Date : November 02, 2022

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 22I29-PTH01
Customer identification : Ginger Root CO2 ORGANIC - GL0100R
Type : CO2 extract
Source : *Zingiber officinale*
Customer : Plant Therapy

Analysis

Method: Dilution of a known amount with an appropriate solvent, and addition of a methyl octanoate internal standard for quantitation. Application of a correction factor[1]. Analysis with PC-MAT-004 - Terpenes and volatiles profiling by response factor (in French); identifications validated by GC-MS.
Analyst : Alexis St-Gelais, Ph. D., Chimiste 2013-174
Analysis date : October 06, 2022

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

This report is an update of the version first issued on October 06, 2022 to correct a mistake in the lot number.

Reference

(1) Cachet, T.; Brevard, H.; Chaintreau, A.; Demyttenaere, J.; French, L.; Gassenmeier, K.; Joulain, D.; Koenig, T.; Leijs, H.; Liddle, P.; et al. IOFI Recommended Practice for the Use of Predicted Relative-Response Factors for the Rapid Quantification of Volatile Flavouring *Compounds by GC-FID. Flavour Fragr. J. 2016, 31 (3), 191–194.*

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PHYSICOCHEMICAL DATA

Physical aspect: Viscous brownish yellow liquid
Refractive index: 1.5071 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

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

ANALYSIS SUMMARY

Identification	(mg/g)	% m/m	Classe
Hexanal	5.59	0.56	Aliphatic aldehyde
2-Heptanone	0.17	0.02	Aliphatic ketone
2-Heptanol	0.43	0.04	Aliphatic alcohol
α-Thujene	0.06	0.01	Monoterpene
α-Pinene	2.81	0.28	Monoterpene
Camphene	8.28	0.83	Monoterpene
Sabinene	0.15	0.02	Monoterpene
β-Pinene	0.41	0.04	Monoterpene
6-Methyl-5-hepten-2-one	0.57	0.06	Aliphatic ketone
Myrcene	1.64	0.16	Monoterpene
α-Phellandrene	0.56	0.06	Monoterpene
Octanal	1.92	0.19	Aliphatic aldehyde
Δ3-Carene	0.09	0.01	Monoterpene
para-Cymene	0.17	0.02	Monoterpene
β-Phellandrene	15.08	1.51	Monoterpene
1,8-Cineole	[17.13]	[1.71]	Monoterpenic ether
Limonene	2.41	0.24	Monoterpene
2-Heptyl acetate	0.14	0.01	Aliphatic ester
γ-Terpinene	0.10	0.01	Monoterpene
cis-Linalool oxide (fur.)	0.03	tr	Monoterpenic alcohol
Terpinolene	0.50	0.05	Monoterpene
Unknown	0.91	0.09	Oxygenated monoterpene
Rosefuran	0.70	0.07	Monoterpenic ether
Linalool	1.45	0.15	Monoterpenic alcohol
2-Nonanol	0.26	0.03	Aliphatic alcohol
Bornyl methyl ether	0.03	tr	Monoterpenic ether
(*E*)-4,8-Dimethylnona-1,3,7-triene	0.15	0.02	Terpene derivative
trans-Pinene hydrate	0.24	0.02	Monoterpenic alcohol
Camphor	0.40	0.04	Monoterpenic ketone
Camphene hydrate	0.31	0.03	Monoterpenic alcohol
exo-Isocitral	0.11	0.01	Monoterpenic aldehyde
Citronellal	0.11	0.01	Monoterpenic aldehyde
Borneol	4.16	0.42	Monoterpenic alcohol
Isoneral	0.11	0.01	Monoterpenic aldehyde
Unknown	0.19	0.02	Oxygenated monoterpene
Rosefuran oxide	1.30	0.13	Monoterpenic ether
Terpinen-4-ol	[1.08]	[0.11]	Monoterpenic alcohol
Cryptone	0.10	0.01	Normonoterpenic ketone
para-Cymen-8-ol	0.24	0.02	Monoterpenic alcohol
α-Terpineol	2.07	0.21	Monoterpenic alcohol
Myrtenal	0.34	0.03	Monoterpenic aldehyde
Myrtenol	0.29	0.03	Monoterpenic alcohol
trans-Piperitol	0.32	0.03	Monoterpenic alcohol
Decanal	4.43	0.44	Aliphatic aldehyde
2,3-Epoxyneral?	0.10	0.01	Monoterpenic aldehyde
Bornyl formate	0.16	0.02	Monoterpenic ester
Nerol	0.09	0.01	Monoterpenic alcohol
Citronellol	1.53	0.15	Monoterpenic alcohol

Neral	5.71	0.57	Monoterpenic aldehyde
Unknown	0.51	0.05	Oxygenated monoterpene
Geraniol	4.19	0.42	Monoterpenic alcohol
Geranial	9.13	0.91	Monoterpenic aldehyde
Citronellyl formate	0.24	0.02	Monoterpenic ester
Bornyl acetate	0.74	0.07	Monoterpenic ester
2-Undecanone	0.94	0.09	Aliphatic ketone
Geranyl formate	0.10	0.01	Monoterpenic ester
2-Undecanol	0.17	0.02	Aliphatic alcohol
Carvacrol	0.18	0.02	Monoterpenic alcohol
δ-Elemene	0.27	0.03	Sesquiterpene
α-Cubebene	0.08	0.01	Sesquiterpene
Citronellyl acetate	0.78	0.08	Monoterpenic ester
Cyclosativene I	0.63	0.06	Sesquiterpene
Cyclosativene II	0.39	0.04	Sesquiterpene
Neryl acetate	0.12	0.01	Monoterpenic ester
α-Copaene	1.64	0.16	Sesquiterpene
β-Cubebene	0.20	0.02	Sesquiterpene
Geranyl acetate	4.61	0.46	Monoterpenic ester
β-Elemene	2.44	0.24	Sesquiterpene
Vanillin	0.17	0.02	Simple phenolic
Sesquithujene	0.79	0.08	Sesquiterpene
Dodecanal	0.30	0.03	Aliphatic aldehyde
β-Caryophyllene	0.37	0.04	Sesquiterpene
β-Copaene	0.25	0.03	Sesquiterpene
γ-Elemene	0.68	0.07	Sesquiterpene
trans-α-Bergamotene	0.22	0.02	Sesquiterpene
Nerylacetone	0.09	0.01	Terpenic ketone
Sesquisabinene A	0.18	0.02	Sesquiterpene
Unknown	0.79	0.08	Sesquiterpene
α-Humulene	0.22	0.02	Sesquiterpene
allo-Aromadendrene	1.43	0.14	Sesquiterpene
Sesquisabinene B	0.88	0.09	Sesquiterpene
(*E*)-β-Farnesene	1.42	0.14	Sesquiterpene
Selina-4,11-diene	0.58	0.06	Sesquiterpene
γ-Muurolene	0.57	0.06	Sesquiterpene
Germacrene D	5.22	0.52	Sesquiterpene
β-Selinene	1.56	0.16	Sesquiterpene
ar-Curcumene	18.21	1.82	Sesquiterpene
Unknown	5.10	0.51	Sesquiterpene
epi-Cubebol	0.23	0.02	Sesquiterpenic alcohol
2-Tridecanone	0.17	0.02	Aliphatic ketone
Bicyclosesquiphellandrene?	10.27	1.03	Sesquiterpene
α-Zingiberene	98.31	9.83	Sesquiterpene
β-Bisabolene	24.02	2.40	Sesquiterpene
Cubebol	0.11	0.01	Sesquiterpenic alcohol
(3*E*,6*E*)-α-Farnesene	23.11	2.31	Sesquiterpene
γ-Cadinene	0.07	0.01	Sesquiterpene
7-epi-α-Selinene	0.22	0.02	Sesquiterpene
trans-Calamenene	0.19	0.02	Sesquiterpene
δ-Cadinene	0.50	0.05	Sesquiterpene
β-Sesquiphellandrene	40.75	4.08	Sesquiterpene

(*E*)-γ-Bisabolene	1.04	0.10	Sesquiterpene
Unknown	1.02	0.10	Oxygenated sesquiterpene
α-Elemol	1.73	0.17	Sesquiterpenic alcohol
Germacrene B	1.53	0.15	Sesquiterpene
cis-Sesquisabinene hydrate	0.87	0.09	Sesquiterpenic alcohol
(*E*)-Nerolidol	2.07	0.21	Sesquiterpenic alcohol
1'-Hydroxyeugenol	1.11	0.11	Phenylpropanoid
ar-Turmerol	0.31	0.03	Sesquiterpenic alcohol
trans-Sesquisabinene hydrate	2.17	0.22	Sesquiterpenic alcohol
Unknown	0.44	0.04	Oxygenated sesquiterpene
cis-Zingiberenol	2.87	0.29	Sesquiterpenic alcohol
10-epi-γ-Eudesmol	0.48	0.05	Sesquiterpenic alcohol
Unknown	1.73	0.17	Oxygenated sesquiterpene
γ-Eudesmol	0.60	0.06	Sesquiterpenic alcohol
trans-Zingiberenol	1.48	0.15	Sesquiterpenic alcohol
β-Eudesmol	0.28	0.03	Sesquiterpenic alcohol
Zingerone	18.63	1.86	Phenylbutanoid
α-Eudesmol	1.08	0.11	Sesquiterpenic alcohol
(3*E*,5*E*)-7-Hydroxyfarnesene	0.85	0.09	Sesquiterpenic alcohol
α-Bisabolol	1.07	0.11	Sesquiterpenic alcohol
Zingerone methyl ether	0.61	0.06	Simple phenolic
Unknown	3.24	0.32	Oxygenated sesquiterpene
Unknown	3.01	0.30	Oxygenated sesquiterpene
Unknown	2.02	0.20	Oxygenated sesquiterpene
Oplopanone	0.29	0.03	Sesquiterpenic alcohol
Xanthorizzhol?	1.23	0.12	Sesquiterpenic alcohol
Unknown	0.67	0.07	Oxygenated sesquiterpene
Unknown	0.64	0.06	Oxygenated sesquiterpene
Unknown	0.56	0.06	Oxygenated sesquiterpene
Unknown	0.18	0.02	Oxygenated sesquiterpene
Cryptomeridiol	0.27	0.03	Sesquiterpenic alcohol
Unknown	3.06	0.31	Oxygenated sesquiterpene
Unknown	1.17	0.12	Oxygenated sesquiterpene
Unknown	0.76	0.08	Oxygenated sesquiterpene
Unknown	0.50	0.05	Oxygenated sesquiterpene
Unknown	0.37	0.04	Unknown
Geranyl-para-cymene	0.98	0.10	Diterpene
Palmitic acid	2.36	0.24	Aliphatic acid
(*E*,*E*)-Geranyllinalool	0.97	0.10	Diterpenic alcohol
[4]-Shogaol	0.40	0.04	Gingerol derivative
Unknown	0.20	0.02	Gingerol derivative
Unknown	0.51	0.05	Gingerol derivative
Unknown	0.36	0.04	Oxygenated diterpene
Linoleic acid	2.26	0.23	Aliphatic acid
Oleic acid	3.93	0.39	Aliphatic acid
cis-Vaccenic acid?	0.68	0.07	Aliphatic acid
[4]-Gingerol	1.57	0.16	Gingerol derivative
[4]-Isogingerol?	0.72	0.07	Gingerol derivative
[6]-Isoshogaol?	0.34	0.03	Gingerol derivative
[6]-Paradol	2.02	0.20	Gingerol derivative
Methyl [6]-isoshogaol?	0.08	0.01	Gingerol derivative
[6]-Dihydroparadol?	0.24	0.02	Gingerol derivative

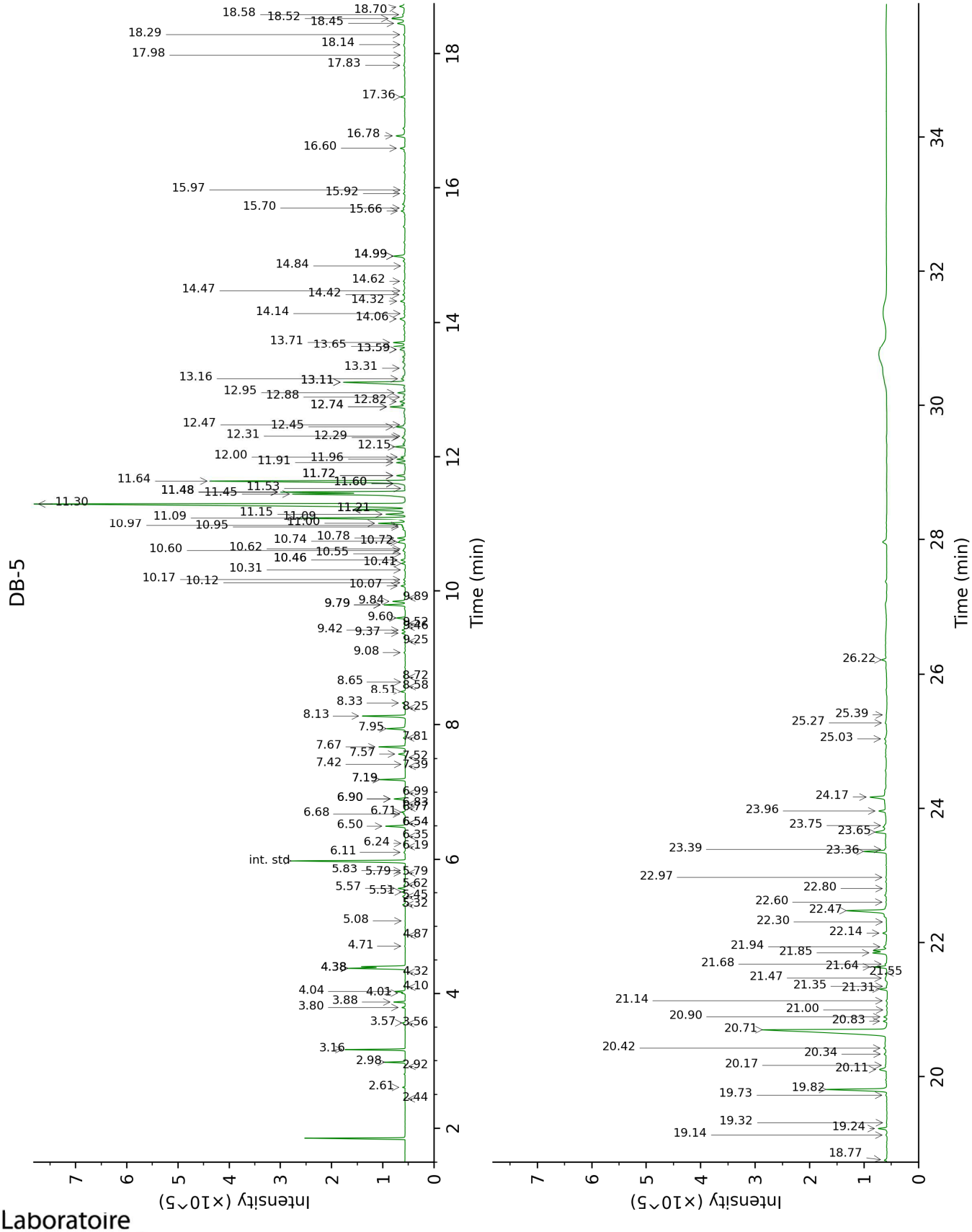
[6]-Shogaol	16.33	1.63	Gingerol derivative
Methyl [6]-shogaol	2.37	0.24	Gingerol derivative
Acetoxy-[6]-dihydroparadol	0.22	0.02	Gingerol derivative
Diacetoxy-[4]-gingerdiol	0.53	0.05	Gingerol derivative
Geranyl laurate	0.41	0.04	Monoterpenic ester
[6]-Gingerol	67.87	6.79	Gingerol derivative
[6]-Isogingerol?	0.93	0.09	Gingerol derivative
[8]-Isoshogaol	0.80	0.08	Gingerol derivative
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	0.13	0.01	Gingerol derivative
[8]-Paradol	0.26	0.03	Gingerol derivative
Acetoxy-[6]-gingerol	2.09	0.21	Gingerol derivative
Unknown	0.30	0.03	Gingerol derivative
[6]-Gingerdiol isomer I	0.64	0.06	Gingerol derivative
[6]-Gingerdiol isomer II	0.30	0.03	Gingerol derivative
[8]-Shogaol	3.41	0.34	Gingerol derivative
5-Acetoxy-[6]-gingerdiol	0.60	0.06	Gingerol derivative
Methyl 5-acetoxy-[6]-gingerdiol	4.07	0.41	Gingerol derivative
[8]-Gingerdione	1.16	0.12	Gingerol derivative
1-Dehydro-[6]-gingerdione	1.05	0.11	Gingerol derivative
[8]-Gingerol	0.10	0.01	Gingerol derivative
1-(4'-Hydroxy-3'-methoxyphenyl)-7-tetradecen-3-one?	13.23	1.32	Gingerol derivative
[10]-Isoshogaol	0.19	0.02	Gingerol derivative
[10]-Paradol	0.12	0.01	Gingerol derivative
Unknown	0.28	0.03	Gingerol derivative
[10]-Shogaol	5.39	0.54	Gingerol derivative
Unknown	0.39	0.04	Gingerol derivative
[10]-Gingerdione	3.72	0.37	Gingerol derivative
1-Dehydro-[8]-gingerdione	0.34	0.03	Gingerol derivative
[12]-Isoshogaol?	1.50	0.15	Gingerol derivative
Unknown	4.49	0.45	Gingerol derivative
[12]-Shogaol	0.72	0.07	Gingerol derivative
[12]-Gingerdione	0.64	0.06	Gingerol derivative
1-Dehydro-[10]-gingerdione	0.31	0.03	Gingerol derivative
[6]-Gingerdiol geranial acetal	1.17	0.12	Gingerol derivative
Consolidated total	**544.89 mg/g**	**54.49%**	

*: Individual compounds concentration could not be found due to overlapping coelutions on columns considered
[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.

Individual compounds contents were corrected following the method of Cachet et al., 2016 (Flavour and Fragrance Journal guidelines).
Unknown compounds are expressed in equivalents of internal standard without correction.

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.


DB-5
Intensity (×10^5)
Time (min)
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18.58
18.52
18.45
18.29
18.14
17.98
17.83
17.36
16.78
16.60
15.97
15.92
15.70
15.66
14.99
14.84
14.62
14.47
14.42
14.32
14.14
14.06
13.71
13.65
13.58
13.31
13.16
13.11
12.95
12.88
12.82
12.74
12.47
12.45
12.31
12.29
12.15
12.00
11.91
11.96
11.72
11.64
11.60
11.48
11.45
11.53
11.30
11.21
11.09
11.15
11.09
10.97
10.95
11.00
10.74
10.78
10.72
10.60
10.62
10.55
10.46
10.41
10.31
10.17
10.12
10.07
9.89
9.79
9.84
9.60
9.53
9.46
9.42
9.37
9.25
9.08
8.72
8.65
8.58
8.51
8.33
8.25
8.13
7.95
7.81
7.67
7.57
7.52
7.42
7.39
7.19
6.99
6.90
6.83
6.77
6.68
6.71
6.54
6.50
6.35
6.24
6.19
6.11
int. std
5.83
5.79
5.79
5.62
5.57
5.51
5.45
5.32
5.08
4.87
4.71
4.38
4.32
4.10
4.04
4.01
3.88
3.80
3.57
3.56
3.16
2.98
2.92
2.61
2.44
26.22
25.39
25.27
25.03
24.17
23.96
23.75
23.65
23.39
23.36
22.97
22.80
22.60
22.47
22.30
22.14
21.94
21.85
21.68
21.64
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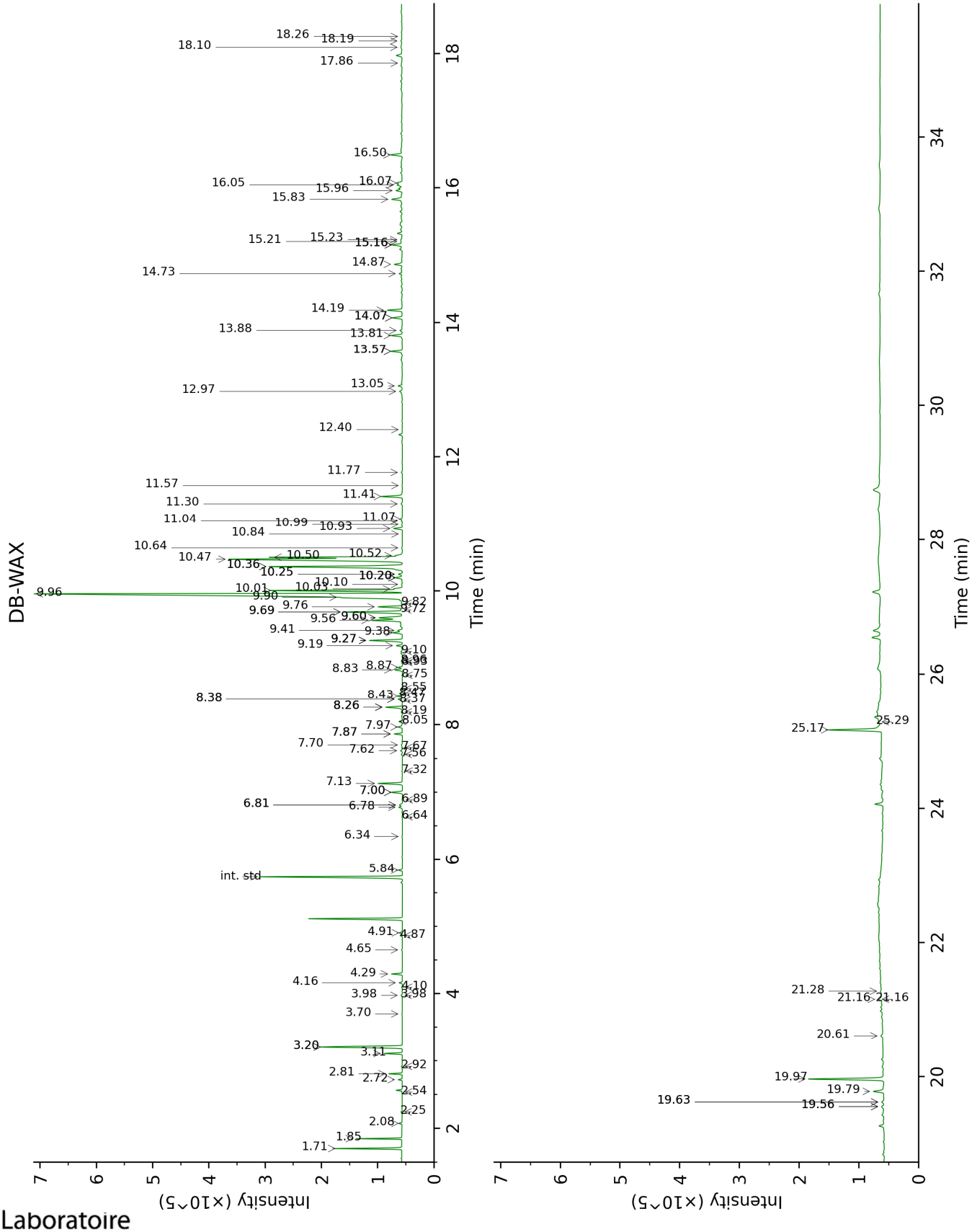
19.14
18.77



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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	mg/g	R.T	R.I	mg/g
Hexanal	1.45	808	5.59	1.85	1050	5.57
2-Heptanone	2.44	894	0.17	2.92	1146	0.13
2-Heptanol	2.61	907	0.43	4.86	1297	0.42
α-Thujene	2.92	928	0.06	1.46	1009	0.06
α-Pinene	2.98	932	2.81	1.40	1004	3.04
Camphene	3.16	945	8.28	1.71	1035	8.32
Sabinene	3.56	972	0.15	2.25	1090	0.15
β-Pinene	3.57	973	0.41	2.08	1073	0.41
6-Methyl-5-hepten-2-one	3.80	988	0.57	4.90	1300	0.62
Myrcene	3.88	994	1.64	2.81	1137	1.65
α-Phellandrene	4.01	1003	0.56	2.72	1130	0.51
Octanal	4.04	1004	1.92	4.30	1254	1.90
Δ3-Carene	4.10	1008	0.09	2.54	1115	0.09
para-Cymene	4.32	1022	0.17	3.98*	1230	0.22
β-Phellandrene	4.38*†	1026	17.49	3.20*	1169	15.21
1,8-Cineole	4.38*†	1026	[19.87]	3.20*	1169	[17.28]
Limonene	4.38*†	1026	[17.49]	3.11	1161	2.41
2-Heptyl acetate	4.71	1047	0.14	4.10	1239	0.17
γ-Terpinene	4.87	1057	0.10	3.70	1209	0.10
cis-Linalool oxide (fur.)	5.08	1071	0.03	6.34	1400	0.14
Terpinolene	5.32	1086	0.50	4.16	1244	0.48
Unknown [m/z 96, 109 (55), 79 (41), 67 (38), 41 (36)... 150 (3)]	5.45	1094	0.91	8.47	1561	0.71
Rosefuran	5.51	1098	0.70	5.84	1364	0.73
Linalool	5.56	1102	1.45	7.87*	1514	1.41
2-Nonanol	5.62	1105	0.26	7.62	1495	0.35
Bornyl methyl ether	5.79*	1117	0.19	3.98*	1230	[0.27]
(*E*)-4,8-Dimethylnona-1,3,7-triene	5.79*	1117	[0.17]	4.65	1281	0.15
trans-Pinene hydrate	5.83	1119	0.24	7.70	1502	0.28
Camphor	6.11	1137	0.40	7.00*	1449	2.20
Camphene hydrate	6.19	1143	0.31	8.37	1553	0.28
exo-Isocitral	6.24	1146	0.11	7.32	1473	0.13
Citronellal	6.35	1153	0.11	6.89	1441	0.10
Borneol	6.50	1162	4.16	9.60*†	1651	[12.48]
Isoneral	6.54*	1165	0.28	7.67	1499	0.11
Unknown [m/z 109, 79 (18), 81 (15), 91 (12), 77 (10)... 152 (3)]	6.54*	1165	[0.32]			
Rosefuran oxide	6.68†	1174	1.30	8.38*	1554	0.99
Terpinen-4-ol	6.71†	1176	[1.08]	8.38*	1554	[0.83]
Cryptone	6.77	1180	0.10	8.96	1599	0.31
para-Cymen-8-ol	6.83	1184	0.24	11.30	1793	0.32
α-Terpineol	6.90*	1189	2.39	9.60*†	1651	[12.48]
Myrtenal	6.90*	1189	[2.49]	8.55	1567	0.34
Myrtenol	6.99	1195	0.29	10.64	1737	0.20
trans-Piperitol	7.19*	1208	4.85	10.20*	1700	1.60

Decanal	7.19*	1208	[4.75]	7.13	1459	4.43
2,3-Epoxyneral?	7.39	1221	0.10			
Bornyl formate	7.42	1223	0.16	7.87*	1514	[1.59]
Nerol	7.52	1230	0.09	10.84	1754	0.03
Citronellol	7.57	1233	1.53	10.52	1727	1.23
Neral	7.68	1241	5.71	9.26*	1624	7.02
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27)...]	7.81	1250	0.51	11.08	1774	0.48
Geraniol	7.94	1259	4.19	11.41	1803	4.41
Geranial	8.13	1272	9.13	9.90	1676	10.49
Citronellyl formate	8.25	1280	0.24	8.75	1582	0.12
Bornyl acetate	8.33	1285	0.74	8.05	1528	0.75
2-Undecanone	8.51	1297	0.94	8.43	1558	0.85
Geranyl formate	8.58	1302	0.10	9.72	1660	0.39
2-Undecanol	8.65	1304	0.17	10.10	1691	0.24
Carvacrol	8.72	1309	0.18	15.16*	2154	2.30
δ-Elemene	9.08	1335	0.27	6.81*	1435	0.64
α-Cubebene	9.25	1347	0.08	6.64	1422	0.08
Citronellyl acetate	9.37	1356	0.78	9.26*	1624	[7.58]
Cyclosativene I	9.42	1359	0.63	6.78	1433	0.65
Cyclosativene II	9.46	1362	0.39	6.81*	1435	[0.64]
Neryl acetate	9.52	1366	0.12	10.03	1686	1.52
α-Copaene	9.60	1372	1.64	7.00*	1449	[1.87]
β-Cubebene	9.79*	1385	3.81	7.56	1491	0.20
Geranyl acetate	9.79*	1385	[4.86]	10.36*	1714	34.07
β-Elemene	9.84	1389	2.44	8.26*	1545	3.03
Vanillin	9.90	1393	0.17	18.10	2468	0.62
Sesquithujene	10.07	1405	0.79	7.97	1522	0.83
Dodecanal	10.12	1409	0.30	9.82	1668	0.28
β-Caryophyllene	10.17	1412	0.37	8.26*	1545	[3.03]
β-Copaene	10.31	1423	0.25	8.19	1540	0.25
γ-Elemene	10.41	1430	0.68	8.86	1592	0.71
trans-α-Bergamotene	10.46*	1434	0.94	8.26*	1545	[3.03]
Nerylacetone	10.46*	1434	[1.05]	11.57	1817	0.09
Sesquisabinene A	10.55	1441	0.18	8.93	1597	0.11
Unknown [m/z 139, 69 (43), 91 (42), 41 (36), 81 (36), 43 (36)... 204 (5)]	10.60	1445	0.79	14.07*	2048	2.38
α-Humulene	10.62	1447	0.22	9.10	1610	0.25
allo-Aromadendrene	10.72	1454	1.43	8.83	1589	1.34
Sesquisabinene B	10.74	1455	0.88	9.19	1618	1.08
(*E*)-β-Farnesene	10.78	1459	1.42	9.38	1633	1.75
Selina-4,11-diene	10.95	1471	0.58	9.26*	1624	[5.94]
γ-Muurolene	10.97	1473	0.57	9.41	1636	0.88
Germacrene D	11.00	1475	5.22	9.56†	1648	10.79
β-Selinene	11.09*	1482	20.91	9.69*	1658	10.68
ar-Curcumene	11.09*	1482	[19.68]	10.50	1725	18.21
Unknown [m/z 161, 91 (100), 105 (93), 79 (89), 93 (89), 107 (79)... 204 (34)]	11.15	1486	5.10	9.76	1664	5.59
epi-Cubebol	11.22*	1491	11.60	11.77	1835	0.23

2-Tridecanone	11.22*	1491	[11.54]	10.99	1767	0.17
Bicyclosesquiphellandrene?	11.22*	1491	[10.64]	9.69*	1658	[10.68]
α-Zingiberene	11.30	1498	98.31	9.96	1680	96.70
β-Bisabolene	11.45	1509	24.02	10.01	1684	21.30
Cubebol	11.48*	1511	25.49	12.40	1891	0.11
(3*E*,6*E*)-α-Farnesene	11.48*	1511	[23.37]	10.36*	1714	[26.73]
γ-Cadinene	11.48*	1511	[23.37]	10.20*	1700	[1.38]
7-epi-α-Selinene	11.53	1515	0.22	10.25*	1704	0.72
trans-Calamenene	11.60*	1521	0.88	11.04	1771	0.19
δ-Cadinene	11.60*	1521	[0.94]	10.25*	1704	[0.72]
β-Sesquiphellandrene	11.64	1524	40.75	10.47	1723	42.08
(*E*)-γ-Bisabolene	11.72*	1530	1.80	10.20*	1700	[1.38]
Unknown [m/z 177, 159 (67), 41 (43), 91 (43), 43 (41)... 220 (t)]	11.72*	1530	[2.40]	13.05	1951	1.02
α-Elemol	11.91	1546	1.73	13.81	2022	2.27
Germacrene B	11.96	1550	1.53	10.93	1762	1.48
cis-Sesquisabinene hydrate	12.00	1552	0.87	12.97	1943	0.59
(*E*)-Nerolidol	12.15	1564	2.07	13.57*	1999	2.10
1'-Hydroxyeugenol	12.29	1575	1.11	19.63*	2647	0.67
ar-Turmerol	12.31	1577	0.31	15.21	2159	0.31
trans-Sesquisabinene hydrate	12.44	1588	2.17	14.07*	2048	[1.95]
Unknown [m/z 132, 118 (89), 145 (85), 119 (79), 117 (60)...]	12.47	1590	0.44	13.57*	1999	[2.56]
cis-Zingiberenol	12.74*	1612	3.31	14.19	2058	2.87
10-epi-γ-Eudesmol	12.74*	1612	[3.31]	13.88	2030	0.48
Unknown [m/z 119, 85 (92), 105 (37), 120 (36), 91 (28)... 218 (6)]	12.82	1618	1.73	16.05	2246	1.40
γ-Eudesmol	12.88	1623	0.60	14.73	2112	0.56
trans-Zingiberenol	12.95	1629	1.48	14.87	2125	1.65
β-Eudesmol	13.11*	1642	16.40	15.23	2162	0.28
Zingerone	13.11*	1642	[20.82]	19.97	2688	18.63
α-Eudesmol	13.16	1646	1.08	15.16*	2154	[2.33]
(3*E*,5*E*)-7-Hydroxyfarnesene	13.31	1659	0.85	16.07	2249	1.21
α-Bisabolol	13.59*	1682	1.56	15.16*	2154	[2.33]
Zingerone methyl ether	13.59*	1682	[1.92]			
Unknown [m/z 137, 119 (70), 84 (69), 41 (68), 69 (53), 55 (45), 109 (38)... 222 (2)]	13.65	1687	3.24	15.83	2223	3.04
Unknown [m/z 69, 41 (59), 118 (33), 43 (32), 55 (31)... 234? (t)]	13.71	1692	3.01	16.50	2293	3.09
Unknown [m/z 119, 91 (31), 105 (29), 41 (25), 133 (23), 158 (21)...]	14.06	1722	2.02			
Oplopanone	14.14	1728	0.29	17.86	2442	0.17
Xanthorizzhol?	14.32	1744	1.23	19.63*	2647	[0.48]

Unknown [m/z 82, 43 (85), 91 (67), 93 (66), 41 (66), 69 (59), 106 (47)... 218 (5)...]	14.42	1753	0.67			
Unknown [m/z 43, 82 (100), 41 (86), 69 (76), 93 (72), 91 (72)... 218 (4)...]	14.47	1758	0.64			
Unknown [m/z 79, 41 (77), 135 (75), 69 (74), 43 (70)... 220 (9)]	14.62	1770	0.56	18.26	2486	0.18
Unknown [m/z 69, 41 (96), 43 (90), 109 (51), 55 (42), 81 (33)...]	14.84	1790	0.18	18.19	2479	0.30
Cryptomeridiol	14.99*	1803	3.29	19.56*	2639	0.71
Unknown [m/z 69, 43 (95), 41 (84), 109 (78), 95 (54), 93 (49)... 177 (36), 220 (2)...]	14.99*	1803	[3.71]	19.79	2666	3.06
Unknown [m/z 109, 69 (58), 43 (56), 41 (42), 135 (37), 55 (27)... 220 (5)]	15.66	1864	1.17	21.16*	2837	1.07
Unknown [m/z 137, 218 (84), 119 (72), 69 (64), 175 (61), 41 (60), 93 (58)]	15.70	1868	0.76	20.61	2768	0.69
Unknown [m/z 125, 41 (88), 109 (76), 69 (76), 151 (68), 55 (45), 95 (36)... 236 (21)]	15.92	1887	0.50	21.28	2852	0.27
Unknown [m/z 43, 109 (89), 69 (71), 41 (63), 94 (53), 79 (47), 93 (44)...]	15.97	1892	0.37	21.16*	2837	[1.07]
Geranyl-para-cymene	16.60	1952	0.98	15.96	2237	1.16
Palmitic acid	16.78	1969	2.36			
(*E*,*E*)-Geranyllinalool	17.36	2025	0.97			
[4]-Shogaol	17.83	2072	0.40			
Unknown [m/z 135, 150 (34), 77 (13), 163 (11)... 262 (2)]	17.98	2087	0.20			
Unknown [m/z 137, 203 (15), 138 (11), 105 (11), 41 (9)... 274 (7), 286? (1)]	18.14	2102	0.51			
Unknown [m/z 69, 41 (44), 121 (37), 107 (36), 81 (33)... 272 (2)]	18.28	2118	0.36			
Linoleic acid	18.45	2135	2.26			
Oleic acid	18.52	2142	3.93			
cis-Vaccenic acid?	18.58	2148	0.68			
[4]-Gingerol	18.70	2161	1.57			
[4]-Isogingerol?	18.77	2168	0.72			
[6]-Isoshogaol?	19.14	2206	0.34			
[6]-Paradol	19.24	2217	2.02			
Methyl [6]-isoshogaol?	19.32	2226	0.08			
[6]-Dihydroparadol?	19.73	2270	0.24	25.29	3410	0.22
[6]-Shogaol	19.82	2279	16.33	25.17	3392	13.53
Methyl [6]-shogaol	20.11	2311	2.37			

Acetoxy-[6]-dihydroparadol	20.17	2318	0.22			
Diacetoxy-[4]-gingerdiol	20.34	2336	0.53			
Geranyl laurate	20.42	2346	0.41	19.56*	2639	[0.67]
[6]-Gingerol	20.71	2378	67.87			
[6]-Isogingerol?	20.83	2392	0.93			
[8]-Isoshogaol	20.90	2399	0.80			
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	21.00	2411	0.13			
[8]-Paradol	21.14	2427	0.26			
Acetoxy-[6]-gingerol	21.31	2447	2.09			
Unknown [m/z 137, 316 (31), 109 (24), 179 (21), 150 (20)]	21.35	2452	0.30			
[6]-Gingerdiol isomer I	21.47	2466	0.64			
[6]-Gingerdiol isomer II	21.55	2475	0.30			
[8]-Shogaol	21.64	2485	3.41			
5-Acetoxy-[6]-gingerdiol	21.68	2490	0.60			
Methyl 5-acetoxy-[6]-gingerdiol	21.85	2510	4.07			
[8]-Gingerdione	21.94	2520	1.16			
1-Dehydro-[6]-gingerdione	22.14	2545	1.05			
[8]-Gingerol	22.30	2565	0.10			
1-(4'-Hydroxy-3'-methoxyphenyl)-7-tetradecen-3-one?	22.47	2585	13.23			
[10]-Isoshogaol	22.60	2600	0.19			
[10]-Paradol	22.80	2625	0.12			
Unknown [m/z 137, 109 (24), 207 (24), 43 (24)... 344 (14)]	22.97	2646	0.28			
[10]-Shogaol	23.36	2695	5.39			
Unknown [m/z 137, 205 (13), 332 (9), 122 (7)]	23.39	2699	0.39			
[10]-Gingerdione	23.65	2732	3.72			
1-Dehydro-[8]-gingerdione	23.75	2744	0.34			
[12]-Isoshogaol?	23.96	2772	1.50			
Unknown [m/z 137, 138 (8), 122 (6), 372 (6)]	24.17	2799	4.49			
[12]-Shogaol	25.03	2914	0.72			
[12]-Gingerdione	25.27	2947	0.64			
1-Dehydro-[10]-gingerdione	25.39	2963	0.31			
[6]-Gingerdiol geranial acetal	26.22	3077	1.17			

*: 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.
Individual compounds contents were corrected following the method of Cachet et al., 2016 (Flavour and Fragrance Journal guidelines).
Unknown compounds are expressed in equivalents of internal standard without correction.
R.T.: Retention time (minutes)

R.I.: Retention index

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