
<i>para</i> -Cymene	0.03	Monoterpene
(<i>E</i>)- β -Ocimene	0.01	Monoterpene
Terpinolene	0.03	Monoterpene
Linalool	0.34	Monoterpenic alcohol
Nonanal	0.06	Aliphatic aldehyde
<i>trans</i> -Limonene oxide	0.01	Monoterpenic ether
<i>cis-para</i> -Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
Citronellal	0.05	Monoterpenic aldehyde
Nonanol	0.05	Aliphatic alcohol
α -Terpineol	0.04	Monoterpenic alcohol
Decanal	0.17	Aliphatic aldehyde
Neral	0.03	Monoterpenic aldehyde
Carvone	0.01	Monoterpenic ketone
Geranial	0.08	Monoterpenic aldehyde
Decanol	0.01	Aliphatic alcohol
Limonen-10-ol	0.02	Monoterpenic alcohol
Undecanal	0.01	Aliphatic aldehyde
α -Copaene	0.03	Sesquiterpene
Geranyl acetate	0.03	Monoterpenic ester
β -Elemene	0.01	Sesquiterpene
Dodecanal	0.03	Aliphatic aldehyde
β -Caryophyllene	0.03	Sesquiterpene
β -Copaene	0.02	Sesquiterpene
Germacrene D	0.03	Sesquiterpene
Valencene	0.02	Sesquiterpene
δ -Cadinene	0.04	Sesquiterpene
β -Sinensal	0.02	Sesquiterpenic aldehyde
α -Sinensal	0.02	Sesquiterpenic aldehyde
Pentamethoxyflavone isomer	0.02	Flavonoid

Tangeretin	0.07	Flavonoid
3,5,6,7,8,3',4'-Heptamethoxyflavone?	0.10	Flavonoid
Nobiletin	0.06	Flavonoid
Consolidated total	98.69	

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

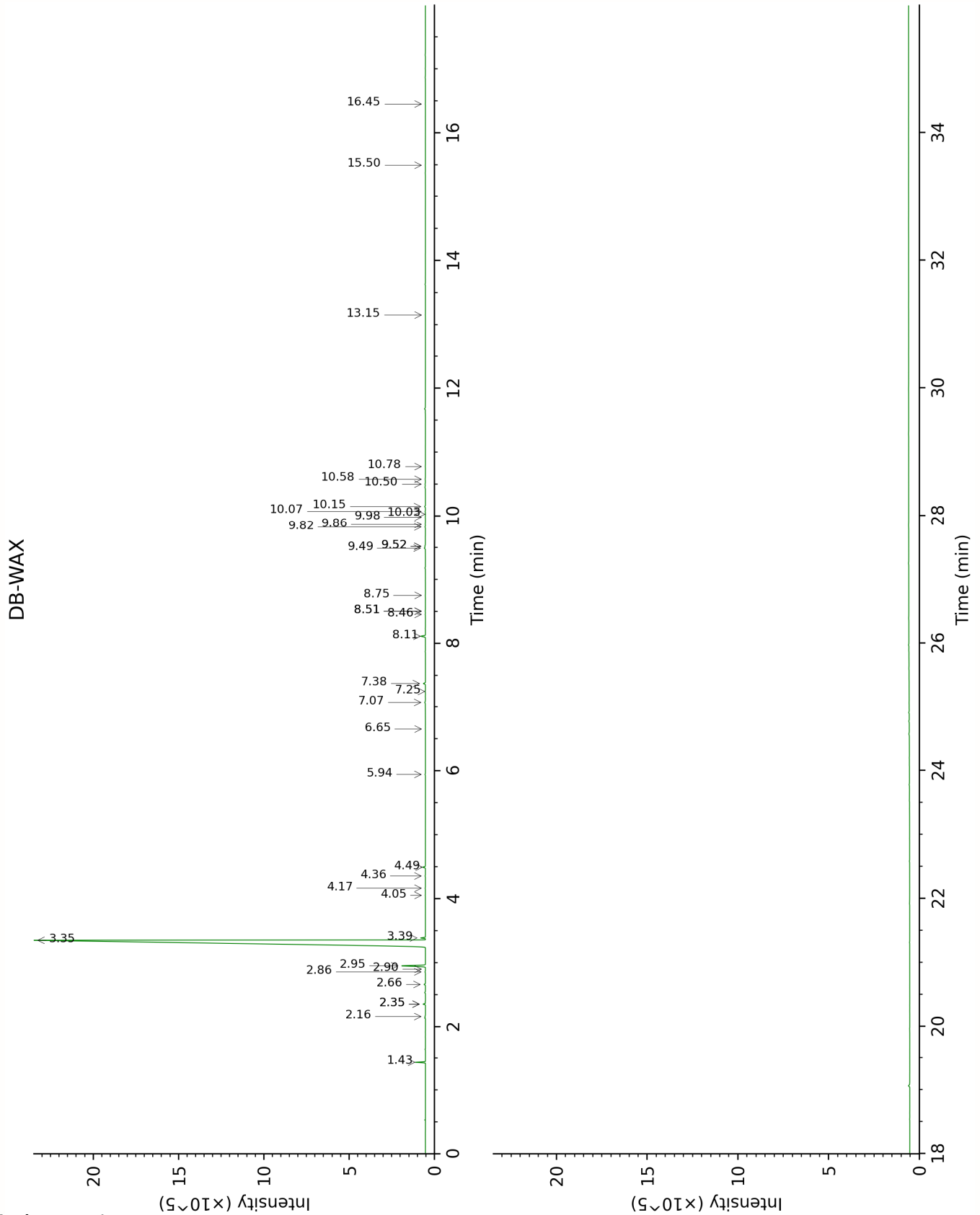
Note: no correction factor was applied

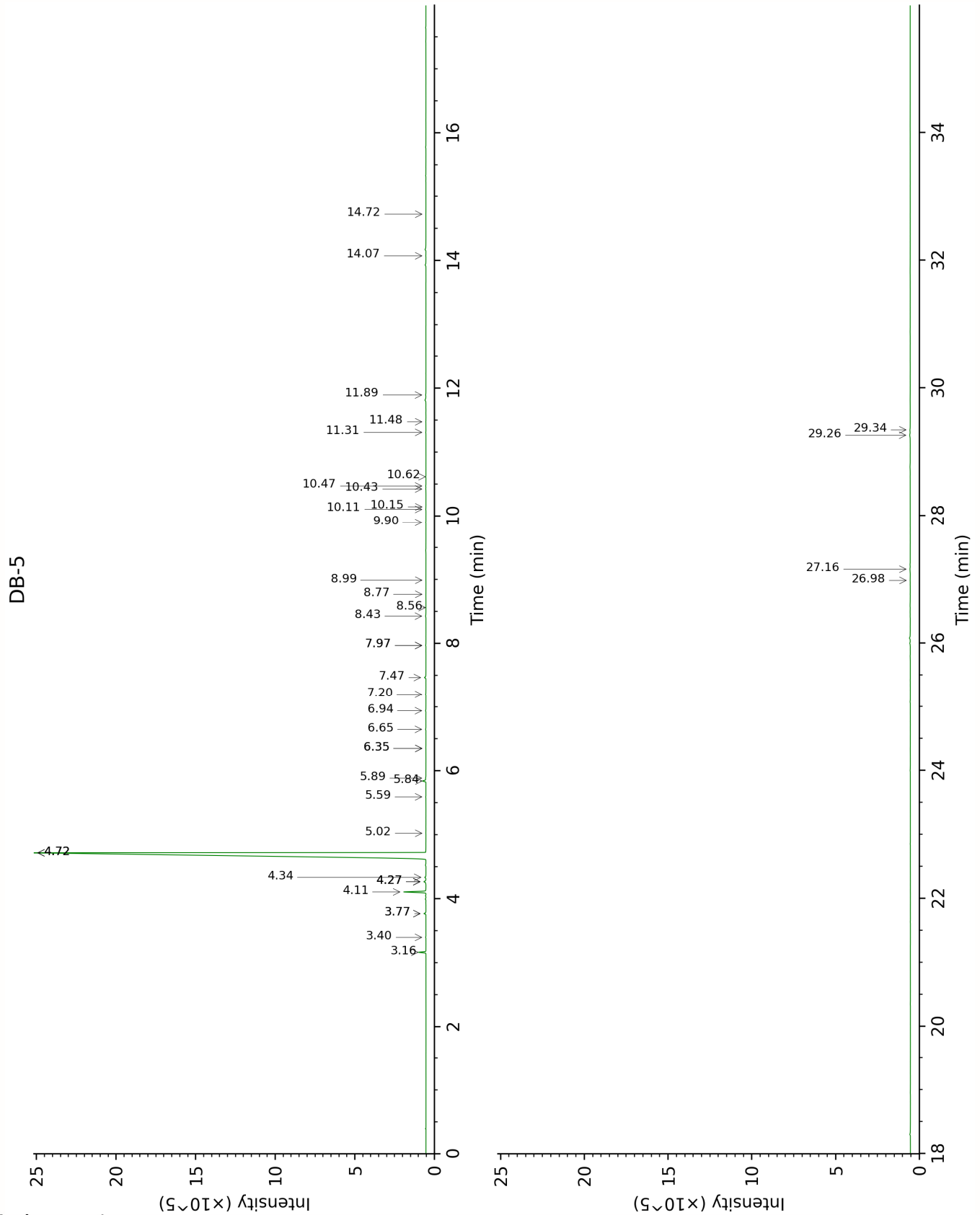
About "consolidated" data: The table above presents the breakdown of the sample volatile constituents after applying an algorithm to collapse data acquired from the multi-columns system of PhytoChemia into a single set of consolidated contents. In case of discrepancies between columns, the algorithm 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.

This page was intentionally left blank. The following pages present the complete data of the analysis.





FULL ANALYSIS DATA

α-Pinene	Column DB-WAX			Column DB-5		
	1.43	994.9	0.55	3.16	931.6	0.55
Thuja-2,4(10)-diene	2.35*	1086.5	[0.15]	3.40	946.9	0.03
β -Pinene	2.16	1068.4	0.05	3.77*	971.4	[0.18]
Sabinene	2.35*	1086.5	[0.15]	3.77*	971.4	[0.18]
Myrcene	2.95	1135.8	1.84	4.11	993.7	1.84
α -Phellandrene	2.86	1128.7	0.04	4.27*	1004.2	[0.26]
Octanal	4.49	1249.4	0.20	4.27*	1004.2	[0.26]
Pseudolimonene	2.90	1131.9	tr	4.27*	1004.2	[0.26]
Δ^3 -Carene	2.66	1114.0	0.11	4.34	1008.6	0.11
β -Phellandrene	3.39	1168.7	0.26	4.72*	1032.6	[94.35]
Limonene	3.35	1165.9	93.97	4.72*	1032.6	[94.35]
<i>para</i> -Cymene	4.17	1226.2	0.03	4.72*	1032.6	[94.35]
(<i>E</i>)- β -Ocimene	4.05	1218.2	0.02	5.02	1051.7	0.01
Terpinolene	4.36	1239.7	0.03	5.59	1087.3	0.03
Linalool	8.11	1516.0	0.37	5.84	1102.8	0.34
Nonanal	5.94	1354.3	0.04	5.89	1105.6	0.06
<i>trans</i> -Limonene oxide	6.65	1405.9	0.01	6.35*	1135.2	[0.03]
<i>cis-para</i> -Mentha-2,8-dien-1-ol	9.52*	1627.0	[0.07]	6.35*	1135.2	[0.03]
Citronellal	7.07	1437.0	0.10	6.65	1154.3	0.05
Nonanol	9.49	1624.6	0.11	6.94	1172.9	0.05
α -Terpineol	9.82	1651.9	0.04	7.20	1189.6	0.04
Decanal	7.38	1460.1	0.17	7.47	1206.7	0.17
Neral	9.52*	1627.0	[0.07]	7.97*	1240.2	[0.04]
Carvone	10.03	1668.9	0.01	7.97*	1240.2	[0.04]
Geranial	10.15	1678.7	0.07	8.43	1270.9	0.08
Decanol	10.78	1730.9	0.02	8.56	1279.9	0.01
Limonen-10-ol	13.15	1941.0	0.02	8.77	1293.7	0.02
Undecanal	8.75	1566.1	0.02	8.99	1308.6	0.01
α -Copaene	7.25	1450.8	0.03	9.90	1372.7	0.03
Geranyl acetate	10.58	1713.9	0.05	10.11	1387.4	0.03
β -Elemene	8.51*	1546.7	[0.03]	10.15	1390.1	0.01
Dodecanal	10.07	1672.4	0.03	10.43	1410.1	0.03
β -Caryophyllene	8.51*	1546.7	[0.03]	10.47	1413.6	0.03
β -Copaene	8.46	1542.8	0.02	10.62	1424.3	0.02
Germacrene D	9.86	1655.1	0.02	11.31	1476.0	0.03
Valencene	9.98	1665.1	0.02	11.48	1488.3	0.02
δ -Cadinene	10.50	1707.6	0.05	11.90	1520.2	0.04
β -Sinensal	15.50	2167.6	0.02	14.08	1695.7	0.02
α -Sinensal	16.45	2266.1	0.02	14.72	1751.4	0.02
Pentamethoxyflavone isomer				26.98	3123.4	0.02
Tangeretin				27.16	3141.3	0.07

3,5,6,7,8,3',4'- Heptamethoxyflavone?		29.26	3323.2	0.10
Nobiletin		29.34	3328.7	0.06
Total reported	98.59%		98.79%	

*: 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