Date : November 05, 2019

Certificate of Analysis – GC Profiling

Sample identification

Internal code : 19K01-PTH04-1-CC
Customer identification : Ginger Root CO2 - Nigeria - G4010995R
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-PA-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 : Sylvain Mercier, M. Sc., Chimiste
Analysis date : November 04, 2019

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Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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

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: Orange viscous liquid
Refractive index: 1.5057 ± 0.0003 (20 °C)

CONCLUSION

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

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ANALYSIS SUMMARY

Identification	(mg/g)	% of total volatiles	Classe
2-Heptanol	0.45	0.05	Aliphatic alcohol
Tricyclene	0.22	0.03	Monoterpene
α-Thujene	0.09	0.01	Monoterpene
α-Pinene	3.55	0.43	Monoterpene
Camphene	10.64	1.28	Monoterpene
Sabinene	0.12	0.01	Monoterpene
β-Pinene	0.52	0.06	Monoterpene
6-Methyl-5-hepten-2-one	0.63	0.08	Aliphatic ketone
Myrcene	2.22	0.27	Monoterpene
α-Phellandrene	0.60	0.07	Monoterpene
Octanal	2.56	0.31	Aliphatic aldehyde
Limonene	3.02	0.36	Monoterpene
β-Phellandrene	11.22	1.35	Monoterpene
1,8-Cineole	9.45	1.14	Monoterpenic ether
γ-Terpinene	0.12	0.01	Monoterpene
Terpinolene	0.73	0.09	Monoterpene
2-Nonanone	0.28	0.03	Aliphatic ketone
Unknown	1.05	0.13	Oxygenated monoterpene
Rosefuran	1.23	0.15	Monoterpenic ether
Linalool	1.66	0.20	Monoterpenic alcohol
2-Nonanol	0.29	0.04	Aliphatic alcohol
Bornyl methyl ether	0.31	0.04	Monoterpenic ether
trans-Pinene hydrate	0.24	0.03	Monoterpenic alcohol
Unknown	0.26	0.03	Unknown
Camphor	0.60	0.07	Monoterpenic ketone
Camphene hydrate	0.31	0.04	Monoterpenic alcohol
exo-Isocitral	0.13	0.02	Monoterpenic aldehyde
Citronellal	0.72	0.09	Monoterpenic aldehyde
Borneol	5.02	0.61	Monoterpenic alcohol
Unknown	0.34	0.04	Oxygenated monoterpene
Terpinen-4-ol	0.70	0.08	Monoterpenic alcohol
Rosefuran oxide	[0.84]	[0.10]	Monoterpenic ether
para-Cymen-8-ol	0.49	0.06	Monoterpenic alcohol
α-Terpineol	2.88	0.35	Monoterpenic alcohol
Myrtenol	0.34	0.04	Monoterpenic alcohol
Decanal	5.14	0.62	Aliphatic aldehyde
2,3-Epoxyneral?	0.10	0.01	Monoterpenic aldehyde
Nerol	2.02	0.24	Monoterpenic alcohol
Citronellol	1.73	0.21	Monoterpenic alcohol
Neral	11.46	1.38	Monoterpenic aldehyde
Unknown	0.61	0.07	Oxygenated monoterpene
Geraniol	3.17	0.38	Monoterpenic alcohol
Geranial	19.46	2.35	Monoterpenic aldehyde
Citronellyl formate	0.55	0.07	Monoterpenic ester
Bornyl acetate	0.67	0.08	Monoterpenic ester
2-Undecanone	1.15	0.14	Aliphatic ketone
2-Undecanol	0.29	0.04	Aliphatic alcohol

Carvacrol	0.16	0.02	Monoterpenic alcohol
δ-Elemene	0.45	0.05	Sesquiterpene
Citronellyl acetate	0.43	0.05	Monoterpenic ester
Cyclosativene I	0.11	0.01	Sesquiterpene
Cyclosativene II	0.88	0.11	Sesquiterpene
Neryl acetate	0.59	0.07	Monoterpenic ester
α-Copaene	2.31	0.28	Sesquiterpene
7-epi-Sesquithujene?	0.61	0.07	Sesquiterpene
Geranyl acetate	1.73	0.21	Monoterpenic ester
β-Cubebene	0.31	0.04	Sesquiterpene
β-Elemene	3.50	0.42	Sesquiterpene
Vanillin	0.35	0.04	Simple phenolic
Sesquithujene	1.29	0.16	Sesquiterpene
Dodecanal	0.36	0.04	Aliphatic aldehyde
β-Caryophyllene	0.48	0.06	Sesquiterpene
β-Copaene	0.32	0.04	Sesquiterpene
γ-Elemene	1.03	0.12	Sesquiterpene
Nerylacetone?	0.46	0.06	Terpenic ketone
trans-α-Bergamotene	0.56	0.07	Sesquiterpene
Sesquisabinene A	0.25	0.03	Sesquiterpene
Unknown	1.05	0.13	Sesquiterpene
α-Humulene	0.30	0.04	Sesquiterpene
allo-Aromadendrene	1.32	0.16	Sesquiterpene
Sesquisabinene B	1.58	0.19	Sesquiterpene
(*E*)-β-Farnesene	1.72	0.21	Sesquiterpene
Selina-4,11-diene	2.48	0.30	Sesquiterpene
Germacrene D	8.88	1.07	Sesquiterpene
γ-Muurolene	1.12	0.13	Sesquiterpene
β-Selinene	0.38	0.05	Sesquiterpene
ar-Curcumene	24.19	2.92	Sesquiterpene
Unknown	6.92	0.83	Sesquiterpene
2-Tridecanone	0.85	0.10	Aliphatic ketone
Bicyclosesquiphellandrene?	13.92	1.68	Sesquiterpene
epi-Cubebol	0.30	0.04	Sesquiterpenic alcohol
α-Zingiberene	142.02	17.12	Sesquiterpene
β-Bisabolene	29.56	3.56	Sesquiterpene
γ-Cadinene	0.30	0.04	Sesquiterpene
Cubebol	0.85	0.10	Sesquiterpenic alcohol
(3*E*,6*E*)-α-Farnesene	36.30	4.38	Sesquiterpene
7-epi-α-Selinene	0.11	0.01	Sesquiterpene
δ-Cadinene	0.87	0.11	Sesquiterpene
trans-Calamenene	0.27	0.03	Sesquiterpene
β-Sesquiphellandrene	55.80	6.73	Sesquiterpene
(*E*)-γ-Bisabolene	1.32	0.16	Sesquiterpene
Unknown	1.32	0.16	Oxygenated sesquiterpene
Unknown	0.57	0.07	Oxygenated sesquiterpene
α-Elemol	2.50	0.30	Sesquiterpenic alcohol
Germacrene B	2.10	0.25	Sesquiterpene
cis-Sesquisabinene hydrate	1.08	0.13	Sesquiterpenic alcohol
(*E*)-Nerolidol	2.74	0.33	Sesquiterpenic alcohol
1'-Hydroxyeugenol	0.50	0.06	Phenylpropanoid
ar-Turmerol	0.99	0.12	Sesquiterpenic alcohol

trans-Sesquisabinene hydrate	2.90	0.35	Sesquiterpenic alcohol
Unknown	0.42	0.05	Oxygenated sesquiterpene
cis-Zingiberenol	4.43	0.53	Sesquiterpenic alcohol
Unknown	0.98	0.12	Oxygenated sesquiterpene
γ-Eudesmol	0.25	0.03	Sesquiterpenic alcohol
trans-Zingiberenol	2.05	0.25	Sesquiterpenic alcohol
Zingerone	23.66	2.85	Phenylbutanoid
β-Eudesmol	1.63	0.20	Sesquiterpenic alcohol
α-Eudesmol	1.38	0.17	Sesquiterpenic alcohol
(3*E*,5*E*)-7-Hydroxyfarnesene	1.18	0.14	Sesquiterpenic alcohol
Zingerone methyl ether	0.39	0.05	Simple phenolic
α-Bisabolol	2.12	0.26	Sesquiterpenic alcohol
Unknown	4.41	0.53	Oxygenated sesquiterpene
Unknown	3.44	0.41	Oxygenated sesquiterpene
Unknown	2.07	0.25	Oxygenated sesquiterpene
Oplopanone	0.30	0.04	Sesquiterpenic alcohol
Xanthorizzhol?	1.57	0.19	Sesquiterpenic alcohol
Unknown	0.51	0.06	Oxygenated sesquiterpene
Unknown	0.27	0.03	Oxygenated sesquiterpene
Unknown	0.77	0.09	Oxygenated sesquiterpene
Unknown	0.87	0.11	Oxygenated sesquiterpene
Unknown	0.55	0.07	Oxygenated sesquiterpene
Unknown	0.20	0.02	Oxygenated sesquiterpene
Unknown	4.66	0.56	Oxygenated sesquiterpene
Unknown	1.90	0.23	Oxygenated sesquiterpene
Unknown	0.63	0.08	Oxygenated sesquiterpene
Unknown	0.28	0.03	Oxygenated sesquiterpene
Geranyl-para-cymene	1.24	0.15	Diterpene
Palmitic acid	4.21	0.51	Aliphatic acid
(*E*,*E*)-Geranyllinalool	1.32	0.16	Diterpenic alcohol
[4]-Shogaol	0.30	0.04	Gingerol derivative
Unknown	0.19	0.02	Gingerol derivative
Unknown	0.75	0.09	Gingerol derivative
Unknown	0.39	0.05	Oxygenated diterpene
Linoleic acid	2.46	0.30	Aliphatic acid
Oleic acid	3.07	0.37	Aliphatic acid
cis-Vaccenic acid?	1.35	0.16	Aliphatic acid
[4]-Gingerol	2.87	0.35	Gingerol derivative
[4]-Isogingerol?	2.55	0.31	Gingerol derivative
[6]-Isoshogaol?	0.62	0.08	Gingerol derivative
[6]-Paradol	9.80	1.18	Gingerol derivative
Methyl [6]-paradol?	0.30	0.04	Gingerol derivative
[6]-Dihydroparadol?	0.41	0.05	Gingerol derivative
[6]-Shogaol	13.41	1.62	Gingerol derivative
Methyl [6]-shogaol	6.38	0.77	Gingerol derivative
Acetoxy-[6]-dihydroparadol	0.16	0.02	Gingerol derivative
Diacetoxy-[4]-gingerdiol	0.68	0.08	Gingerol derivative
Geranyl laurate	0.40	0.05	Monoterpenic ester
[6]-Gingerol	111.81	13.48	Gingerol derivative
[6]-Isogingerol?	1.54	0.19	Gingerol derivative
Unknown	1.23	0.15	Gingerol derivative
1-(4'-Hydroxy-3'-methoxyphenyl)-7-	0.23	0.03	Gingerol derivative

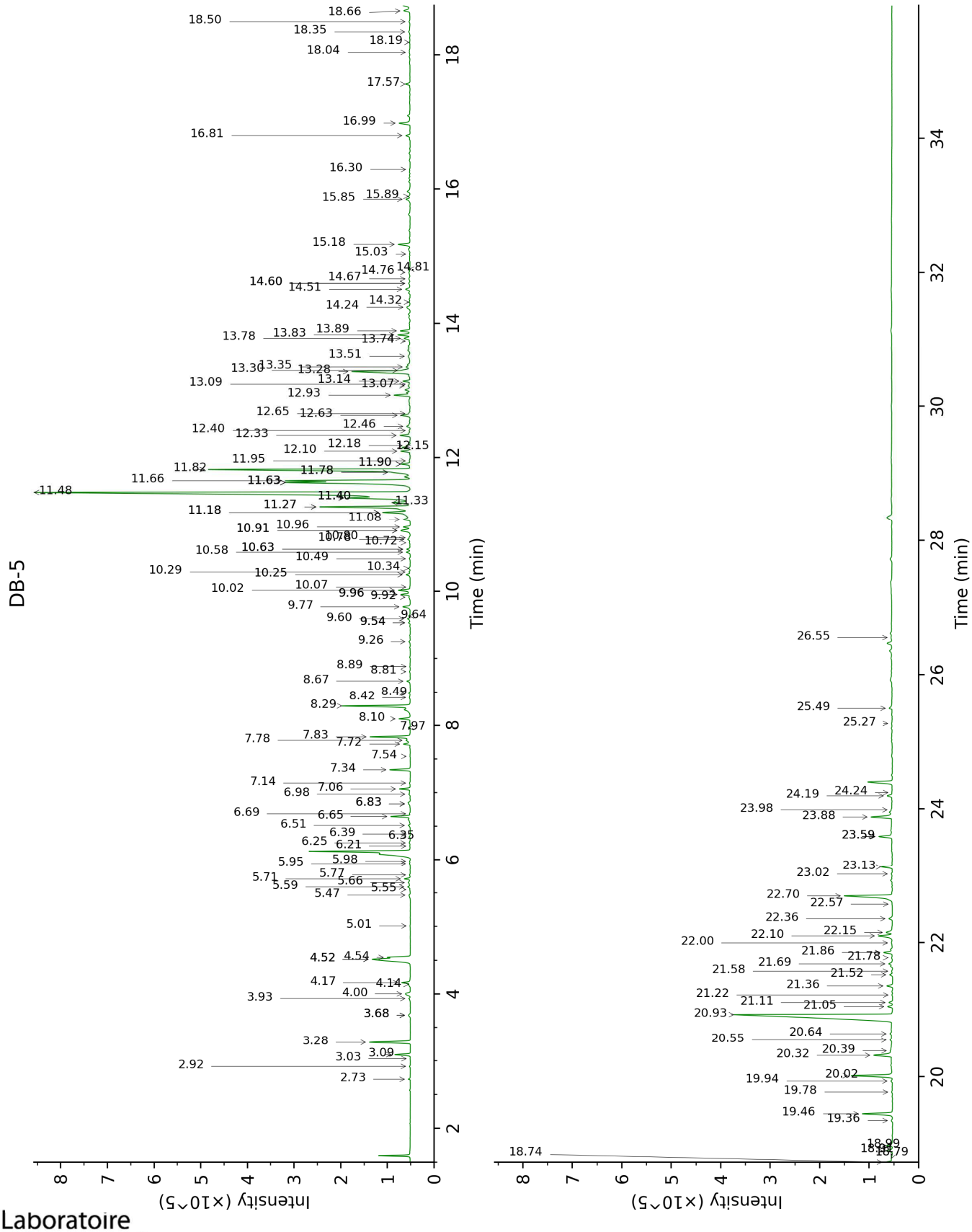
dodecen-3-one?			
[8]-Paradol	1.79	0.22	Gingerol derivative
Acetoxy-[6]-gingerol	1.12	0.14	Gingerol derivative
Unknown	0.44	0.05	Gingerol derivative
[6]-Gingerdiol isomer I	1.71	0.21	Gingerol derivative
[6]-Gingerdiol isomer II	0.37	0.04	Gingerol derivative
[8]-Shogaol	3.01	0.36	Gingerol derivative
5-Acetoxy-[6]-gingerdiol	0.64	0.08	Gingerol derivative
Diacetoxy-[6]-gingerdiol	6.50	0.78	Gingerol derivative
[8]-Gingerdione	2.50	0.30	Gingerol derivative
1-Dehydro-[6]-gingerdione	1.39	0.17	Gingerol derivative
[8]-Gingerol	0.12	0.01	Gingerol derivative
[10]-Isoshogaol	19.41	2.34	Gingerol derivative
[10]-Paradol	0.38	0.05	Gingerol derivative
Unknown	3.85	0.46	Gingerol derivative
[10]-Shogaol	0.15	0.02	Gingerol derivative
Unknown	4.26	0.51	Gingerol derivative
[10]-Gingerdione	7.63	0.92	Gingerol derivative
1-Dehydro-[8]-gingerdione	0.27	0.03	Gingerol derivative
[12]-Isoshogaol?	1.60	0.19	Gingerol derivative
Unknown	0.13	0.02	Gingerol derivative
[12]-Shogaol	0.27	0.03	Gingerol derivative
[12]-Gingerdione	0.86	0.10	Gingerol derivative
[6]-Gingerdiol geranial acetal	0.26	0.03	Gingerol derivative
Consolidated total	**759.91 mg/g**	**91.63%**	

*: 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

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.



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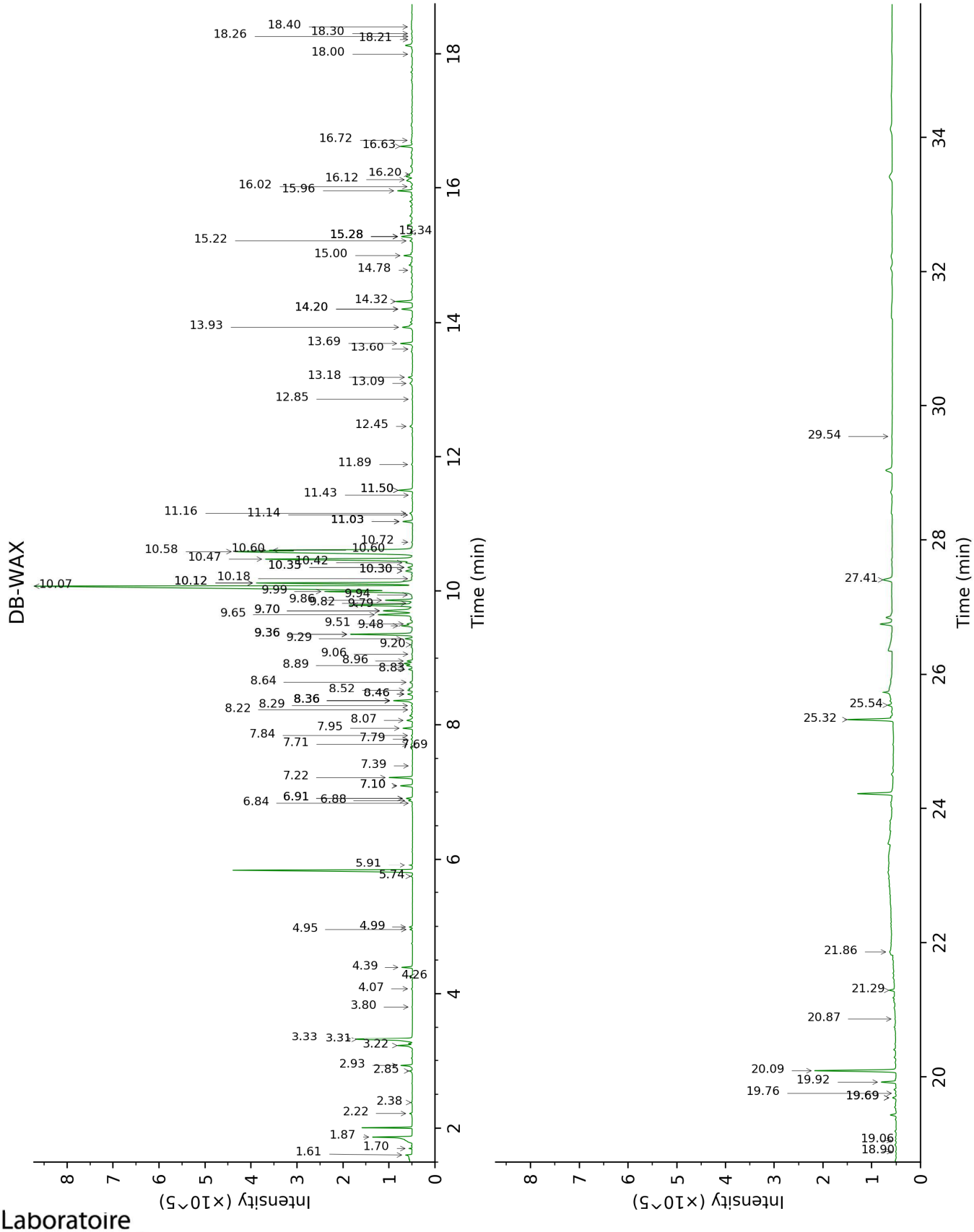
DB-WAX
Intensity (×10^5)
Time (min)
18.26
18.40
18.30
18.21
18.00
16.72
16.63
16.02
16.12
16.20
15.96
15.22
15.28
15.34
15.00
14.78
14.32
14.20
13.93
13.69
13.60
13.18
13.09
12.85
12.45
11.89
11.43
11.50
11.16
11.14
11.03
10.72
10.58
10.60
10.60
10.47
10.42
10.35
10.30
10.07
10.12
10.18
9.99
9.94
9.86
9.82
9.79
9.65
9.70
9.51
9.48
9.36
9.29
9.20
9.06
8.96
8.89
8.83
8.64
8.52
8.46
8.22
8.29
8.36
8.07
7.95
7.84
7.79
7.71
7.69
7.39
7.22
7.10
6.84
6.91
6.88
5.91
5.74
4.95
4.99
4.39
4.26
4.07
3.80
3.33
3.31
3.22
2.93
2.85
2.38
2.22
1.87
1.70
1.61
29.54
27.41
25.54
25.32
21.86
21.29
20.87
20.09
19.92
19.76
19.69
19.06
18.90

FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	mg/g	R.T	R.I	mg/g
2-Heptanol	2.73	908	0.45	4.95	1299	0.48
Tricyclene	2.92	921	0.22	1.37	1000	0.36
α-Thujene	3.03	928	0.09	1.70	1034	0.28
α-Pinene	3.09	932	3.55	1.61	1025	3.37
Camphene	3.28	944	10.64	1.87	1051	10.43
Sabinene	3.68*	971	0.75	2.38	1101	0.12
β-Pinene	3.68*	971	[0.75]	2.22	1085	0.52
6-Methyl-5-hepten-2-one	3.93	988	0.63	4.99	1302	0.70
Myrcene	4.00	992	2.22	2.93	1144	2.23
α-Phellandrene	4.14	1001	0.60	2.85	1138	0.69
Octanal	4.17	1003	2.56	4.39	1257	2.20
Limonene	4.52*†	1025	23.00	3.22	1167	3.02
β-Phellandrene	4.52*†	1025	[23.00]	3.31	1174	11.22
1,8-Cineole	4.54†	1027	[26.13]	3.33	1176	9.45
γ-Terpinene	5.01	1057	0.12	3.80	1213	0.11
Terpinolene	5.47	1086	0.73	4.26	1247	0.66
2-Nonanone	5.55	1091	0.28	5.74	1349	0.38
Unknown [m/z 96, 109 (55), 79 (41), 67 (38), 41 (36)... 150 (3)]	5.59	1094	1.05	8.64	1569	0.88
Rosefuran	5.66	1098	1.23	5.91	1362	0.84
Linalool	5.71	1101	1.66	7.95	1514	1.97
2-Nonanol	5.77	1105	0.29	7.69	1494	0.21
Bornyl methyl ether	5.94	1116	0.31	4.07	1233	0.28
trans-Pinene hydrate	5.98	1119	0.24	7.84	1506	0.27
Unknown [m/z 83, 43 (99), 97 (75), 59 (44)...]	6.21	1134	0.26			
Camphor	6.25	1137	0.60	7.10*	1450	2.85
Camphene hydrate	6.35	1143	0.31	8.36*	1547	4.89
exo-Isocitral	6.39	1145	0.13	7.39	1472	0.10
Citronellal	6.52	1154	0.72	6.91*	1436	1.48
Borneol	6.65	1163	5.02	9.70*†	1654	[19.60]
Unknown [m/z 109, 79 (18), 81 (15), 91 (12), 77 (10)... 152 (3)]	6.69	1165	0.34			
Terpinen-4-ol	6.84*	1175	0.70	8.46*	1554	1.29
Rosefuran oxide	6.84*	1175	[0.84]	8.46*	1554	[1.56]
para-Cymen-8-ol	6.98	1184	0.49	11.43	1800	0.17
α-Terpineol	7.06	1190	2.88	9.65†	1650	19.60
Myrtenol	7.14	1195	0.34	10.72	1739	0.19
Decanal	7.34	1208	5.14	7.22	1459	4.83
2,3-Epoxyneral?	7.54	1222	0.10			
Nerol	7.72	1235	2.02	11.03*	1766	2.30
Citronellol	7.78	1239	1.73	10.60*†	1729	[94.16]
Neral	7.83	1243	11.46	9.36*	1626	15.24
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27)...]	7.97	1252	0.61	11.16	1777	0.97

Geraniol	8.10	1261	3.17	11.50*	1806	3.65
Geranial	8.29	1269	19.46	9.99	1678	22.80
Citronellyl formate	8.42	1278	0.55	8.83	1584	1.00
Bornyl acetate	8.49	1282	0.67	8.22	1536	0.27
2-Undecanone	8.67	1294	1.15	8.52	1560	1.05
2-Undecanol	8.81	1304	0.29	10.18	1694	0.24
Carvacrol	8.89	1309	0.16	15.22	2155	0.68
δ-Elemene	9.26	1336	0.45	6.91*	1436	[1.28]
Citronellyl acetate	9.54*	1356	0.57	9.36*	1626	[16.45]
Cyclosativene I	9.54*	1356	[0.45]	6.84	1430	0.11
Cyclosativene II	9.60	1360	0.88	6.88	1433	0.80
Neryl acetate	9.64	1363	0.59	10.12*	1688	38.27
α-Copaene	9.77	1372	2.31	7.10*	1450	[2.41]
7-epi-Sesquithujene?	9.92	1382	0.61	7.79	1502	0.29
Geranyl acetate	9.96*	1385	2.95	10.42	1713	1.73
β-Cubebene	9.96*	1385	[2.32]	7.71	1496	0.31
β-Elemene	10.02	1390	3.50	8.36*	1547	[4.23]
Vanillin	10.07	1393	0.35	18.21	2473	0.25
Sesquithujene	10.25	1406	1.29	8.07	1524	1.30
Dodecanal	10.29	1409	0.36	9.94	1674	0.29
β-Caryophyllene	10.34	1413	0.48	8.36*	1547	[4.23]
β-Copaene	10.49	1424	0.32	8.29	1541	0.26
γ-Elemene	10.58	1431	1.03	8.96	1594	1.05
Nerylacetone?	10.63*	1435	1.09	11.50*	1806	[3.52]
trans-α-Bergamotene	10.63*	1435	[0.97]	8.36*	1547	[4.23]
Sesquisabinene A	10.72	1442	0.25	9.06	1602	0.24
Unknown [m/z 139, 69 (43), 91 (42), 41 (36), 81 (36), 43 (36)... 204 (5)]	10.78	1446	1.05	14.20*	2055	3.30
α-Humulene	10.80	1448	0.30	9.20	1613	0.27
allo-Aromadendrene	10.91*	1456	3.62	8.89	1588	1.32
Sesquisabinene B	10.91*	1456	[3.62]	9.29	1620	1.58
(*E*)-β-Farnesene	10.96	1459	1.72	9.48	1636	2.30
Selina-4,11-diene	11.08	1468	2.48	9.36*	1626	[12.90]
Germacrene D	11.18*	1476	10.00	9.70*†	1654	[16.94]
γ-Muurolene	11.18*	1476	[10.00]	9.51	1638	1.12
β-Selinene	11.27*	1482	26.09	9.82	1664	0.38
ar-Curcumene	11.27*	1482	[24.55]	10.60*†	1729	[78.14]
Unknown [m/z 161, 91 (100), 105 (93), 79 (89), 93 (89), 107 (79)... 204 (34)]	11.33	1487	6.92	9.86	1667	7.33
2-Tridecanone	11.40*†	1492	170.35	11.03*	1766	[2.15]
Bicyclosesquiphellandrene?	11.40*†	1492	[156.99]	9.79	1662	13.92
epi-Cubebol	11.40*†	1492	[171.22]	11.89	1840	0.30
α-Zingiberene	11.48†	1499	[157.00]	10.07	1684	142.02
β-Bisabolene	11.63*†	1510	67.05	10.12*	1688	[30.03]
γ-Cadinene	11.63*†	1510	[67.05]	10.30*	1703	1.62
Cubebol	11.63*†	1510	[73.13]	12.45	1891	0.85
(3*E*,6*E*)-α-Farnesene	11.63*†	1510	[67.05]	10.47	1718	36.30
7-epi-α-Selinene	11.66†	1512	[67.05]	10.35*	1707	0.98
δ-Cadinene	11.78*†	1522	58.24	10.35*	1707	[0.98]
trans-Calamenene	11.78*†	1522	[54.81]	11.14	1775	0.27

β-Sesquiphellandrene	11.82†	1525	[58.24]	10.58†	1727	83.03
(*E*)-γ-Bisabolene	11.90*	1531	2.31	10.30*	1703	[1.62]
Unknown [m/z 177, 159 (67), 41 (43), 91 (43), 43 (41)... 220 (t)]	11.90*	1531	[3.08]	13.18	1958	1.32
Unknown [m/z 43, 177 (99), 93 (75), 41 (73), 91 (65), 107 (60)... 220 (4)]	11.95	1535	0.57	12.85	1928	0.18
α-Elemol	12.10	1546	2.50	13.93	2029	2.67
Germacrene B	12.15	1551	2.10	11.03*	1766	[1.99]
cis-Sesquisabinene hydrate	12.18	1553	1.08	13.09	1950	1.19
(*E*)-Nerolidol	12.33	1565	2.74	13.69	2006	2.85
1'-Hydroxyeugenol	12.40	1571	0.50	19.76	2652	0.24
ar-Turmerol	12.46	1576	0.99	15.34	2167	0.58
trans-Sesquisabinene hydrate	12.63	1588	2.90	14.20*	2055	[2.70]
Unknown [m/z 132, 118 (89), 145 (85), 119 (79), 117 (60)...]	12.65	1591	0.42	13.60	1997	0.25
cis-Zingiberenol	12.93	1612	4.43	14.32	2066	3.90
Unknown [m/z 119, 85 (92), 105 (37), 120 (36), 91 (28)... 218 (6)]	13.07	1624	0.98	16.12	2247	0.85
γ-Eudesmol	13.09	1626	0.25	14.78	2111	0.19
trans-Zingiberenol	13.14	1630	2.05	15.00	2133	2.04
Zingerone	13.28	1642	23.66	20.09	2692	23.02
β-Eudesmol	13.30	1643	1.63	15.28*	2161	2.97
α-Eudesmol	13.35	1647	1.38	15.28*	2161	[2.97]
(3*E*,5*E*)-7-Hydroxyfarnesene	13.51	1660	1.18	16.20	2256	1.09
Zingerone methyl ether	13.74	1680	0.39	18.90	2552	0.20
α-Bisabolol	13.78	1683	2.12	15.28*	2161	[2.97]
Unknown [m/z 137, 119 (70), 84 (69), 41 (68), 69 (53), 55 (45), 109 (38)... 222 (2)]	13.83	1688	4.41	15.96	2230	4.21
Unknown [m/z 69, 41 (59), 118 (33), 43 (32), 55 (31)... 234? (t)]	13.89	1692	3.44	16.63	2300	3.37
Unknown [m/z 119, 91 (31), 105 (29), 41 (25), 133 (23), 158 (21)...]	14.24	1722	2.07	16.72	2309	0.67
Oplopanone	14.32	1729	0.30	18.00	2449	0.28
Xanthorizzhol?	14.51	1745	1.57	19.69*	2644	0.80
Unknown [m/z 82, 43 (85), 91 (67), 93 (66), 41 (66), 69 (59), 106 (47)... 218 (5)...]	14.60*	1753	0.79			
Unknown [m/z 105, 148 (87), 91 (83), 135 (78), 131 (76)... 218 (21)...]	14.60*	1753	[0.79]	19.06	2570	0.27
Unknown [m/z 43, 82 (100), 41 (86), 69 (76), 93 (72), 91 (72)... 218 (4)...]	14.67	1759	0.77			
Unknown [m/z 79, 41 (77),	14.76	1767	0.87	18.30	2483	0.27

135 (75), 69 (74), 43 (70)... 220 (9)]						
Unknown [m/z 151, 41 (78), 95 (71), 109 (59), 55 (56), 69 (55)... 234 (15)]	14.81	1772	0.55			
Unknown [m/z 69, 41 (96), 43 (90), 109 (51), 55 (42), 81 (33)...]	15.03	1791	0.20	18.26	2478	0.12
Unknown [m/z 69, 43 (95), 41 (84), 109 (78), 95 (54), 93 (49)... 177 (36), 220 (2)...]	15.18	1803	4.66	19.92	2672	4.01
Unknown [m/z 109, 69 (58), 43 (56), 41 (42), 135 (37), 55 (27)... 220 (5)]	15.85	1864	1.90	21.29	2840	1.45
Unknown [m/z 137, 218 (84), 119 (72), 69 (64), 175 (61), 41 (60), 93 (58)]	15.89	1868	0.63	20.87	2787	0.12
Unknown [m/z 125, 41 (86), 151 (78), 109 (67), 69 (63)... 236 (22)]	16.30	1906	0.28	21.86	2913	5.06
Geranyl-para-cymene	16.81	1953	1.24	16.02	2237	0.36
Palmitic acid	16.99	1971	4.21			
(*E*,*E*)-Geranyllinalool	17.57	2027	1.32	18.40	2494	0.23
[4]-Shogaol	18.04	2074	0.30			
Unknown [m/z 135, 150 (34), 77 (13), 163 (11)... 262 (2)]	18.19	2088	0.19			
Unknown [m/z 137, 203 (15), 138 (11), 105 (11), 41 (9)... 274 (7), 286? (1)]	18.35	2104	0.75			
Unknown [m/z 69, 41 (44), 121 (37), 107 (36), 81 (33)... 272 (2)]	18.50	2119	0.39			
Linoleic acid	18.66	2136	2.46			
Oleic acid	18.74	2145	3.07			
cis-Vaccenic acid?	18.79	2150	1.35			
[4]-Gingerol	18.91	2162	2.87			
[4]-Isogingerol?	18.99	2170	2.55			
[6]-Isoshogaol?	19.36	2208	0.62			
[6]-Paradol	19.46	2219	9.80			
Methyl [6]-paradol?	19.78	2253	0.30			
[6]-Dihydroparadol?	19.94	2271	0.41	25.54	3421	0.97
[6]-Shogaol	20.02	2280	13.41	25.32	3389	12.17
Methyl [6]-shogaol	20.32	2312	6.38			
Acetoxy-[6]-dihydroparadol	20.39	2320	0.16			
Diacetoxy-[4]-gingerdiol	20.55	2338	0.68			
Geranyl laurate	20.64	2348	0.40	19.69*	2644	[0.85]
[6]-Gingerol	20.93	2380	111.81			
[6]-Isogingerol?	21.05	2394	1.54			
Unknown [m/z 137, 138 (9), 316 (6), 122 (5)]	21.11	2401	1.23			
1-(4'-Hydroxy-3'-	21.22	2413	0.23			

methoxyphenyl)-7-dodecen-3-one?						
[8]-Paradol	21.36	2429	1.79			
Acetoxy-[6]-gingerol	21.52	2448	1.12			
Unknown [m/z 137, 316 (31), 109 (24), 179 (21), 150 (20)]	21.58	2455	0.44			
[6]-Gingerdiol isomer I	21.69	2467	1.71			
[6]-Gingerdiol isomer II	21.78	2478	0.37			
[8]-Shogaol	21.86	2487	3.01	27.41	3668	3.64
5-Acetoxy-[6]-gingerdiol	22.00	2503	0.64			
Diacetoxy-[6]-gingerdiol	22.10	2516	6.50			
[8]-Gingerdione	22.15	2522	2.50			
1-Dehydro-[6]-gingerdione	22.36	2546	1.39			
[8]-Gingerol	22.57	2573	0.12			
[10]-Isoshogaol	22.70	2588	19.41			
[10]-Paradol	23.02	2628	0.38			
Unknown [m/z 137, 109 (24), 207 (24), 43 (24)... 344 (14)]	23.13	2641	3.85			
[10]-Shogaol	23.59*	2698	3.88	29.54	3857	0.15
Unknown [m/z 137, 205 (13), 332 (9), 122 (7)]	23.59*	2698	[4.44]			
[10]-Gingerdione	23.88	2735	7.63			
1-Dehydro-[8]-gingerdione	23.98	2748	0.27			
[12]-Isoshogaol?	24.19	2775	1.60			
Unknown [m/z 137, 138 (8), 122 (6), 372 (6)]	24.24	2781	0.13			
[12]-Shogaol	25.27	2917	0.27			
[12]-Gingerdione	25.49	2948	0.86			
[6]-Gingerdiol geranial acetal	26.56	3089	0.26			

*: 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
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