CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 21D15-ZAA04
Customer identification : Eucalyptus Globulus Biologique - Chine - EAB382455 - CN21020B
Type : Essential oil
Source : *Eucalyptus globulus*
Customer : ZAYAT AROMA

ANALYSIS

Method: PC-MAT-014 **✳ISO** - 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, M. Sc.
Analysis date : April 29, 2021

Checked and approved by :

_____
Alexis St-Gelais, M. Sc., 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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

✳ISO 17025:2017
MÉTHODE CERTIFIÉE
CERTIFIED METHOD

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PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid
Refractive index: 1.4605 ± 0.0003 (20 °C; method PC-MAT-016)

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
Isovaleral	tr	Aliphatic aldehyde
Isoamyl alcohol	0.01	Aliphatic alcohol
Tricyclene	0.01	Monoterpene
α-Thujene	0.03	Monoterpene
α-Pinene	4.93	Monoterpene
α-Fenchene	0.01	Monoterpene
Camphene	0.03	Monoterpene
Thuja-2,4(10)-diene	0.01	Monoterpene
β-Pinene	0.30	Monoterpene
Sabinene	tr	Monoterpene
Myrcene	0.37	Monoterpene
α-Phellandrene	0.67	Monoterpene
Pseudolimonene	0.01	Monoterpene
Δ3-Carene	0.02	Monoterpene
α-Terpinene	0.17	Monoterpene
para-Cymene	3.22	Monoterpene
Limonene	5.77	Monoterpene
1,8-Cineole	80.61	Monoterpenic ether
(Z)-β-Ocimene	0.04	Monoterpene
(E)-β-Ocimene	0.02	Monoterpene
γ-Terpinene	2.98	Monoterpene
cis-Linalool oxide (fur.)	0.01	Monoterpenic alcohol
Terpinolene	tr	Monoterpene
Linalool	tr	Monoterpenic alcohol
α-Terpineol	0.01	Monoterpenic alcohol
Unknown	0.01	Unknown
Bornyl acetate	0.02	Monoterpenic ester
α-Gurjunene	tr	Sesquiterpene
β-Caryophyllene	0.01	Sesquiterpene
Viridiflorene	0.01	Sesquiterpene
Cubeban-11-ol	0.05	Sesquiterpenic alcohol
Ledol	0.01	Sesquiterpenic alcohol
Rosifoliol	0.02	Sesquiterpenic alcohol
γ-Eudesmol	0.02	Sesquiterpenic alcohol
β-Eudesmol	0.01	Sesquiterpenic alcohol
Unknown	0.03	Sesquiterpenic alcohol
Selin-11-en-4α-ol	0.01	Sesquiterpenic alcohol
Aromadendrene	tr	Sesquiterpene
Consolidated total	**99.46%**	

tr: The compound has been detected below 0.005% of total signal.
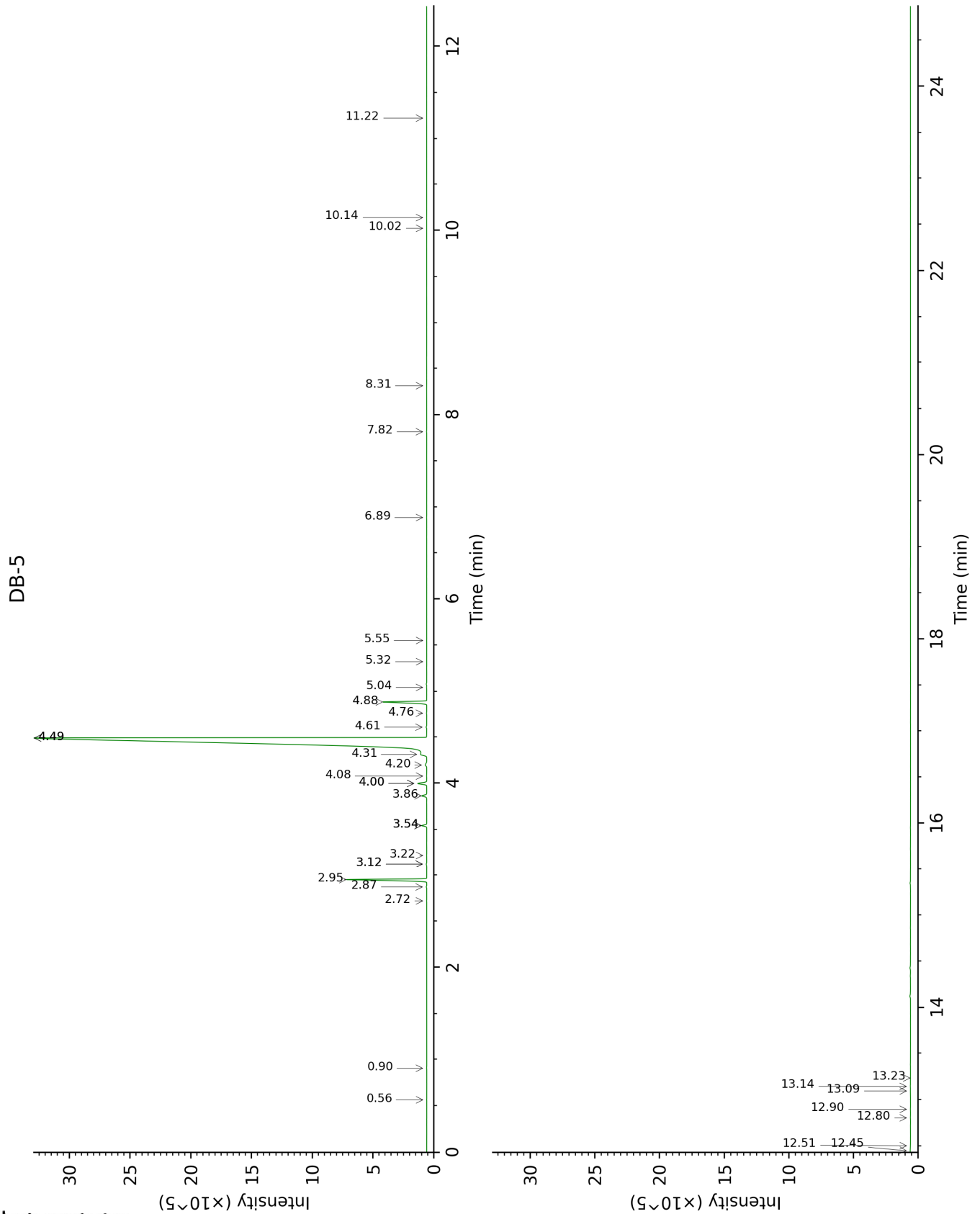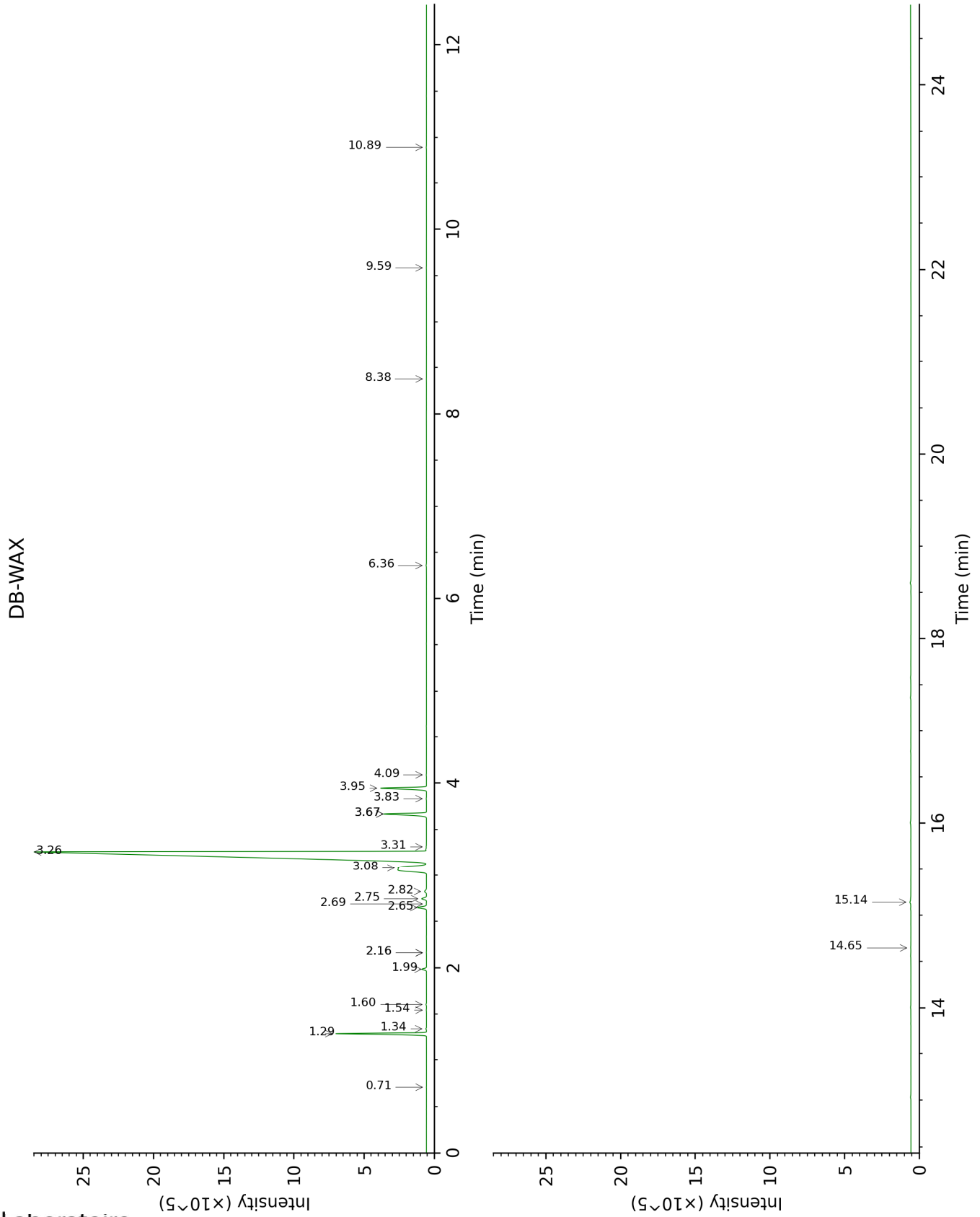
Note: no correction factor was applied

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

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Essential oil, *Eucalyptus globulus*
Internal code: 21D15-ZAA04   Eucalyptus Globulus Biologique - Chine - EAB382455 - CN21020B

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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.

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

DB-5

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DB-WAX

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Isovaleral	0.56	639	tr	0.71	887	tr
Isoamyl alcohol	0.90	731	0.01	3.31	1179	0.02
Tricyclene	2.72	917	0.01			
α-Thujene	2.87	927	0.03	1.34	1001	0.03
α-Pinene	2.95	932	4.93	1.29	993	5.01
α-Fenchene	3.12*	944	0.04	1.54	1021	0.01
Camphene	3.12*	944	[0.04]	1.60	1027	0.03
Thuja-2,4(10)-diene	3.22	951	0.01	2.16*	1084	0.01
β-Pinene	3.54*	972	0.31	1.98	1066	0.30
Sabinene	3.54*	972	[0.31]	2.16*	1084	[0.01]
Myrcene	3.86	994	0.37	2.75	1134	0.36
α-Phellandrene	4.00*	1003	0.69	2.65	1126	0.67
Pseudolimonene	4.00*	1003	[0.69]	2.69	1129	0.01
Δ3-Carene	4.08	1008	0.02			
α-Terpinene	4.20	1016	0.17	2.82	1140	0.17
para-Cymene	4.31†	1023	89.74	3.95	1228	3.22
Limonene	4.49*†	1034	[89.74]	3.08	1161	5.77
1,8-Cineole	4.49*†	1034	[89.74]	3.26	1175	80.61
(*Z*)-β-Ocimene	4.61	1042	0.04	3.67*	1207	3.10
(*E*)-β-Ocimene	4.76	1052	0.02	3.83	1220	0.02
γ-Terpinene	4.88	1059	2.98	3.67*	1207	[3.10]
cis-Linalool oxide (fur.)	5.04	1070	0.01	6.36	1402	0.03
Terpinolene	5.32	1087	tr	4.09	1239	0.01
Linalool	5.55	1102	tr			
α-Terpineol	6.89	1188	0.01	9.59	1652	tr
Unknown [m/z 43, 97 (69), 107 (46), 41 (28), 55 (21), 109 (20)...]	7.82	1249	0.01	10.89	1762	0.01
Bornyl acetate	8.31	1283	0.02			
α-Gurjunene	10.02	1403	tr			
β-Caryophyllene	10.14	1411	0.01			
Viridiflorene	11.22	1492	0.01			
Cubeban-11-ol	12.45	1588	0.05			
Ledol	12.50	1592	0.01			
Rosifoliol	12.80	1616	0.02			
γ-Eudesmol	12.90	1624	0.02	14.65	2107	0.01
β-Eudesmol	13.09	1640	0.01	15.14	2157	0.11
Unknown cadinol analog II [m/z 95, 121 (73), 43 (57), 79 (43), 161 (43), 109)40)... 204 (35), 222 (2)]	13.14	1644	0.03			

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Selin-11-en-4α-ol	13.23	1652	0.01				
Aromadendrene					8.38	1555	tr
Total identified		**99.57%**				**99.52%**	
Total reported		**99.61%**				**99.54%**	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, not 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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