

Date : March 22, 2019

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 19C11-PTH05-1-SCC

Customer identification : Ginger CO2 - Germany - G4010877R

Type : CO2 extract

Source : *Zingiber officinale*

Customer : Plant Therapy

ANALYSIS

Method: PC-PA-014-17J19 - 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 : March 13, 2019

Checked and approved by :



Alexis St-Gelais, M. Sc., chimiste 2013-174

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PYHSICOCHEMICAL DATA

Physical aspect: Dark orange viscous liquid

Refractive index: 1.5008 ± 0.0003 (20 °C)

CONCLUSION

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

ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Acetic acid	0.10	0.11	Aliphatic acid
2-Methyl-3-buten-2-ol	[0.10]	0.03	Aliphatic alcohol
2,3-Butanediol isomer I	0.03	0.03	Aliphatic alcohol
Hexanal	0.22	0.23	Aliphatic aldehyde
2-Heptanone	0.01	0.02	Aliphatic ketone
2-Heptanol	0.07	0.08	Aliphatic alcohol
Tricyclene	0.06	0.06	Monoterpene
α-Pinene	0.71	0.85	Monoterpene
Camphepane	3.11	3.71	Monoterpene
5,5-Dimethyl-2(5H)-furanone	0.01	0.07*	Aliphatic lactone
Unknown	0.02	0.02	Monoterpene
β-Pinene	0.09*	0.10	Monoterpene
Sabinene	[0.09]*	0.02	Monoterpene
6-Methyl-5-hepten-2-one	0.10	0.13	Aliphatic ketone
Myrcene	0.40	0.48	Monoterpene
6-Methyl-5-hepten-2-ol	0.01	0.01	Aliphatic alcohol
Caproic acid	0.13	0.13*	Aliphatic acid
Octanal	[0.13]*	0.07	Aliphatic aldehyde
α-Phellandrene	[0.13]*	0.05	Monoterpene
Δ3-Carene	0.02	0.02	Monoterpene
ortho-Cymene	0.03	0.03	Simple phenolic
Unknown	1.82*	0.03	Unknown
Limonene	[1.82]*	0.63	Monoterpene
β-Phellandrene	[1.82]*	0.41	Monoterpene
1,8-Cineole	[1.82]*	1.14	Monoterpenic ether
Unknown	[1.82]*	0.01	Unknown
2-Heptyl acetate	0.02	0.02	Aliphatic ester
γ-Terpinene	0.02	0.02	Monoterpene
cis-Linalool oxide (fur.)	0.01	0.01	Monoterpenic alcohol
Terpinolene	0.12*	0.13	Monoterpene
trans-Linalool oxide (fur.)	[0.12]*	0.08	Monoterpenic alcohol
2-Nonanone	0.02	0.03	Aliphatic ketone
Unknown	0.16	0.22	Oxygenated monoterpene
Rosefuran	0.12	0.14	Monoterpenic ether
Linalool	0.23	0.44*	Monoterpenic alcohol
2-Nonanol	0.03	0.04	Aliphatic alcohol
Bornyl methyl ether	0.03*	0.02	Monoterpenic ether
(E)-4,8-Dimethylnona-1,3,7-triene	[0.03]*	0.01	Terpene derivative
trans-Pinene hydrate	0.02	0.10	Monoterpenic alcohol
Unknown	0.01		Unknown
Camphor	0.08	0.08	Monoterpenic ketone
Camphene hydrate	0.07*	[0.07]*	Monoterpenic alcohol
exo-Isocitral	[0.07]*	0.01	Monoterpenic aldehyde
Citronellal	0.03*	0.02	Monoterpenic aldehyde
Isoborneol	[0.03]*	0.03	Monoterpenic alcohol
Borneol	1.09	2.80*	Monoterpenic alcohol
Unknown	0.05		Oxygenated monoterpene
Terpinen-4-ol	0.30*	0.32*	Monoterpenic alcohol

Rosefuran oxide	[0.30]*	0.11	Monoterpenic ether
para-Cymen-8-ol	0.06	0.07	Monoterpenic alcohol
α-Terpineol	0.35	[2.80]*	Monoterpenic alcohol
Myrtenol	0.03	0.04	Monoterpenic alcohol
Decanal	0.09	0.11	Aliphatic aldehyde
<i>trans</i> -Carveol	0.01	0.02	Monoterpenic alcohol
Bornyl formate	0.04*	0.02	Monoterpenic ester
2,3-Epoxyneral?	[0.04]*		Monoterpenic aldehyde
Nerol	0.01	0.01	Monoterpenic alcohol
Citronellol	0.13	0.17	Monoterpenic alcohol
Neral	0.33	0.37	Monoterpenic aldehyde
Unknown	0.10	[0.13]*	Oxygenated monoterpene
Geraniol	0.80	1.10	Monoterpenic alcohol
Geranial	0.50	6.01*	Monoterpenic aldehyde
Citronellyl formate	0.02	0.01	Monoterpenic ester
Bornyl acetate	0.63	0.74	Monoterpenic ester
2-Undecanone	0.07	[0.32]*	Aliphatic ketone
Geranyl formate	0.02	0.18*	Monoterpenic ester
2-Undecanol	0.01	0.03	Aliphatic alcohol
Carvacrol	0.01	0.18	Monoterpenic alcohol
α-Cubebene	0.02	0.04	Sesquiterpene
Citronellyl acetate	0.01	0.05	Monoterpenic ester
Cyclosativene I	0.05	0.13*	Sesquiterpene
Cyclosativene II	0.12	[0.13]*	Sesquiterpene
Neryl acetate	0.12	[6.01]	Monoterpenic ester
α-Copaene	0.25	0.28	Sesquiterpene
Unknown	0.03		Unknown
Geranyl acetate	0.75	11.69	Monoterpenic ester
β-Cubebene	[0.75]	0.03	Sesquiterpene
β-Elemene	0.28	0.58*	Sesquiterpene
Vanillin	0.05	0.03	Simple phenolic
γ-4-Dimethylbenzenebutyral	0.02		Simple phenolic
Sesquithujene	0.17*	[0.44]*	Sesquiterpene
Dodecanal	[0.17]*	0.13*	Aliphatic aldehyde
β-Caryophyllene	0.08	[0.58]*	Sesquiterpene
β-Copaene	0.01	[0.58]*	Sesquiterpene
Unknown	0.18		Unknown
γ-Elemene	0.03	0.02	Sesquiterpene
(Z)-β-Farnesene?	0.02	0.03	Sesquiterpene
<i>trans</i> -α-Bergamotene	0.23	[0.58]*	Sesquiterpene
Sesquisabinene A	0.06	0.08	Sesquiterpene
Unknown	0.03	0.04	Sesquiterpene
α-Humulene	0.02	0.02	Sesquiterpene
allo-Aromadendrene	0.40*	0.16	Sesquiterpene
Sesquisabinene B	[0.40]*	0.33	Sesquiterpene
(E)-β-Farnesene	0.32	0.40	Sesquiterpene
γ-Murolene	0.09	0.20	Sesquiterpene
Germacrene D	0.30	0.37	Sesquiterpene
β-Selinene	6.56*	[0.18]*	Sesquiterpene
ar-Curcumene	[6.56]*	7.59	Sesquiterpene
Unknown	0.05	[0.13]*	Sesquiterpene
Bicyclosesquiphellandrene?	0.98*	[2.80]*	Sesquiterpene

epi-Cubebol	[0.98]*	0.04	Sesquiterpenic alcohol
2-Tridecanone	[0.98]*	0.07	Aliphatic ketone
α -Zingiberene	16.44	19.22	Sesquiterpene
β -Bisabolene	5.98*	[6.01]*	Sesquiterpene
γ -Cadinene	[5.98]*	0.20	Sesquiterpene
Cubebol	[5.98]*	0.02	Sesquiterpenic alcohol
(3E,6E)- α -Farnesene	1.73*	3.77	Sesquiterpene
7-epi- α -Selinene	[1.73]*	0.15*	Sesquiterpene
δ -Cadinene	9.27*	0.17	Sesquiterpene
<i>trans</i> -Calamenene	[9.27]*	0.03	Sesquiterpene
β -Sesquiphellandrene	[9.27]*	[11.69]	Sesquiterpene
(E)- γ -Bisabolene	0.03	[0.15]*	Sesquiterpene
Unknown	0.33	0.28*	Oxygenated sesquiterpene
Unknown	0.09		Oxygenated sesquiterpene
α -Elemol	0.18	0.26	Sesquiterpenic alcohol
Germacrene B	0.16	0.20	Sesquiterpene
<i>cis</i> -Sesquisabinene hydrate	0.16	[0.28]*	Sesquiterpenic alcohol
(E)-Nerolidol	0.19	0.24	Sesquiterpenic alcohol
1'-Hydroxyeugenol	0.05	0.10	Phenylpropanoid
ar-Turmerol	0.16	0.34*	Sesquiterpenic alcohol
<i>trans</i> -Sesquisabinene hydrate	0.48	0.45	Sesquiterpenic alcohol
Unknown	0.04	0.06	Oxygenated sesquiterpene
<i>cis</i> -Zingiberenol	0.65*	0.71	Sesquiterpenic alcohol
10-epi- γ -Eudesmol	[0.65]*	0.03	Sesquiterpenic alcohol
Unknown	0.20	0.43*	Oxygenated sesquiterpene
<i>trans</i> -Zingiberenol	0.32	0.58	Sesquiterpenic alcohol
β -Eudesmol	0.76*	[0.34]*	Sesquiterpenic alcohol
Zingerone	[0.76]*	0.61	Phenylbutanoid
α -Eudesmol	0.19	0.09	Sesquiterpenic alcohol
(3E,5E)-7-Hydroxyfarnesene	0.18	[0.43]*	Sesquiterpenic alcohol
Zingerone methyl ether	0.22*	0.05	Simple phenolic
α -Bisabolol	[0.22]*	0.26	Sesquiterpenic alcohol
Unknown	0.57	0.69	Oxygenated sesquiterpene
Unknown	0.50	0.61	Oxygenated sesquiterpene
Unknown	0.18	0.10	Oxygenated sesquiterpene
Xanthorizzhol?	0.23	0.19	Sesquiterpenic alcohol
Unknown	0.13*	0.04	Oxygenated sesquiterpene
Unknown	[0.13]*		Oxygenated sesquiterpene
Unknown	0.07		Oxygenated sesquiterpene
Unknown	0.13	0.14*	Oxygenated sesquiterpene
Unknown	0.01		Oxygenated sesquiterpene
Unknown	0.02	[0.14]*	Oxygenated sesquiterpene
Unknown	1.01	1.06	Oxygenated sesquiterpene
Unknown	0.34	0.42	Oxygenated sesquiterpene
Unknown	0.06	0.07	Oxygenated sesquiterpene
Unknown	0.12		Oxygenated sesquiterpene
Unknown	0.09	0.12	Unknown
Unknown	0.06	0.06	Oxygenated sesquiterpene
Geranyl-para-cymene	0.08	0.24	Diterpene
Palmitic acid	0.42	0.60	Aliphatic acid
(E,E)-Geranylinalool	0.06	0.06	Diterpenic alcohol
[4]-Shogaol	0.07		Gingerol derivative

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Unknown	0.02		Gingerol derivative
Unknown	0.11		Gingerol derivative
Unknown	0.01		Oxygenated diterpene
Linoleic acid	0.35	0.43	Aliphatic acid
Oleic acid	0.19	0.22	Aliphatic acid
cis-Vaccenic acid?	0.13	0.10	Aliphatic acid
[4]-Gingerol	0.21		Gingerol derivative
[4]-Isogingerol?	0.13		Gingerol derivative
[6]-Isoshogaol?	0.05	0.14	Gingerol derivative
[6]-Paradol	0.28		Gingerol derivative
Methyl [6]-isoshogaol?	0.03		Gingerol derivative
Methyl [6]-paradol?	0.01		Gingerol derivative
[6]-Dihydroparadol?	0.04	4.75*	Gingerol derivative
[6]-Shogaol	4.13	[4.75]*	Gingerol derivative
Methyl [6]-shogaol	0.16		Gingerol derivative
Acetoxy-[6]-dihydroparadol	0.07		Gingerol derivative
[6]-Gingerdione	0.02		Gingerol derivative
Diacetoxyl-[4]-gingerdiol	0.11		Gingerol derivative
[6]-Gingerol	13.01		Gingerol derivative
[8]-Isoshogaol	0.34		Gingerol derivative
Unknown	0.05		Gingerol derivative
Methyl [6]-gingerol	0.01		Gingerol derivative
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	0.02		Gingerol derivative
[8]-Paradol	0.04		Gingerol derivative
Acetoxy-[6]-gingerol	0.43		Gingerol derivative
Unknown	0.23		Gingerol derivative
[6]-Gingerdiol isomer I	0.14		Gingerol derivative
[6]-Gingerdiol isomer II	0.06		Gingerol derivative
[8]-Shogaol	0.81	0.76	Gingerol derivative
5-Acetoxy-[6]-gingerdiol	0.20		Gingerol derivative
Methyl 5-acetoxy-[6]-gingerdiol	0.03		Gingerol derivative
Diacetoxyl-[6]-gingerdiol	2.23	2.53	Gingerol derivative
[8]-Gingerdione	0.07		Gingerol derivative
1-Dehydro-[6]-gingerdione	0.18		Gingerol derivative
[8]-Gingerol	0.02		Gingerol derivative
[10]-Isoshogaol	2.05		Gingerol derivative
[10]-Paradol	0.02		Gingerol derivative
Unknown	0.03		Gingerol derivative
Unknown	0.03		Gingerol derivative
[10]-Shogaol	0.73	0.77	Gingerol derivative
Unknown	0.09		Gingerol derivative
[10]-Gingerdione	0.13		Gingerol derivative
1-Dehydro-[8]-gingerdione	0.11		Gingerol derivative
[12]-Isoshogaol?	0.06		Gingerol derivative
Unknown	0.08		Gingerol derivative
[12]-Shogaol	0.03		Gingerol derivative
[6]-Gingerdiol geranial acetal	0.32		Gingerol derivative
(E)-Gingerenone A	0.03		Gingerol derivative
Cedr-8(15)-en-10-ol?		0.07	Sesquiterpenic alcohol
Total identified	88.32%	83.34%	

*: Two or more compounds are coeluting on this column

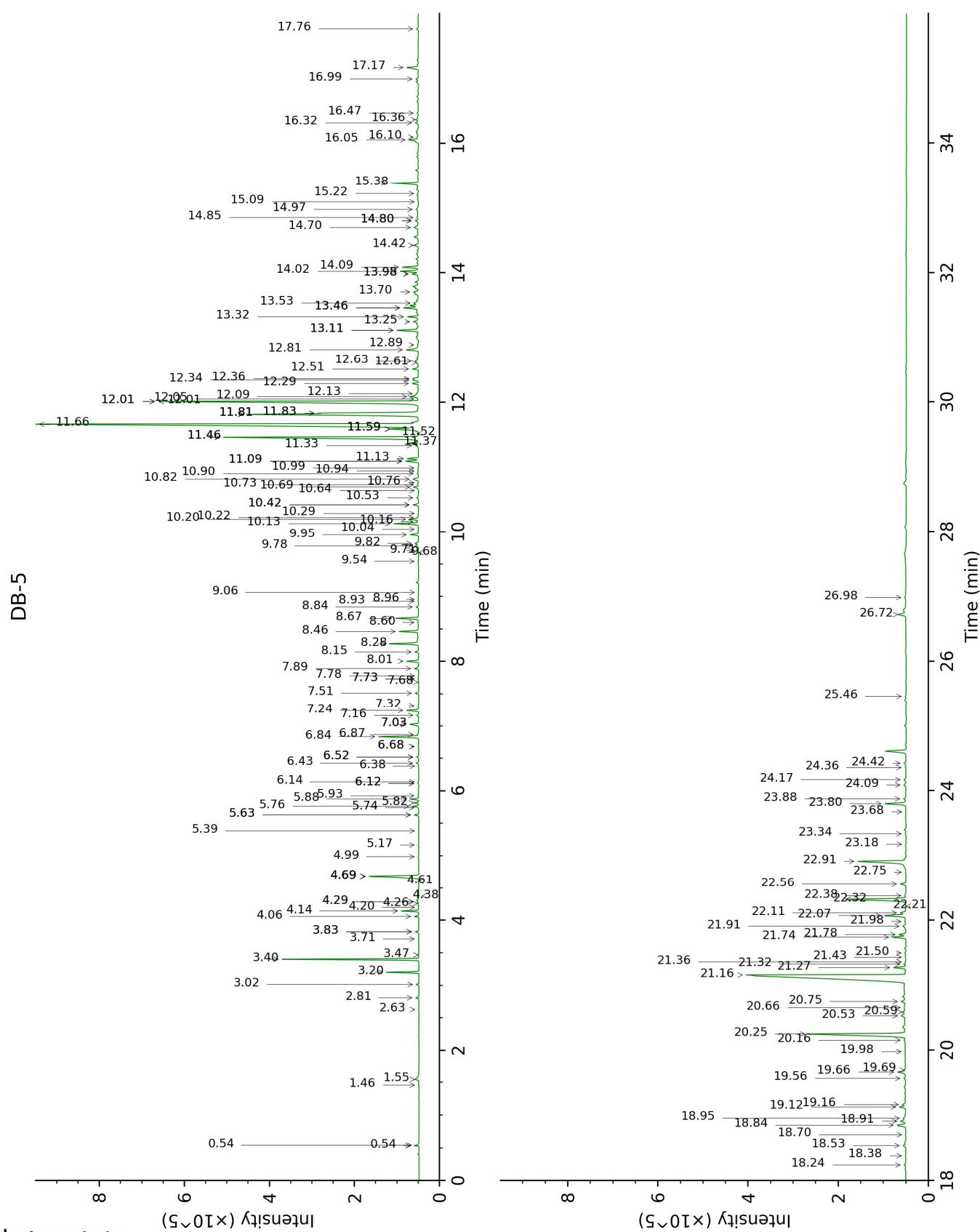
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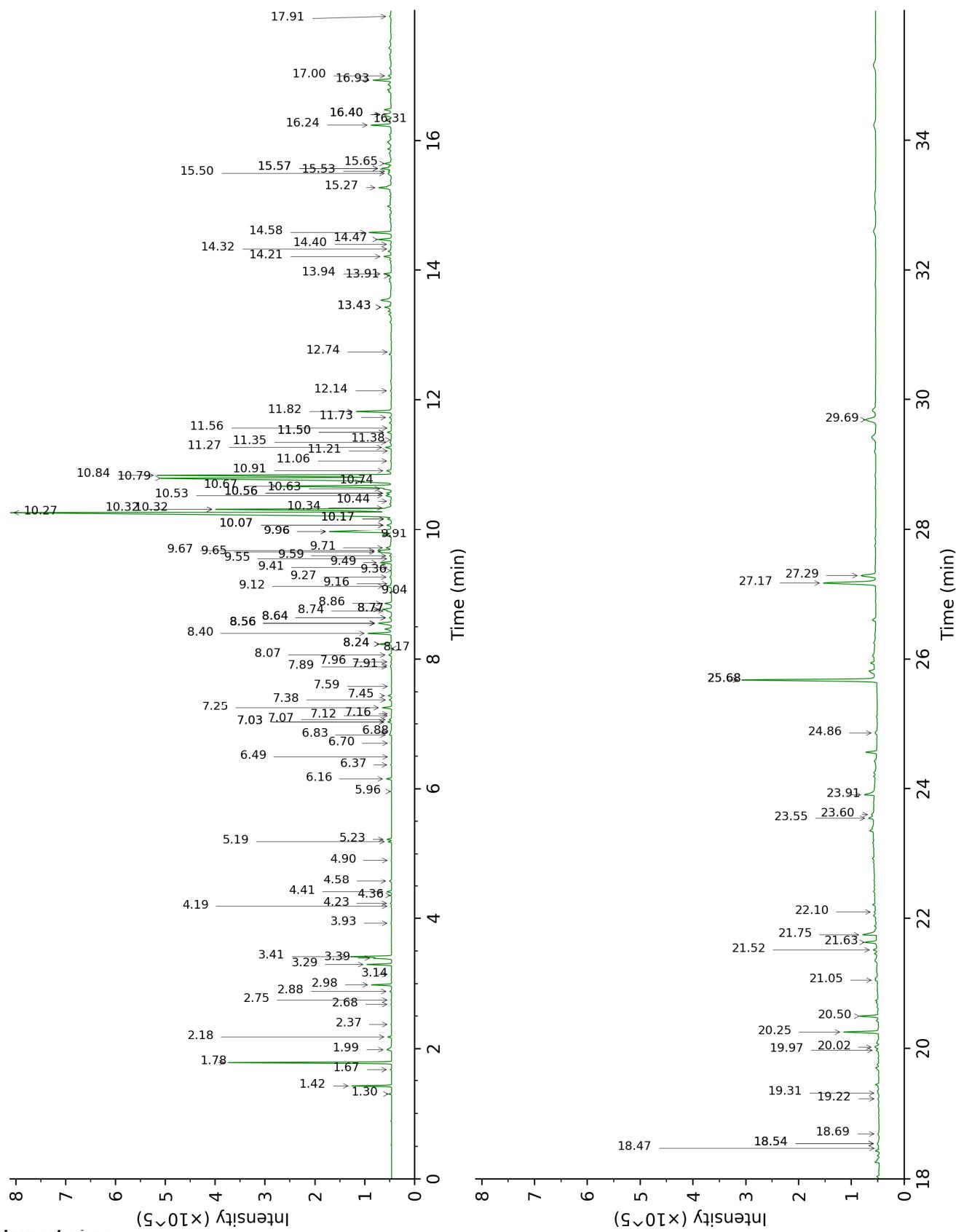
[xx]: Duplicate percentage due to coelutions, not taken account in the identified total

Note: no correction factor was applied

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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	%
Acetic acid	0.54†	605	0.10	6.83	1414	0.11
2-Methyl-3-buten-2-ol	0.54†	607	[0.10]	1.67	1017	0.03
2,3-Butanediol isomer I	1.46	787	0.03	7.96	1498	0.03
Hexanal	1.55	799	0.22	1.99	1048	0.23
2-Heptanone	2.63	888	0.01	3.14	1146	0.02
2-Heptanol	2.81	903	0.07	5.19	1297	0.08
Tricyclene	3.02	917	0.06	1.30	972	0.06
α-Pinene	3.20	929	0.71	1.42	992	0.85
Camphene	3.40	942	3.11	1.78	1027	3.71
5,5-Dimethyl-2(5H)-furanone	3.47	947	0.01	8.64*	1550	0.07
Unknown [m/z 91, 119 (60), 77 (36), 92 (31), 93 (31)... 134 (23)]	3.71	963	0.02	2.75	1116	0.02
β-Pinene	3.83*	970	0.09	2.18	1066	0.10
Sabinene	3.83*	970	[0.09]	2.37	1085	0.02
6-Methyl-5-hepten-2-one	4.06	986	0.10	5.23	1299	0.13
Myrcene	4.14	991	0.40	2.98	1134	0.48
6-Methyl-5-hepten-2-ol	4.20	995	0.01	7.12	1436	0.01
Caproic acid	4.26†	999	0.13	11.50*	1783	0.13
Octanal	4.29*†	1001	[0.13]	4.58	1252	0.07
α-Phellandrene	4.29*†	1001	[0.13]	2.88	1126	0.05
Δ3-Carene	4.38	1006	0.02	2.68	1111	0.02
ortho-Cymene	4.61	1021	0.03	4.23	1228	0.03
Unknown [m/z 59, 43 (11), 109 (10), 41 (10), 127 (8)...]	4.69*	1026	1.82	6.37	1381	0.03
Limonene	4.69*	1026	[1.82]	3.30	1158	0.63
β-Phellandrene	4.69*	1026	[1.82]	3.39	1166	0.41
1,8-Cineole	4.69*	1026	[1.82]	3.41	1167	1.14
Unknown [m/z 59, 43 (12), 109 (11), 41 (10), 127 (8)...]	4.69*	1026	[1.82]	6.49	1390	0.01
2-Heptyl acetate	4.99	1045	0.02	4.36	1236	0.02
γ-Terpinene	5.17	1056	0.02	3.93	1206	0.02
cis-Linalool oxide (fur.)	5.39	1070	0.01	6.70	1405	0.01
Terpinolene	5.63*	1086	0.12	4.41	1240	0.13
trans-Linalool oxide (fur.)	5.63*	1086	[0.12]	7.07	1432	0.08
2-Nonanone	5.74	1092	0.02	5.96	1352	0.03
Unknown [m/z 96, 109 (55), 79 (41), 67 (38), 41 (36)... 150 (3)]	5.76	1094	0.16	8.86	1567	0.22
Rosefuran	5.82	1097	0.12	6.16	1366	0.14
Linalool	5.88	1101	0.23	8.24*	1519	0.44
2-Nonanol	5.93	1104	0.03	7.89	1492	0.04
Bornyl methyl ether	6.12*	1116	0.03	4.19	1224	0.02
(E)-4,8-Dimethylnona-1,3,7-triene	6.12*	1116	[0.03]	4.90	1276	0.01
trans-Pinene hydrate	6.14	1118	0.02	8.07	1507	0.10
Unknown [m/z 83, 43 (99),]	6.38	1134	0.01			

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97 (75), 59 (44)...						
Camphor	6.43	1137	0.08	7.38	1455	0.08
Camphene hydrate	6.52*	1142	0.07	8.64*	1550	[0.07]
exo-Isocitral	6.52*	1142	[0.07]	7.59	1470	0.01
Citronellal	6.68*	1153	0.03	7.16	1438	0.02
Isoborneol	6.68*	1153	[0.03]	9.55	1622	0.03
Borneol	6.84	1163	1.09	9.96*	1655	2.80
Unknown [m/z 109, 79 (18), 81 (15), 91 (12), 77 (10)... 152 (3)]	6.87	1165	0.05			
Terpinen-4-ol	7.03*	1175	0.30	8.77*	1560	0.32
Rosefuran oxide	7.03*	1175	[0.30]	8.74	1558	0.11
para-Cymen-8-ol	7.16	1184	0.06	11.73	1803	0.07
α-Terpineol	7.24	1189	0.35	9.96*	1655	[2.80]
Myrtenol	7.32	1194	0.03	11.06	1746	0.04
Decanal	7.51	1207	0.09	7.44	1460	0.11
trans-Carveol	7.68	1218	0.01	11.56	1788	0.02
Bornyl formate	7.73*	1222	0.04	8.17	1514	0.02
2,3-Epoxyneral?	7.73*	1222	[0.04]			
Nerol	7.78	1225	0.01	11.21	1759	0.01
Citronellol	7.89	1233	0.13	10.91	1733	0.17
Neral	8.01	1240	0.33	9.67	1632	0.37
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27) ...]	8.15	1250	0.10	11.50*	1783	[0.13]
Geraniol	8.28	1259	0.80	11.82	1811	1.10
Geranial	8.46	1272	0.50	10.32*†	1684	6.01
Citronellyl formate	8.60	1281	0.02	9.04	1582	0.01
Bornyl acetate	8.67	1285	0.63	8.40	1532	0.74
2-Undecanone	8.84	1297	0.07	8.77*	1560	[0.32]
Geranyl formate	8.93	1303	0.02	10.07*	1664	0.18
2-Undecanol	8.96	1305	0.01	10.44	1694	0.03
Carvacrol	9.06	1308	0.01	15.50	2155	0.18
α-Cubebene	9.54	1342	0.02	6.88	1418	0.04
Citronellyl acetate	9.68	1351	0.01	9.59	1625	0.05
Cyclosativene I	9.71	1354	0.05	7.03*	1429	0.13
Cyclosativene II	9.78	1358	0.12	7.03*	1429	[0.13]
Neryl acetate	9.82	1361	0.12	10.34†	1685	[6.01]
α-Copaene	9.95	1371	0.25	7.25	1445	0.28
Unknown [m/z 139, 69 (63), 83 (53), 43 (49), 41 (39) ...]	10.04	1377	0.03			
Geranyl acetate	10.13†	1384	0.75	10.74†	1719	11.69
β-Cubebene	10.16†	1386	[0.75]	7.91	1494	0.03
β-Elemene	10.20	1388	0.28	8.56*	1544	0.58
Vanillin	10.22	1390	0.05	18.47	2472	0.03
γ-4-	10.29	1395	0.02			
Dimethylbenzenebutyral						
Sesquithujene	10.42*	1404	0.17	8.24*	1519	[0.44]
Dodecanal	10.42*	1404	[0.17]	10.17*	1672	0.13
β-Caryophyllene	10.53	1412	0.08	8.56*	1544	[0.58]
β-Copaene	10.64	1421	0.01	8.56*	1544	[0.58]
Unknown [m/z 43, 83 (81),	10.69	1424	0.18			

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126 (64), 41 (53), 55 (43)...					
γ-Elemene	10.73	1427	0.03	9.16	1591
(Z)-β-Farnesene?	10.76	1430	0.02	9.36	1607
trans-α-Bergamotene	10.82	1434	0.23	8.56*	1544
Sesquisabinene A	10.90	1440	0.06	9.26	1599
Unknown [m/z 139, 69 (43), 91 (42), 41 (36), 81 (36), 43 (36)... 204 (5)]	10.94	1443	0.03	14.40	2047
α-Humulene	10.99	1446	0.02	9.41	1611
allo-Aromadendrene	11.09*	1454	0.40	9.12	1588
Sesquisabinene B	11.09*	1454	[0.40]	9.49	1617
(E)-β-Farnesene	11.13	1457	0.32	9.65	1630
γ-Murolene	11.33	1472	0.09	9.72	1635
Germacrene D	11.37	1475	0.30	9.91	1651
β-Selinene	11.46*	1482	6.56	10.07*	1664
ar-Curcumene	11.46*	1482	[6.56]	10.84	1727
Unknown [m/z 161, 91 (100), 105 (93), 79 (89), 93 (89), 107 (79)... 204 (34)]	11.52	1486	0.05	10.17*	1672
Bicyclosesquiphellandrene?	11.59*	1491	0.98	9.96*	1655
epi-Cubebol	11.59*	1491	[0.98]	12.14	1839
2-Tridecanone	11.59*	1491	[0.98]	11.34	1770
α-Zingiberene	11.66	1497	16.44	10.26	1679
β-Bisabolene	11.81*	1508	5.98	10.32*†	1684
γ-Cadinene	11.81*	1508	[5.98]	10.53	1701
Cubebol	11.81*	1508	[5.98]	12.74	1892
(3E,6E)-α-Farnesene	11.83*	1510	1.73	10.67	1713
7-epi-α-Selinene	11.83*	1510	[1.73]	10.56*	1704
δ-Cadinene	12.01*	1524	9.27	10.63	1710
trans-Calamenene	12.01*	1524	[9.27]	11.38	1773
β-Sesquiphellandrene	12.01*	1524	[9.27]	10.79†	1724
(E)-γ-Bisabolene	12.05	1527	0.03	10.56*	1704
Unknown [m/z 177, 159 (67), 41 (43), 91 (43), 43 (41)... 220 (t)]	12.08	1530	0.33	13.43*	1956
Unknown [m/z 43, 177 (99), 93 (75), 41 (73), 91 (65), 107 (60)... 220 (4)]	12.13	1533	0.09		
α-Elemol	12.29	1546	0.18	14.21	2029
Germacrene B	12.34	1550	0.16	11.27	1763
cis-Sesquisabinene hydrate	12.36	1552	0.16	13.43*	1956
(E)-Nerolidol	12.51	1563	0.19	13.94	2004
1'-Hydroxyeugenol	12.61	1571	0.05	19.97	2648
ar-Turmerol	12.63	1573	0.16	15.57*	2163
trans-Sesquisabinene hydrate	12.82	1587	0.48	14.47	2054
Unknown [m/z 132, 118 (89), 145 (85), 119 (79), 117 (60)...]	12.89	1593	0.04	13.91	2001
cis-Zingiberenol	13.11*	1611	0.65	14.58	2064
10-epi-γ-Eudesmol	13.11*	1611	[0.65]	14.32	2040
Unknown [m/z 119, 85 (92),	13.25	1622	0.20	16.40*	2248
					0.43

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105 (37), 120 (36), 91 (28)... 218 (6)]						
<i>trans</i> -Zingiberenol	13.32	1628	0.32	15.27	2132	0.58
β-Eudesmol	13.46*†	1640	0.76	15.57*	2163	[0.34]
Zingerone	13.46*†	1640	[0.76]	20.50	2712	0.61
α-Eudesmol	13.53	1646	0.19	15.53	2158	0.09
(3E,5E)-7-Hydroxyfarnesene	13.70	1660	0.18	16.40*	2248	[0.43]
Zingerone methyl ether	13.98*	1683	0.22	19.22	2559	0.05
α-Bisabolol	13.98*	1683	[0.22]	15.65	2170	0.26
Unknown [m/z 137, 119 (70), 84 (69), 41 (68), 69 (53), 55 (45), 109 (38)... 222 (2)]	14.02	1686	0.57	16.24	2231	0.69
Unknown [m/z 69, 41 (59), 118 (33), 43 (32), 55 (31)... 234? (t)]	14.09	1692	0.50	16.93	2303	0.61
Unknown [m/z 119, 91 (31), 105 (29), 41 (25), 133 (23), 158 (21)...]	14.42	1720	0.18	17.00	2310	0.10
Xanthorizzhol?	14.70	1744	0.23	20.02	2654	0.19
Unknown [m/z 105, 148 (87), 91 (83), 135 (78), 131 (76)... 218 (21)...]	14.80*	1753	0.13	19.31	2569	0.04
Unknown [m/z 82, 43 (85), 91 (67), 93 (66), 41 (66), 69 (59), 106 (47)... 218 (5)...]	14.80*	1753	[0.13]			
Unknown [m/z 43, 82 (100), 41 (86), 69 (76), 93 (72), 91 (72)... 218 (4)...]	14.85	1757	0.07			
Unknown [m/z 79, 41 (77), 135 (75), 69 (74), 43 (70)... 220 (9)]	14.97	1768	0.13	18.54*	2480	0.14
Unknown [m/z 151, 41 (78), 95 (71), 109 (59), 55 (56), 69 (55)... 234 (15)]	15.09	1778	0.01			
Unknown [m/z 69, 41 (96), 43 (90), 109 (51), 55 (42), 81 (33)...]	15.22	1789	0.02	18.54*	2480	[0.14]
Unknown [m/z 69, 43 (95), 41 (84), 109 (78), 95 (54), 93 (49)... 177 (36), 220 (2)...]	15.38	1804	1.01	20.25	2682	1.06
Unknown [m/z 109, 69 (58), 43 (56), 41 (42), 135 (37), 55 (27)... 220 (5)]	16.05	1865	0.34	21.63	2854	0.42
Unknown [m/z 137, 218 (84), 119 (72), 69 (64), 175 (61), 41 (60), 93 (58)]	16.10	1868	0.06	21.05	2780	0.07
Unknown [m/z 125, 41 (88), 109 (76), 69 (76), 151 (68), 55 (45), 95 (36)... 236 (21)]	16.32	1888	0.12			
Unknown [m/z 43, 109 (89), 69 (71), 41 (63), 94 (53), 79 (47), 93 (44)...]	16.36	1893	0.09	21.52	2839	0.12

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Unknown [m/z 125, 41 (86), 151 (78), 109 (67), 69 (63)... 236 (22)]	16.47	1902	0.06	22.10	2914	0.06
Geranyl-para-cymene	16.99	1952	0.08	16.31	2238	0.24
Palmitic acid	17.17	1968	0.42	21.75	2869	0.60
(E,E)-Geranylinalool	17.76	2026	0.06	18.69	2497	0.06
[4]-Shogaol	18.24	2073	0.07			
Unknown [m/z 135, 150 (34), 77 (13), 163 (11)... 262 (2)]	18.38	2087	0.02			
Unknown [m/z 137, 203 (15), 138 (11), 105 (11), 41 (9)... 274 (7), 286? (1)]	18.53	2102	0.11			
Unknown [m/z 69, 41 (44), 121 (37), 107 (36), 81 (33)... 272 (2)]	18.70	2120	0.01			
Linoleic acid	18.84	2135	0.35	23.91	3160	0.43
Oleic acid	18.91	2141	0.19	23.55	3110	0.22
cis-Vaccenic acid?	18.95	2146	0.13	23.60	3118	0.10
[4]-Gingerol	19.12	2163	0.21			
[4]-Isogingerol?	19.16	2167	0.13			
[6]-Isoshogaol?	19.56	2209	0.05	24.86	3297	0.14
[6]-Paradol	19.66	2219	0.28			
Methyl [6]-isoshogaol?	19.69	2223	0.03			
Methyl [6]-paradol?	19.98	2254	0.01			
[6]-Dihydroparadol?	20.16	2273	0.04	25.68*	3420	4.75
[6]-Shogaol	20.25	2283	4.13	25.68*	3420	[4.75]
Methyl [6]-shogaol	20.53	2314	0.16			
Acetoxy-[6]-dihydroparadol	20.59	2320	0.07			
[6]-Gingerdione	20.66	2328	0.02			
Diacetoxy-[4]-gingerdiol	20.75	2338	0.11			
[6]-Gingerol	21.16	2384	13.01			
[8]-Isoshogaol	21.27	2397	0.34			
Unknown [m/z 137, 138 (9), 316 (6), 122 (5)]	21.32	2402	0.05			
Methyl [6]-gingerol	21.36	2406	0.01			
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	21.43	2415	0.02			
[8]-Paradol	21.50	2422	0.04			
Acetoxy-[6]-gingerol	21.74	2451	0.43			
Unknown [m/z 137, 316 (31), 109 (24), 179 (21), 150 (20)]	21.78	2455	0.23			
[6]-Gingerdiol isomer I	21.91	2470	0.14			
[6]-Gingerdiol isomer II	21.98	2479	0.06			
[8]-Shogaol	22.07	2489	0.81	27.28	3635	0.76
5-Acetoxy-[6]-gingerdiol	22.11	2494	0.20			
Methyl 5-acetoxy-[6]-gingerdiol	22.22	2506	0.03			
Diacetoxy-[6]-gingerdiol	22.32	2519	2.23	27.17	3622	2.53
[8]-Gingerdione	22.38	2526	0.07			

1-Dehydro-[6]-gingerdione	22.56	2547	0.18			
[8]-Gingerol	22.75	2570	0.02			
[10]-Isoshogaol	22.92	2590	2.05			
[10]-Paradol	23.18	2622	0.02			
Unknown [m/z 137, 109 (24), 207 (24), 43 (24)... 344 (14)]	23.34	2643	0.03			
Unknown [m/z 137, 55 (23), 41 (21), 69 (18), 150 (17), 135 (14)... 330 (12)]	23.68	2685	0.03			
[10]-Shogaol	23.80	2700	0.73	29.69	3852	0.77
Unknown [m/z 137, 205 (13), 332 (9), 122 (7)]	23.88	2710	0.09			
[10]-Gingerdione	24.09	2737	0.13			
1-Dehydro-[8]-gingerdione	24.17	2748	0.11			
[12]-Isoshogaol?	24.36	2772	0.06			
Unknown [m/z 137, 138 (8), 122 (6), 372 (6)]	24.42	2780	0.08			
[12]-Shogaol	25.46	2918	0.03			
[6]-Gingerdiol geranial acetal	26.72	3082	0.32			
(E)-Gingerenone A	26.98	3112	0.03			
Cedr-8(15)-en-10-ol?				17.91	2410	0.07
Total identified	88.32%			83.34%		
Total reported	93.42%			86.90%		

*: Two or more compounds are coeluting on this column

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

†: Peaks apexes were resolved, but peaks overlapped and were summed for analysis

Note: no correction factor was applied

R.T.: Retention time (minutes)

R.I.: Retention index