

Date : January 13, 2022

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 21L21-PTH03

Customer identification : Orange Terpenes - R-10157

Type : Essential oil

Source : *Citrus sinensis* ct. rectified

Customer : Plant Therapy

ANALYSIS

Method: PC-MAT-014  - Analysis of the composition of an essential oil or other volatile liquid by FAST GC-FID (in French); identifications validated by GC-MS.

Analyst : Seydou Ka, Ph. D.

Analysis date : January 04, 2022

Checked and approved by :

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

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid

Refractive index: 1.4725 ± 0.0003 (20 °C; method PC-MAT-016)

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 -Thujene	tr	Monoterpene
α -Pinene	0.57	Monoterpene
Camphene	tr	Monoterpene
Sabinene	0.35	Monoterpene
β -Pinene	0.03	Monoterpene
Myrcene	1.98	Monoterpene
α -Phellandrene	0.04	Monoterpene
Octanal	0.24	Aliphatic aldehyde
Δ^3 -Carene	0.10	Monoterpene
Limonene	96.09	Monoterpene
β -Phellandrene	0.29	Monoterpene
(Z)- β -Ocimene	tr	Monoterpene
(E)- β -Ocimene	0.02	Monoterpene
<i>cis</i> -Sabinene hydrate	0.01	Monoterpenic alcohol
Octanol	0.02	Aliphatic alcohol
Terpinolene	0.01	Monoterpene
Linalool	0.09	Monoterpenic alcohol
Nonanal	0.02	Aliphatic aldehyde
<i>trans</i> -para-Mentha-2,8-dien-1-ol	0.01	Monoterpenic alcohol
<i>cis</i> -Limonene oxide	0.02	Monoterpenic ether
<i>trans</i> -Limonene oxide	0.01	Monoterpenic ether
<i>trans</i> -Carveol	0.01	Monoterpenic alcohol
Nerol	tr	Monoterpenic alcohol
Neral	0.01	Monoterpenic aldehyde
Consolidated total	99.92%	

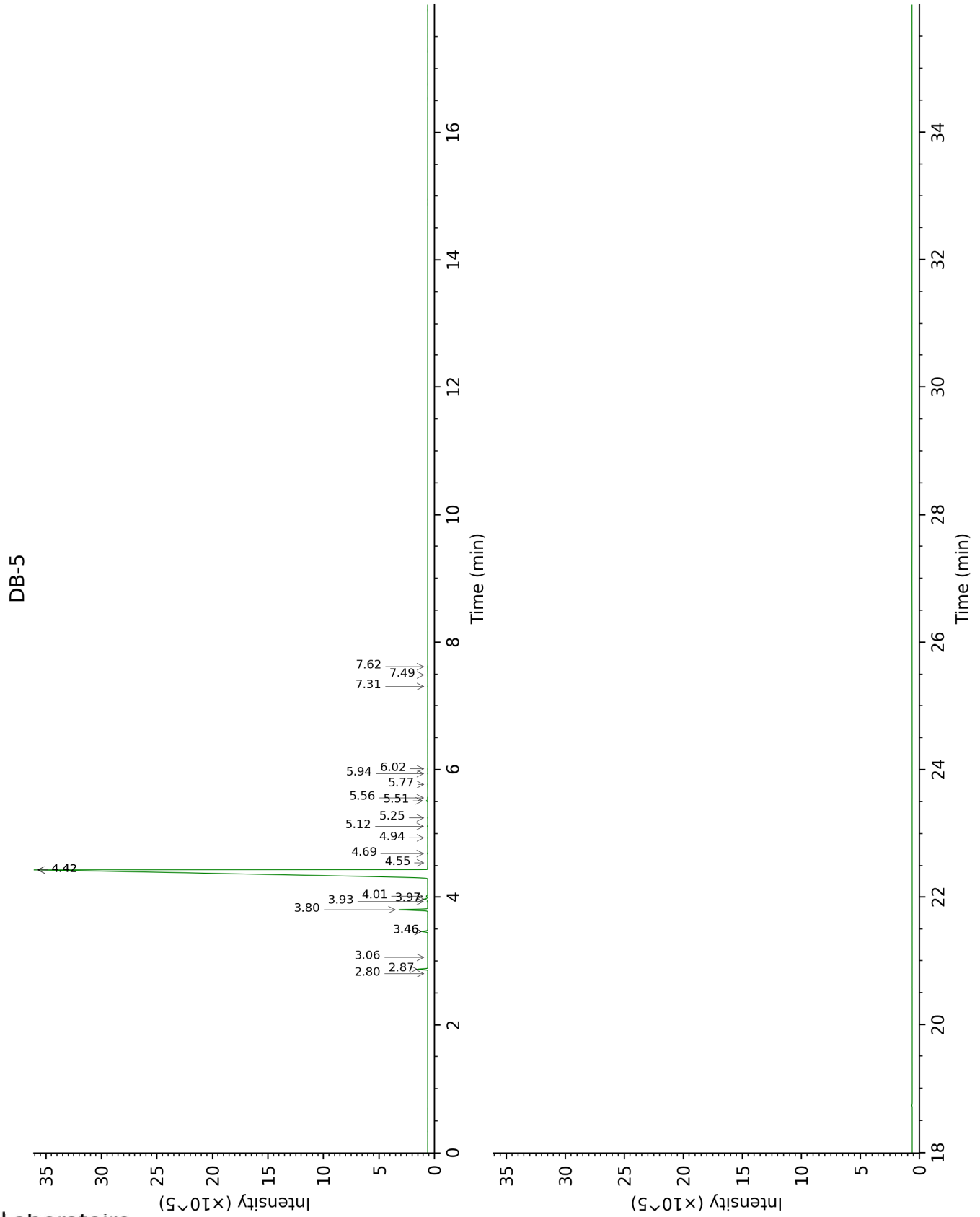
tr: The compound has been detected below 0.005% of total signal.

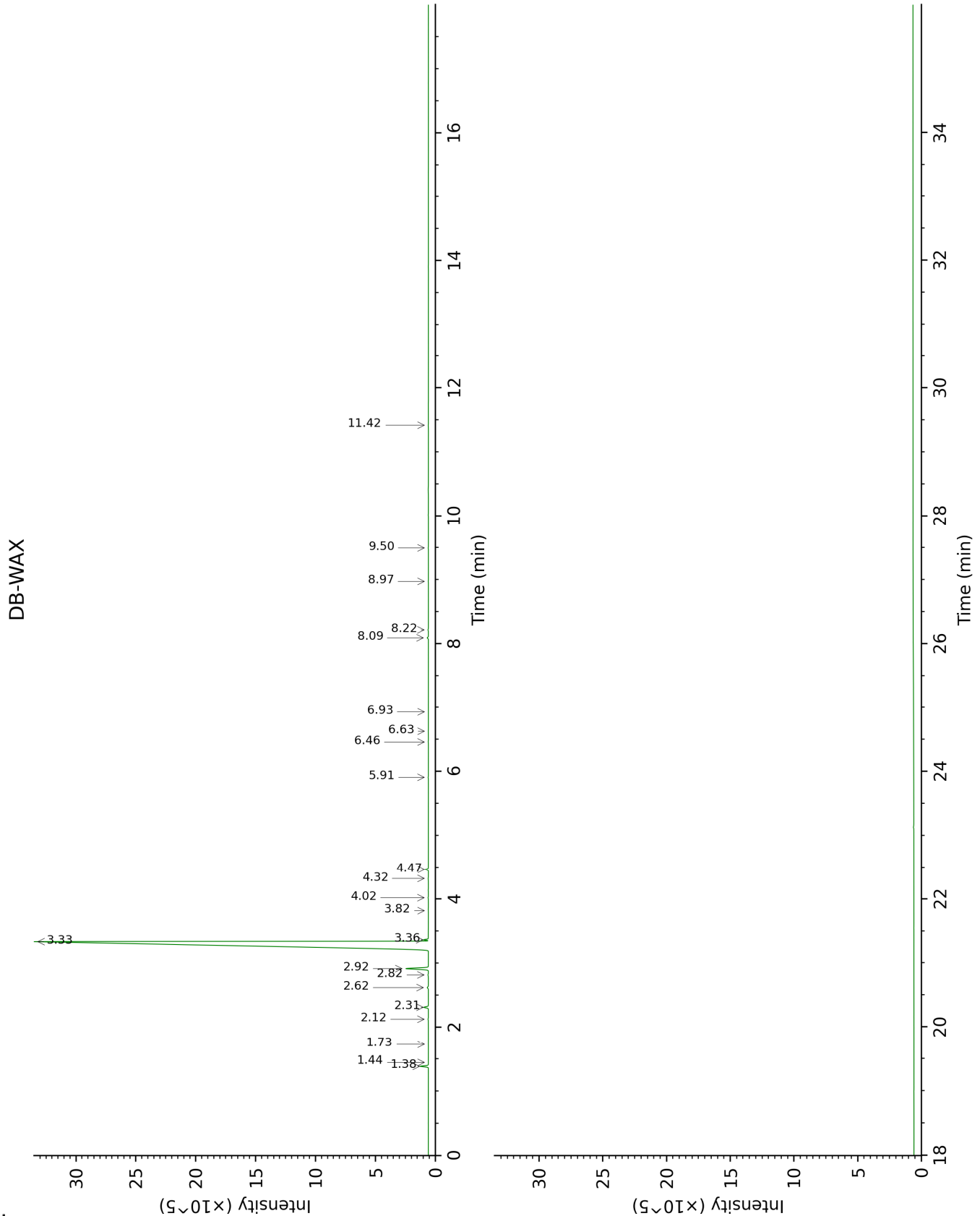
Note: no correction factor was applied

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.

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
α -Thujene	2.80	925	tr	1.44	1000	tr
α -Pinene	2.87	930	0.57	1.38	992	0.57
Camphene	3.06	942	tr	1.73	1028	tr
Sabinene	3.46*	970	0.37	2.31	1085	0.35
β -Pinene	3.46*	970	[0.37]	2.12	1067	0.03
Myrcene	3.80	993	1.98	2.92	1135	1.96
α -Phellandrene	3.93	1002	0.04	2.82	1127	0.03
Octanal	3.97	1004	0.24	4.47	1254	0.23
Δ^3 -Carene	4.02	1007	0.10	2.62	1112	0.10
Limonene	4.42*	1033	96.40	3.34	1168	96.09
β -Phellandrene	4.42*	1033	[96.40]	3.36	1171	0.29
(Z)- β -Ocimene	4.55	1041	tr	3.82	1206	tr
(E)- β -Ocimene	4.69	1050	0.02	4.02	1221	0.02
<i>cis</i> -Sabinene hydrate	4.94	1066	0.01	6.93	1430	0.01
Octanol	5.12	1077	0.02	8.22	1526	0.03
Terpinolene	5.25	1086	0.01	4.32	1244	0.01
Linalool	5.52	1102	0.09	8.09	1517	0.09
Nonanal	5.56	1105	0.02	5.91	1355	0.02
<i>trans</i> -para-Mentha-2,8-dien-1-ol	5.77	1119	0.01	8.97	1585	0.01
<i>cis</i> -Limonene oxide	5.94	1130	0.02	6.46	1394	0.01
<i>trans</i> -Limonene oxide	6.02	1134	0.01	6.63	1407	0.01
<i>trans</i> -Carveol	7.31	1218	0.01	11.42	1787	0.01
Nerol	7.49	1231	tr			
Neral	7.62	1239	0.01	9.50	1627	0.01
Total identified		99.93%			99.88%	
Total reported		99.93%			99.88%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not taken into account in the consolidated total

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