

Date : March 31, 2023

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 23C24-PTH02

Customer identification : Orange Blood - Italy - O10113R

Type : Essential oil

Source : *Citrus sinensis*

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 : Amélie Simard, Analyste

Analysis date : March 28, 2023

Checked and approved by :

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

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PHYSICOCHEMICAL DATA

Physical aspect: Bright orange liquid

Refractive index: 1.4736 ± 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	0.02	Monoterpene
α -Pinene	0.56	Monoterpene
Camphene	0.01	Monoterpene
β -Pinene	0.07	Monoterpene
Sabinene	0.32	Monoterpene
Myrcene	1.94	Monoterpene
α -Phellandrene	0.05	Monoterpene
Octanal	0.19	Aliphatic aldehyde
Pseudolimonene	0.01	Monoterpene
Δ^3 -Carene	0.28	Monoterpene
α -Terpinene	0.02	Monoterpene
para-Cymene	0.02	Monoterpene
β -Phellandrene	0.27	Monoterpene
Limonene	94.26	Monoterpene
(Z)- β -Ocimene	0.01	Monoterpene
(E)- β -Ocimene	0.03	Monoterpene
γ -Terpinene	0.18	Monoterpene
cis-Sabinene hydrate	0.01	Monoterpenic alcohol
Octanol	0.01	Aliphatic alcohol
Isoterpinolene	0.01	Monoterpene
Terpinolene	0.06	Monoterpene
Linalool	0.22	Monoterpenic alcohol
Nonanal	0.03	Aliphatic aldehyde
trans-para-Mentha-2,8-dien-1-ol	0.01	Monoterpenic alcohol
trans-Limonene oxide	0.02	Monoterpenic ether
Citronellal	0.04	Monoterpenic aldehyde
Terpinen-4-ol	0.01	Monoterpenic alcohol
α -Terpineol	0.04	Monoterpenic alcohol
Decanal	0.20	Aliphatic aldehyde
trans-Carveol	0.01	Monoterpenic alcohol
Nerol	0.01	Monoterpenic alcohol
Citronellol	0.01	Monoterpenic alcohol
Neral	0.06	Monoterpenic aldehyde
Geraniol	0.01	Monoterpenic alcohol
Geranial	0.09	Monoterpenic aldehyde
Limonen-10-ol	0.01	Monoterpenic alcohol
Undecanal	0.01	Aliphatic aldehyde
Neryl acetate	0.01	Monoterpenic ester
α -Copaene	0.02	Sesquiterpene
Geranyl acetate	0.01	Monoterpenic ester
β -Elemene	0.01	Sesquiterpene
Dodecanal	0.03	Aliphatic aldehyde
β -Caryophyllene	0.02	Sesquiterpene
β -Copaene	0.02	Sesquiterpene
α -Humulene	0.01	Sesquiterpene

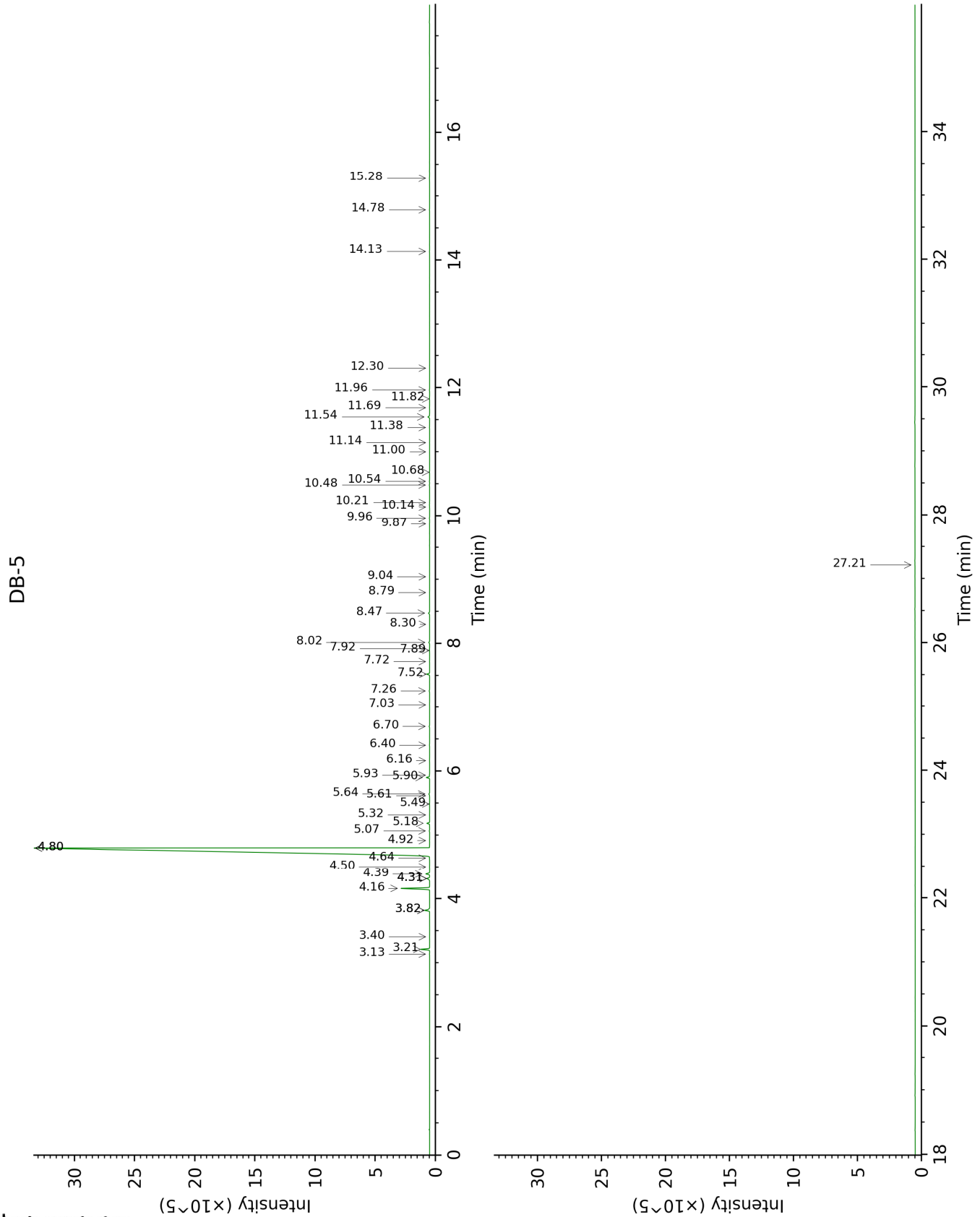
(E)-β-Farnesene	0.01	Sesquiterpene
Germacrene D	0.02	Sesquiterpene
Valencene	0.14	Sesquiterpene
α-Muurolene	0.02	Sesquiterpene
γ-Cadinene	0.01	Sesquiterpene
δ-Cadinene	0.02	Sesquiterpene
α-Elemol	0.01	Sesquiterpenic alcohol
β-Sinensal	0.02	Sesquiterpenic aldehyde
α-Sinensal	0.02	Sesquiterpenic aldehyde
Nootkatone	0.02	Sesquiterpenic ketone
Tetramethoxyflavone isomer	0.01	Flavonoid
Consolidated total	99.53%	

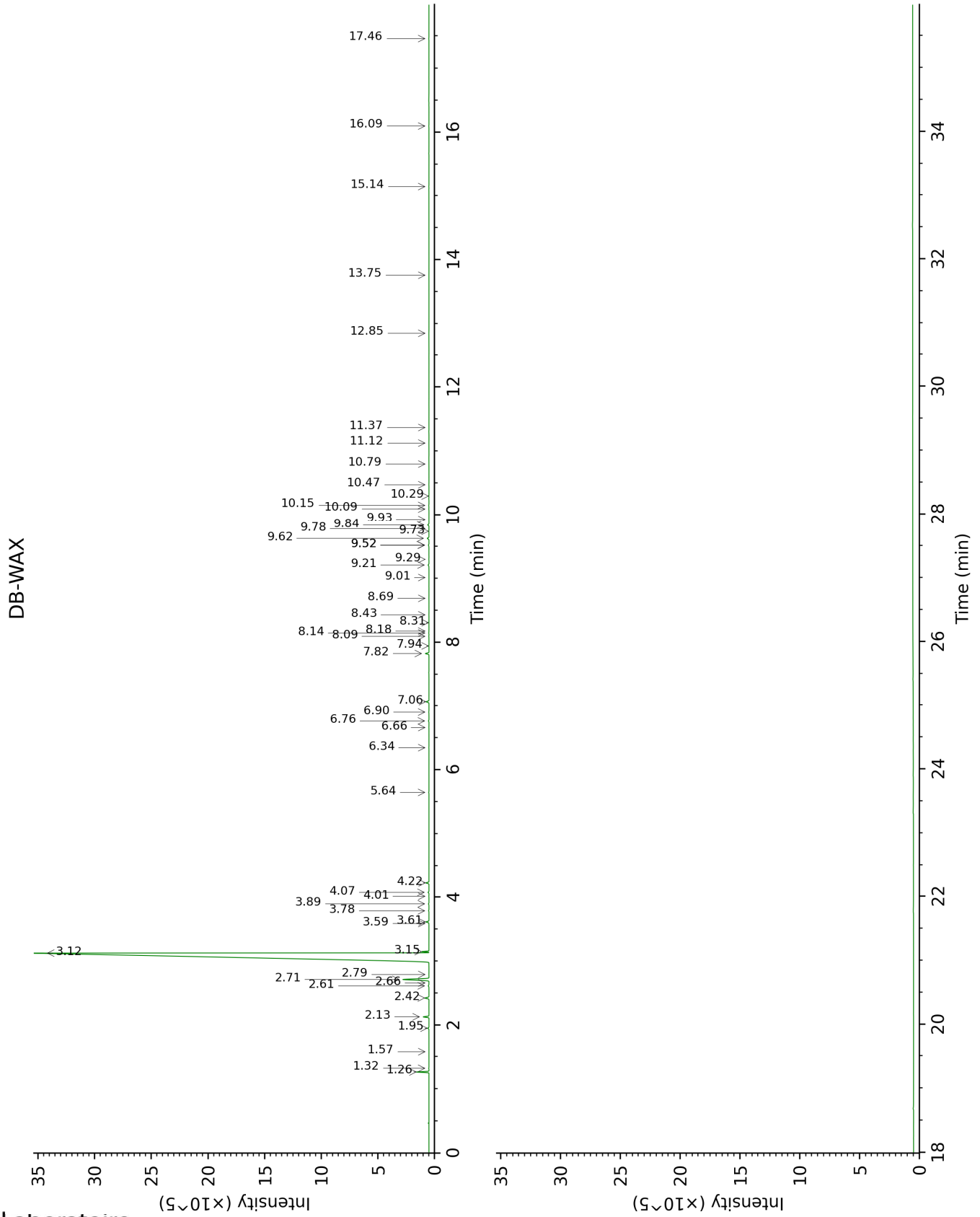
Note: no correction factor was applied

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	3.13	926	0.02	1.32	1000	0.01
α-Pinene	3.21	931	0.56	1.26	992	0.55
Camphene	3.40	944	0.01	1.57	1026	0.01
β-Pinene	3.82*	971	0.39	1.95	1066	0.07
Sabinene	3.82*	971	[0.39]	2.13	1084	0.32
Myrcene	4.16	994	1.94	2.71	1135	1.94
α-Phellandrene	4.31*	1004	0.24	2.61	1127	0.05
Octanal	4.31*	1004	[0.24]	4.22	1256	0.19
Pseudolimonene	4.31*	1004	[0.24]	2.66	1130	0.01
Δ3-Carene	4.39	1008	0.28	2.42	1111	0.27
α-Terpinene	4.50	1015	0.02	2.79	1141	0.02
para-Cymene	4.64	1024	0.02	3.89	1230	0.03
β-Phellandrene	4.80*	1034	94.40	3.15	1171	0.27
Limonene	4.80*	1034	[94.40]	3.12	1169	94.26
(Z)-β-Ocimene	4.92	1041	0.01	3.59	1207	0.01
(E)-β-Ocimene	5.07	1051	0.03	3.78	1222	0.03
γ-Terpinene	5.18	1058	0.18	3.61	1209	0.18
cis-Sabinene hydrate	5.32	1066	0.01	6.66	1429	0.01
Octanol	5.48	1077	0.01	7.94	1527	0.01
Isoterpinolene	5.61	1085	0.01	4.01	1239	0.01
Terpinolene	5.64	1087	0.06	4.07	1244	0.06
Linalool	5.90	1103	0.22	7.82	1517	0.23
Nonanal	5.93	1105	0.03	5.64	1354	0.02
trans-para-Mentha-2,8-dien-1-ol	6.16	1119	0.01	8.69	1585	0.01
trans-Limonene oxide	6.40	1135	0.02	6.34	1406	0.01
Citronellal	6.70	1153	0.04	6.76	1437	0.04
Terpinen-4-ol	7.03	1175	0.01	8.31	1555	0.01
α-Terpineol	7.26	1189	0.04	9.52*	1652	0.05
Decanal	7.52	1206	0.20	7.06	1459	0.19
trans-Carveol	7.72	1219	0.01	11.12	1787	0.01
Nerol	7.89	1230	0.01	10.79	1759	0.01
Citronellol	7.92	1232	0.01	10.47	1731	0.01
Neral	8.02	1239	0.06	9.21	1627	0.07
Geraniol	8.30	1258	0.01	11.36	1808	0.01
Geranial	8.47	1269	0.09	9.84	1678	0.09
Limonen-10-ol	8.79	1291	0.01	12.85	1942	0.01
Undecanal	9.04	1307	0.01	8.43	1565	0.01
Neryl acetate	9.87	1366	0.01	9.93	1685	0.01
α-Copaene	9.96	1372	0.02	6.90	1447	0.02
Geranyl acetate	10.14	1385	0.01	10.29	1716	0.01
β-Elemene	10.21	1390	0.01	8.18	1545	0.01
Dodecanal	10.48	1409	0.03	9.74	1670	0.01
β-Caryophyllene	10.54	1413	0.02	8.14	1542	0.02
β-Copaene	10.68	1424	0.02	8.09	1538	0.02
α-Humulene	11.00	1448	0.01	9.01	1611	0.01
(E)-β-Farnesene	11.14	1458	0.01	9.30	1634	0.02

Germacrene D	11.38	1476	0.02	9.52*	1652	[0.05]
Valencene	11.54	1488	0.14	9.62	1661	0.13
α -Muurolene	11.69	1499	0.02	9.78	1673	0.01
γ -Cadinene	11.82	1509	0.01	10.09	1699	0.02
δ -Cadinene	11.96	1520	0.02	10.15	1704	0.02
α -Elemol	12.30	1547	0.01	13.75	2027	0.01
β -Sinensal	14.13	1695	0.02	15.14	2164	0.02
α -Sinensal	14.78	1750	0.02	16.10	2262	0.02
Nootkatone	15.28	1793	0.02	17.46	2410	0.02
Tetramethoxyflavone isomer	27.21	3136	0.01			
Total identified		99.40%			99.42%	
Total reported		99.40%			99.42%	

*: Two or more compounds are coeluting on this column

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

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index