



## GC/MS BATCH NUMBER: G40107

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**ESSENTIAL OIL:** GINGER ROOT C02

**BOTANICAL NAME:** ZINGIBER OFFICINALE

**ORIGIN:** INDONESIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF GINGER ROOT C02 OIL	%
α-ZINGIBERENE	15.6
[6]-GINGEROL	14.3
δ-CADINENE + β-SESQUIPHELLANDRENE	8.6
α-CURCUMENE	6.3
β-BISABOLENE + γ-CADINENE	5.1
[6]-SHOGAOL	3.9
CAMPHENENE	3.0
DIACETOXY-[6]-GINGERDIOL	2.3
[10]-ISOSHOGAOL	2.2
(3E,6E)-α-FARNESENE + 7-epi-α-SELINENE	2.1
1,8-CINEOLE	1.6
BORNEOL	1.0
CRYPTOMERIDIOL	1.0

Comments from Robert Tisserand: Rich, spicy, pungent odor profile, evocative of dried ginger. Contains about 25% of gingerols.

Date : September 13, 2018

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

**Internal code :** 18I07-PTH6-1-CC

**Customer identification :** Ginger Root CO2 - Indonesia - G4010788R

**Type :** Essential oil

**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 :** September 11, 2018

Checked and approved by :



Sylvain Mercier, M. Sc., chimiste 2014-005

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#### *P*HYSICO*C*HEMICAL *D*ATA

**Physical aspect:** Red/brown liquid

**Refractive index:**  $1.5018 \pm 0.0003$  (20 °C)

#### *C*ONCLUSION

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

## ANALYSIS SUMMARY

Identification	DB-5 (%)	DB-WAX (%)	Classe
Acetic acid	0.12*		Aliphatic acid
2-Methyl-3-buten-2-ol	[0.12]*	0.02	Aliphatic alcohol
2,3-Butanediol isomer I	0.03	0.03	Aliphatic alcohol
Hexanal	0.30*	0.33	Aliphatic aldehyde
2,3-Butanediol isomer II	[0.30]*	0.37*	Aliphatic alcohol
2-Heptanone	0.01	0.01	Aliphatic ketone
2-Heptanol	0.07	0.09	Aliphatic alcohol
Tricyclene	0.05	0.07	Monoterpene
α-Pinene	0.68	0.85	Monoterpene
Camphepane	2.99	3.74	Monoterpene
β-Pinene	0.08*	0.09	Monoterpene
Sabinene	[0.08]*	0.01	Monoterpene
6-Methyl-5-hepten-2-one	0.09	0.13	Aliphatic ketone
Myrcene	0.37	0.48	Monoterpene
6-Methyl-5-hepten-2-ol	0.02	0.01	Aliphatic alcohol
α-Phellandrene	0.03	0.04	Monoterpene
Octanal	0.12	0.11	Aliphatic aldehyde
Δ3-Carene	0.02	0.02	Monoterpene
para-Cymene	1.75	0.05*	Monoterpene
Limonene	[1.75]*	0.61	Monoterpene
1,8-Cineole	[1.75]*	1.57	Monoterpnic ether
Unknown	[1.75]*	0.03	Unknown
2-Heptyl acetate	0.01	0.02	Aliphatic ester
γ-Terpinene	0.02	0.02	Monoterpene
cis-Linalool oxide (fur.)	0.01	0.01	Monoterpnic alcohol
Terpinolene	0.11*	0.13	Monoterpene
trans-Linalool oxide (fur.)	[0.11]*	0.01	Monoterpnic alcohol
2-Nonanone	0.01	0.03	Aliphatic ketone
Unknown	0.14	0.27*	Oxygenated monoterpene
Rosefuran	0.11	0.14	Monoterpnic ether
Linalool	0.19	[0.37]*	Monoterpnic alcohol
2-Nonanol	0.02	0.03	Aliphatic alcohol
Bornyl methyl ether	0.03	[0.05]*	Monoterpnic ether
(E)-4,8-Dimethylnona-1,3,7-triene	0.01	0.02	Terpene derivative
trans-para-Menth-2-en-1-ol	0.06*	0.02	Monoterpnic alcohol
Camphor	[0.06]*	0.35*	Monoterpnic ketone
Camphene hydrate	0.05	0.06	Monoterpnic alcohol
Citronellal	0.01	0.06	Monoterpnic aldehyde
Borneol	1.09*	1.70*	Monoterpnic alcohol
Isoneral	[1.09]*	0.07	Monoterpnic aldehyde
Unknown	0.01		Oxygenated monoterpene
Terpinen-4-ol	0.28	0.34	Monoterpnic alcohol
para-Cymen-8-ol	0.05	0.06	Monoterpnic alcohol
α-Terpineol	0.32*	[1.70]*	Monoterpnic alcohol
Myrtenal	[0.32]*	[0.27]*	Monoterpnic aldehyde
Myrtenol	0.04	0.04	Monoterpnic alcohol
Decanal	0.16*	0.19	Aliphatic aldehyde
trans-Piperitol	[0.16]*	0.67*	Monoterpnic alcohol

Bornyl formate	0.04	[0.37]*	Monoterpenic ester
Nerol	0.01	0.02	Monoterpenic alcohol
Citronellol	0.11	[18.47]	Monoterpenic alcohol
Neral	0.37	0.54*	Monoterpenic aldehyde
Unknown	0.09	0.18*	Oxygenated monoterpane
Geraniol	0.87	1.00*	Monoterpenic alcohol
Geranial	0.62	0.86	Monoterpenic aldehyde
Bornyl acetate	0.60	0.78	Monoterpenic ester
2-Undecanone	0.07	[0.27]*	Aliphatic ketone
Geranyl formate	0.04	1.10*	Monoterpenic ester
2-Undecanol	0.04	0.05	Aliphatic alcohol
Carvacrol	0.02	0.50*	Monoterpenic alcohol
8-Hydroxy-neo-menthol	0.02	0.02	Monoterpenic alcohol
α-Cubebene	0.03	0.02	Sesquiterpene
Citronellyl acetate	0.07	[0.54]*	Monoterpenic ester
Cyclosativene I	0.10	0.15*	Sesquiterpene
Cyclosativene II	0.06*	[0.15]*	Sesquiterpene
Neryl acetate	[0.06]*	5.15*	Monoterpenic ester
Geranic acid	0.10	0.15	Aliphatic acid
α-Copaene	0.24	[0.35]*	Sesquiterpene
Geranyl acetate	0.69	4.76*	Monoterpenic ester
β-Elemene	0.26	0.47*	Sesquiterpene
Vanillin	0.05	0.03	Simple phenolic
Dodecanal	0.16	0.15	Aliphatic aldehyde
β-Caryophyllene	0.06	[0.47]*	Sesquiterpene
β-Copaene	0.16	0.21	Sesquiterpene
γ-Elemene	0.03	0.03	Sesquiterpene
(Z)-β-Farnesene?	0.01	0.01	Sesquiterpene
trans-α-Bergamotene	0.09	[0.47]*	Sesquiterpene
Nerylacetone?	0.12	[1.00]*	Terpenic ketone
Sesquisabinene A	0.08	0.04	Sesquiterpene
Unknown	0.02	0.45*	Sesquiterpene
α-Humulene	0.04	0.03	Sesquiterpene
Sesquisabinene B	0.39	0.34	Sesquiterpene
(E)-β-Farnesene	0.30	0.40	Sesquiterpene
Selina-4,11-diene	0.01	[0.54]*	Sesquiterpene
γ-Muuirolene	0.09	0.18	Sesquiterpene
Germacrene D	0.30	0.43	Sesquiterpene
ar-Curcumene	6.30	18.47*	Sesquiterpene
Unknown	[6.30]	0.01	Sesquiterpene
epi-Cubebol	0.93*	0.04	Sesquiterpenic alcohol
Bicyclosesquiphellandrene?	[0.93]*	[1.10]*	Sesquiterpene
α-Zingiberene	15.62	19.07	Sesquiterpene
β-Bisabolene	5.21*	[5.15]*	Sesquiterpene
γ-Cadinene	[5.21]*	[0.67]*	Sesquiterpene
Cubebol	[5.21]*	0.09	Sesquiterpenic alcohol
(3E,6E)-α-Farnesene	2.14*	[4.76]*	Sesquiterpene
7-epi-α-Selinene	[2.14]*	[0.67]*	Sesquiterpene
δ-Cadinene	8.82*	[0.67]*	Sesquiterpene
trans-Calamenene	[8.82]*	[0.18]*	Sesquiterpene
β-Sesquiphellandrene	[8.82]*	[18.47]*	Sesquiterpene
Unknown	0.23	1.64	Oxygenated sesquiterpene

Unknown	0.11		Oxygenated sesquiterpene
$\alpha$ -Elemol	0.16	0.15	Sesquiterpenic alcohol
Germacrene B	0.15	0.19	Sesquiterpene
cis-Sesquisabinene hydrate	0.16	[1.64]	Sesquiterpenic alcohol
(E)-Nerolidol	0.18	0.33*	Sesquiterpenic alcohol
1'-Hydroxyeugenol	0.07	0.05	Phenylpropanoid
ar-Turmerol	0.22	[0.50]*	Sesquiterpenic alcohol
Unknown	0.40*	[0.33]*	Oxygenated sesquiterpene
trans-Sesquisabinene hydrate	[0.40]*	[0.45]*	Sesquiterpenic alcohol
10-epi- $\gamma$ -Eudesmol	0.05	0.03	Sesquiterpenic alcohol
cis-Zingiberol	0.64	0.71	Sesquiterpenic alcohol
$\gamma$ -Eudesmol	0.21	0.17	Sesquiterpenic alcohol
trans-Zingiberol	0.31	0.49	Sesquiterpenic alcohol
$\beta$ -Eudesmol	1.02*	0.10	Sesquiterpenic alcohol
Zingerone	[1.02]*	0.89	Phenylbutanoid
$\alpha$ -Eudesmol	0.18	0.16	Sesquiterpenic alcohol
(3E,5E)-7-Hydroxyfarnesene	0.35	0.29	Sesquiterpenic alcohol
Zingerone methyl ether	0.13	0.12	Simple phenolic
$\alpha$ -Bisabolol	0.21	0.07	Sesquiterpenic alcohol
Unknown	0.55	0.64	Oxygenated sesquiterpene
Unknown	0.48	0.58	Oxygenated sesquiterpene
Unknown	0.17		Oxygenated sesquiterpene
Oplopanone	0.14	0.18	Sesquiterpenic alcohol
Xanthorizzhol?	0.17		Sesquiterpenic alcohol
Unknown	0.04		Oxygenated sesquiterpene
Unknown	0.03	0.04	Oxygenated sesquiterpene
Unknown	0.09		Oxygenated sesquiterpene
Unknown	0.05	0.03	Oxygenated sesquiterpene
Unknown	0.07		Oxygenated sesquiterpene
Unknown	0.01	0.03	Oxygenated sesquiterpene
Unknown	0.07		Oxygenated sesquiterpene
Cryptomeridiol	1.00	1.01	Sesquiterpenic alcohol
Unknown	0.09		Oxygenated sesquiterpene
Unknown	0.32		Oxygenated sesquiterpene
Unknown	0.10	0.32	Unknown
Unknown	0.07	0.07	Oxygenated sesquiterpene
Geranyl-para-cymene	0.09	0.17	Diterpene
Palmitic acid	0.41		Aliphatic acid
(E,E)-Geranylinalool	0.03	0.02	Diterpenic alcohol
[4]-Shogaol	0.03		Gingerol derivative
Unknown	0.07		Gingerol derivative
Unknown	0.10		Gingerol derivative
Unknown	0.01		Oxygenated diterpene
Linoleic acid	0.21		Aliphatic acid
Oleic acid	0.18		Aliphatic acid
cis-Vaccenic acid?	0.09		Aliphatic acid
[4]-Gingerol	0.21		Gingerol derivative
[4]-Isogingerol?	0.14		Gingerol derivative
[6]-Isoshogaol?	0.08	0.47	Gingerol derivative
[6]-Paradol	0.41		Gingerol derivative
Methyl [6]-paradol?	0.02		Gingerol derivative
[6]-Dihydroparadol?	0.03		Gingerol derivative

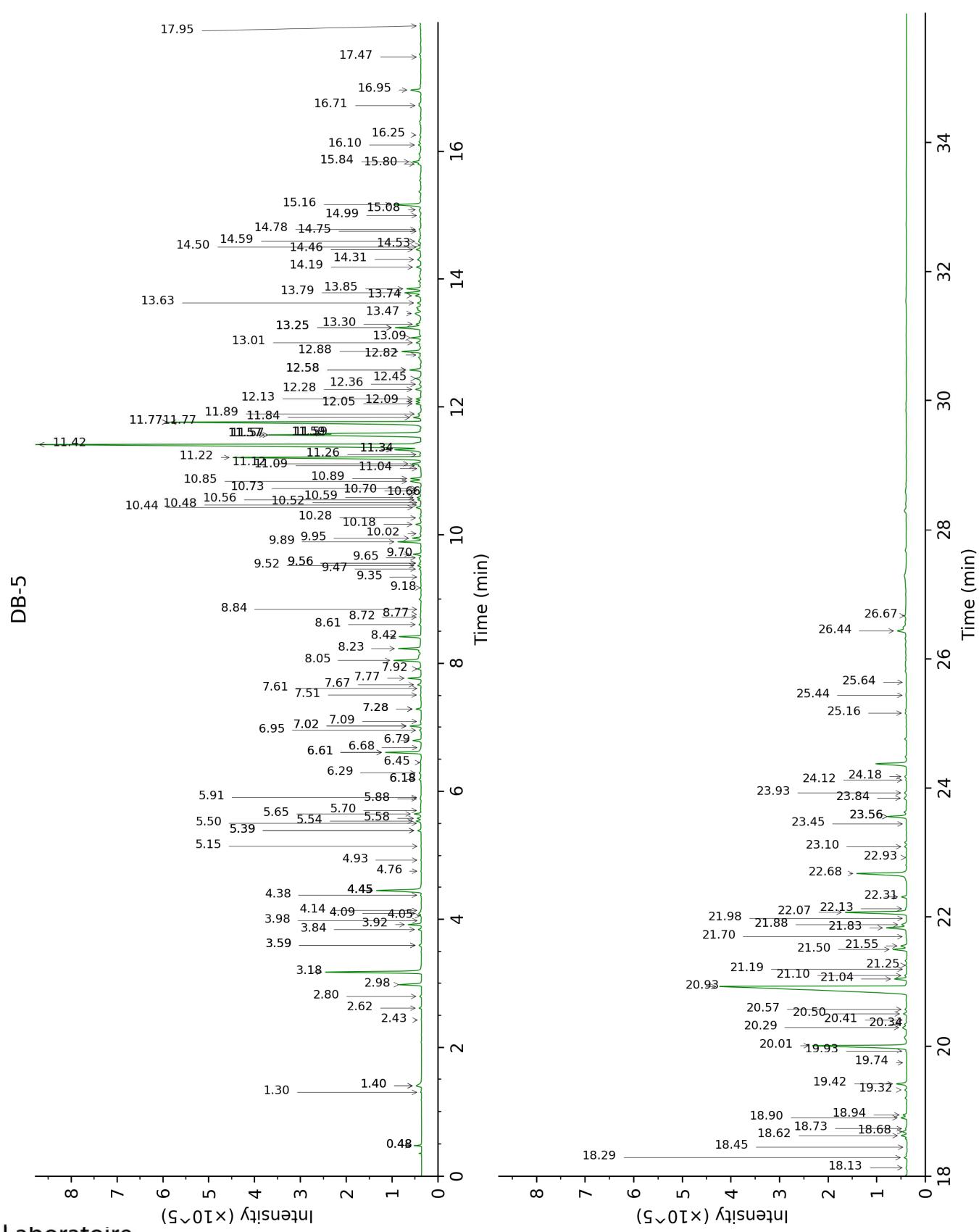
[6]-Shogaol	3.89	5.29	Gingerol derivative
Methyl [6]-shogaol	0.22		Gingerol derivative
Acetoxy-[6]-dihydroparadol	0.08		Gingerol derivative
[6]-Gingerdione	0.05		Gingerol derivative
Diacetoxo-[4]-gingerdiol	0.12		Gingerol derivative
Geranyl laurate	0.07	0.07	Monoterpenic ester
[6]-Gingerol	14.29		Gingerol derivative
Unknown	0.42		Gingerol derivative
Methyl [6]-gingerol	0.08		Gingerol derivative
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	0.02		Gingerol derivative
[8]-Paradol	0.04		Gingerol derivative
Acetoxy-[6]-gingerol	0.45		Gingerol derivative
Unknown	0.23		Gingerol derivative
[6]-Gingerdiol isomer II	0.04		Gingerol derivative
[8]-Shogaol	0.74	0.77	Gingerol derivative
5-Acetoxy-[6]-gingerdiol	0.21		Gingerol derivative
Methyl 5-acetoxy-[6]-gingerdiol	0.01		Gingerol derivative
Diacetoxo-[6]-gingerdiol	2.25		Gingerol derivative
[8]-Gingerdione	0.05		Gingerol derivative
1-Dehydro-[6]-gingerdione	0.18		Gingerol derivative
[10]-Isoshogaol	2.22		Gingerol derivative
[10]-Paradol	0.04		Gingerol derivative
Unknown	0.08		Gingerol derivative
Unknown	0.01		Gingerol derivative
[10]-Shogaol	0.69*	0.27	Gingerol derivative
Unknown	[0.69]*		Gingerol derivative
[10]-Gingerdione	0.13		Gingerol derivative
1-Dehydro-[8]-gingerdione	0.09		Gingerol derivative
[12]-Isoshogaol?	0.03		Gingerol derivative
Unknown	0.07		Gingerol derivative
[12]-Shogaol	0.06		Gingerol derivative
[12]-Gingerdione	0.03		Gingerol derivative
[6]-Gingerdiol neral acetal?	0.01		Gingerol derivative
[6]-Gingerdiol geranial acetal	0.39		Gingerol derivative
(E)-Gingerenone A	0.04		Gingerol derivative
<b>Total identified</b>	<b>88.72%</b>	<b>81.99%</b>	

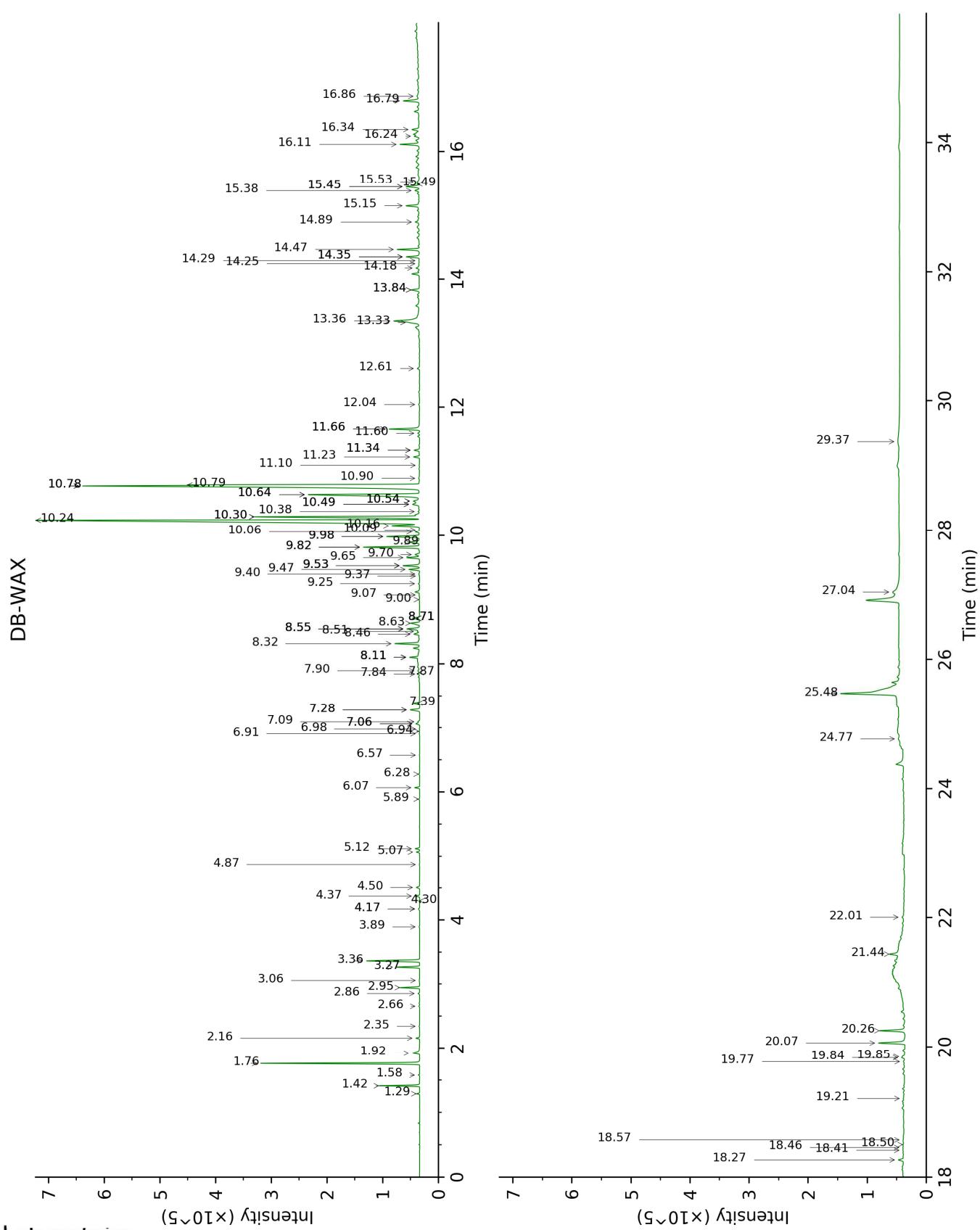
\*: Two or more compounds are coeluting on this column

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

Note: no correction factor was applied

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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Acetic acid	0.48*	602	0.12			
2-Methyl-3-buten-2-ol	0.48*	602	[0.12]	1.58	1012	0.02
2,3-Butanediol isomer I	1.30	784	0.03	7.87	1496	0.03
Hexanal	1.40*	799	0.30	1.92	1046	0.33
2,3-Butanediol isomer II	1.40*	799	[0.30]	8.10*	1515	0.37
2-Heptanone	2.43	888	0.01	3.06	1147	0.01
2-Heptanol	2.62	904	0.07	5.07	1293	0.09
Tricyclene	2.80	916	0.05	1.29	975	0.07
α-Pinene	2.98	928	0.68	1.42	995	0.85
Camphepane	3.18	941	2.99	1.76	1030	3.74
β-Pinene	3.59*	969	0.08	2.16	1070	0.09
Sabinene	3.59*	969	[0.08]	2.35	1088	0.01
6-Methyl-5-hepten-2-one	3.84	986	0.09	5.12	1297	0.13
Myrcene	3.92	991	0.37	2.95	1138	0.48
6-Methyl-5-hepten-2-ol	3.98	995	0.02	6.98	1431	0.01
α-Phellandrene	4.06	1000	0.03	2.86	1131	0.04
Octanal	4.09	1002	0.12	4.50	1253	0.11
Δ3-Carene	4.14	1005	0.02	2.66	1116	0.02
para-Cymene	4.38†	1020	1.75	4.17*	1230	0.05
Limonene	4.45*†	1025	[1.75]	3.27	1163	0.61
1,8-Cineole	4.45*†	1025	[1.75]	3.36	1170	1.57
Unknown [m/z 59, 43 (11), 109 (10), 41 (10), 127 (8)...]	4.45*†	1025	[1.75]	6.28	1380	0.03
2-Heptyl acetate	4.76	1045	0.01	4.30	1239	0.02
γ-Terpinene	4.93	1055	0.02	3.89	1210	0.02
cis-Linalool oxide (fur.)	5.15	1069	0.01	6.57	1401	0.01
Terpinolene	5.39*	1084	0.11	4.37	1244	0.13
trans-Linalool oxide (fur.)	5.39*	1084	[0.11]	6.94	1428	0.01
2-Nonanone	5.50	1092	0.01	5.89	1352	0.03
Unknown [m/z 96, 109 (55), 79 (41), 67 (38), 41 (36)... 150 (3)]	5.54	1094	0.14	8.71*	1562	0.27
Rosefuran	5.58	1096	0.11	6.07	1365	0.14
Linalool	5.65	1101	0.19	8.10*	1515	[0.37]
2-Nonanol	5.70	1104	0.02	7.84	1495	0.03
Bornyl methyl ether	5.88	1116	0.03	4.17*	1230	[0.05]
(E)-4,8-Dimethylnona-1,3,7-triene	5.91	1117	0.01	4.87	1280	0.02
trans-para-Menth-2-en-1-ol	6.18*	1135	0.06	9.00	1584	0.02
Camphor	6.18*	1135	[0.06]	7.28*	1453	0.35
Camphene hydrate	6.29	1142	0.05	8.51	1546	0.06
Citronellal	6.45	1152	0.01	7.09	1439	0.06
Borneol	6.61*	1162	1.09	9.82*	1649	1.70
Isoneral	6.61*	1162	[1.09]	7.90	1499	0.07
Unknown [m/z 109, 79 (18), 81 (15), 91 (12), 77 (10)... 152 (3)]	6.68	1167	0.01			
Terpinen-4-ol	6.79	1174	0.28	8.64	1556	0.34

Laboratoire  
**PhytoChemia**

Plus que des analyses... des conseils

para-Cymen-8-ol	6.95	1184	0.05	11.60	1798	0.06
α-Terpineol	7.02*	1188	0.32	9.82*	1649	[1.70]
Myrtenal	7.02*	1188	[0.32]	8.71*	1562	[0.27]
Myrtenol	7.09	1193	0.04	10.90	1739	0.04
Decanal	7.28*	1206	0.16	7.39	1461	0.19
trans-Piperitol	7.28*	1206	[0.16]	10.49*†	1704	0.67
Bornyl formate	7.51	1221	0.04	8.10*	1515	[0.37]
Nerol	7.61	1228	0.01	11.10	1756	0.02
Citronellol	7.67	1232	0.11	10.80†	1730	[18.47]
Neral	7.77	1238	0.37	9.53*	1626	0.54
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27) ...]	7.92	1248	0.09	11.34*	1776	0.18
Geraniol	8.05	1257	0.87	11.66*	1804	1.00
Geranial	8.23	1269	0.62	10.16	1677	0.86
Bornyl acetate	8.42	1282	0.60	8.32	1531	0.78
2-Undecanone	8.61	1294	0.07	8.71*	1562	[0.27]
Geranyl formate	8.72	1302	0.04	9.98*	1663	1.10
2-Undecanol	8.76	1305	0.04	10.38	1695	0.05
Carvacrol	8.84	1311	0.02	15.44*	2158	0.50
8-Hydroxy-neo-menthol	9.18	1334	0.02	14.29	2045	0.02
α-Cubebene	9.35	1346	0.03	6.91	1426	0.02
Citronellyl acetate	9.47	1355	0.07	9.53*	1626	[0.54]
Cyclosativene I	9.52	1359	0.10	7.06*	1437	0.15
Cyclosativene II	9.56*	1361	0.06	7.06*	1437	[0.15]
Neryl acetate	9.56*	1361	[0.06]	10.30*	1688	5.15
Geranic acid	9.65	1367	0.10	16.86	2304	0.15
α-Copaene	9.70	1371	0.24	7.28*	1453	[0.35]
Geranyl acetate	9.89	1385	0.69	10.64*	1717	4.76
β-Elemene	9.95	1389	0.26	8.55*	1549	0.47
Vanillin	10.02	1394	0.05	18.41	2475	0.03
Dodecanal	10.18	1405	0.16	10.06	1669	0.15
β-Caryophyllene	10.28	1412	0.06	8.55*	1549	[0.47]
β-Copaene	10.44	1424	0.16	8.46	1542	0.21
γ-Elemene	10.48	1427	0.03	9.07	1590	0.03
(Z)-β-Farnesene?	10.52	1430	0.01	9.37	1613	0.01
trans-α-Bergamotene	10.56	1433	0.09	8.55*	1549	[0.47]
Nerylacetone?	10.59	1436	0.12	11.66*	1804	[1.00]
Sesquisabinene A	10.66	1441	0.08	9.25	1603	0.04
Unknown [m/z 139, 69 (43), 91 (42), 41 (36), 81 (36), 43 (36)... 204 (5)]	10.70	1444	0.02	14.35*	2050	0.45
α-Humulene	10.73	1446	0.04	9.40	1616	0.03
Sesquisabinene B	10.85	1455	0.39	9.47	1621	0.34
(E)-β-Farnesene	10.89	1458	0.30	9.65	1636	0.40
Selina-4,11-diene	11.04	1470	0.01	9.53*	1626	[0.54]
γ-Murolene	11.09	1473	0.09	9.70	1640	0.18
Germacrene D	11.12	1475	0.30	9.90	1656	0.43
ar-Curcumene	11.22†	1482	6.30	10.78*†	1729	18.47
Unknown [m/z 161, 91 (100), 105 (93), 79 (89), 93 (89), 107 (79)... 204 (34)]	11.26†	1486	[6.30]	10.09	1671	0.01

epi-Cubebol	11.34*	1492	0.93	12.04	1838	0.04
Bicyclosesquiphellandrene?	11.34*	1492	[0.93]	9.98*	1663	[1.10]
$\alpha$ -Zingiberene	11.42	1498	15.62	10.24	1684	19.07
$\beta$ -Bisabolene	11.57*	1509	5.21	10.30*	1688	[5.15]
$\gamma$ -Cadinene	11.57*	1509	[5.21]	10.49*†	1704	[0.67]
Cubebol	11.57*	1509	[5.21]	12.60	1887	0.09
(3E,6E)- $\alpha$ -Farnesene	11.59*	1511	2.14	10.64*	1717	[4.76]
7-epi- $\alpha$ -Selinene	11.59*	1511	[2.14]	10.54*†	1709	[0.67]
$\delta$ -Cadinene	11.77*	1525	8.82	10.54*†	1709	[0.67]
<i>trans</i> -Calamenene	11.77*	1525	[8.82]	11.34*	1776	[0.18]
$\beta$ -Sesquiphellandrene	11.77*	1525	[8.82]	10.78*†	1729	[18.47]
Unknown [m/z 177, 159 (67), 41 (43), 91 (43), 43 (41)... 220 (t)]	11.84	1530	0.23	13.33†	1954	1.64
Unknown [m/z 43, 177 (99), 93 (75), 41 (73), 91 (65), 107 (60)... 220 (4)]	11.89	1535	0.11			
$\alpha$ -Elemol	12.05	1547	0.16	14.18	2034	0.15
Germacrene B	12.09	1550	0.15	11.23	1767	0.19
<i>cis</i> -Sesquisabinene hydrate	12.13	1553	0.16	13.36†	1956	[1.64]
(E)-Nerolidol	12.28	1565	0.18	13.84*	2001	0.33
1'-Hydroxyeugenol	12.36	1571	0.07	19.85	2643	0.05
ar-Turmerol	12.45	1578	0.22	15.44*	2158	[0.50]
Unknown [m/z 132, 118 (89), 145 (85), 119 (79), 117 (60)...]	12.58*	1588	0.40	13.84*	2001	[0.33]
<i>trans</i> -Sesquisabinene hydrate	12.58*	1588	[0.40]	14.35*	2050	[0.45]
10-epi- $\gamma$ -Eudesmol	12.82	1608	0.05	14.25	2040	0.03
<i>cis</i> -Zingiberenol	12.88	1612	0.64	14.47	2062	0.71
$\gamma$ -Eudesmol	13.01	1624	0.21	14.89	2103	0.17
<i>trans</i> -Zingiberenol	13.09	1630	0.31	15.15	2128	0.49
$\beta$ -Eudesmol	13.25*	1643	1.02	15.53	2166	0.10
Zingerone	13.25*	1643	[1.02]	20.26	2692	0.89
$\alpha$ -Eudesmol	13.30	1647	0.18	15.38	2152	0.16
(3E,5E)-7-Hydroxyfarnesene	13.47	1661	0.35	16.34	2250	0.29
Zingerone methyl ether	13.63	1675	0.13	19.84	2641	0.12
$\alpha$ -Bisabolol	13.74	1684	0.21	15.49	2163	0.07
Unknown [m/z 137, 119 (70), 84 (69), 41 (68), 69 (53), 55 (45), 109 (38)... 222 (2)]	13.79	1688	0.55	16.11	2226	0.64
Unknown [m/z 69, 41 (59), 118 (33), 43 (32), 55 (31)... 234? (t)]	13.85	1693	0.48	16.79	2297	0.58
Unknown [m/z 119, 91 (31), 105 (29), 41 (25), 133 (23), 158 (21)...]	14.19	1722	0.17			
Oplopanone	14.31	1732	0.14	18.27	2459	0.18
Xanthorizzhol?	14.46	1745	0.17			
Unknown [m/z 82, 43 (85), 91 (67), 93 (66), 41 (66), 69 (59), 106 (47)... 218 (5)...]	14.50	1749	0.04			

Unknown [m/z 105, 148 (87), 91 (83), 135 (78), 131 (76)... 218 (21)…]	14.53	1752	0.03	19.21	2566	0.04
Unknown [m/z 43, 82 (100), 41 (86), 69 (76), 93 (72), 91 (72)... 218 (4)…]	14.59	1757	0.09			
Unknown [m/z 79, 41 (77), 135 (75), 69 (74), 43 (70)... 220 (9)]	14.75	1770	0.05	18.50	2485	0.03
Unknown [m/z 151, 41 (78), 95 (71), 109 (59), 55 (56), 69 (55)... 234 (15)]	14.78	1773	0.07			
Unknown [m/z 69, 41 (96), 43 (90), 109 (51), 55 (42), 81 (33)…]	14.99	1791	0.01	18.46	2480	0.03
Unknown [m/z 69, 43 (95), 41 (84), 109 (78), 95 (54), 93 (49)... 177 (36), 220 (2)…]	15.08	1799	0.07			
Cryptomeridiol	15.16	1806	1.00	20.07	2669	1.01
Unknown [m/z 109, 69 (58), 43 (56), 41 (42), 135 (37), 55 (27)... 220 (5)]	15.80	1865	0.09			
Unknown [m/z 137, 218 (84), 119 (72), 69 (64), 175 (61), 41 (60), 93 (58)]	15.84	1868	0.32			
Unknown [m/z 43, 109 (89), 69 (71), 41 (63), 94 (53), 79 (47), 93 (44)…]	16.10	1892	0.10	21.44	2840	0.32
Unknown [m/z 125, 41 (86), 151 (78), 109 (67), 69 (63)... 236 (22)]	16.26	1906	0.07	22.01	2913	0.07
Geranyl-para-cymene	16.71	1949	0.09	16.24	2239	0.17
Palmitic acid	16.96	1972	0.41			
(E,E)-Geranylinalool	17.47	2022	0.03	18.57	2493	0.02
[4]-Shogaol	17.95	2070	0.03			
Unknown [m/z 135, 150 (34), 77 (13), 163 (11)... 262 (2)]	18.13	2088	0.07			
Unknown [m/z 137, 203 (15), 138 (11), 105 (11), 41 (9)... 274 (7), 286? (1)]	18.29	2104	0.10			
Unknown [m/z 69, 41 (44), 121 (37), 107 (36), 81 (33)... 272 (2)]	18.45	2120	0.01			
Linoleic acid	18.62	2138	0.21			
Oleic acid	18.68	2145	0.18			
cis-Vaccenic acid?	18.73	2150	0.09			
[4]-Gingerol	18.90	2167	0.21			
[4]-Isogingerol?	18.94	2172	0.14			
[6]-Isoshogaol?	19.32	2212	0.08	24.77	3296	0.47
[6]-Paradol	19.42	2222	0.41			
Methyl [6]-paradol?	19.74	2256	0.02			

[6]-Dihydroparadol?	19.93	2277	0.03			
[6]-Shogaol	20.01	2286	3.89	25.48	3401	5.29
Methyl [6]-shogaol	20.29	2317	0.22			
Acetoxy-[6]-dihydroparadol	20.34	2322	0.08			
[6]-Gingerdione	20.41	2330	0.05			
Diacetoxyl-[4]-gingerdiol	20.50	2340	0.12			
Geranyl laurate	20.58	2348	0.07	19.77	2634	0.07
[6]-Gingerol	20.93	2388	14.29			
Unknown [m/z 137, 138 (9), 316 (6), 122 (5)]	21.04	2401	0.42			
Methyl [6]-gingerol	21.10	2407	0.08			
1-(4'-Hydroxy-3'-methoxyphenyl)-7-dodecen-3-one?	21.19	2418	0.02			
[8]-Paradol	21.25	2425	0.04			
Acetoxy-[6]-gingerol	21.50	2454	0.45			
Unknown [m/z 137, 316 (31), 109 (24), 179 (21), 150 (20)]	21.55	2460	0.23			
[6]-Gingerdiol isomer II	21.70	2477	0.04			
[8]-Shogaol	21.83	2493	0.74	27.04	3619	0.77
5-Acetoxy-[6]-gingerdiol	21.88	2498	0.21			
Methyl 5-acetoxy-[6]-gingerdiol	21.98	2510	0.01			
Diacetoxyl-[6]-gingerdiol	22.07	2521	2.25			
[8]-Gingerdione	22.13	2528	0.05			
1-Dehydro-[6]-gingerdione	22.31	2550	0.18			
[10]-Isoshogaol	22.68	2595	2.22			
[10]-Paradol	22.93	2626	0.04			
Unknown [m/z 137, 109 (24), 207 (24), 43 (24)... 344 (14)]	23.10	2647	0.08			
Unknown [m/z 137, 55 (23), 41 (21), 69 (18), 150 (17), 135 (14)... 330 (12)]	23.45	2690	0.01			
[10]-Shogaol	23.56*	2705	0.69	29.37	3840	0.27
Unknown [m/z 137, 205 (13), 332 (9), 122 (7)]	23.56*	2705	[0.69]			
[10]-Gingerdione	23.84	2741	0.13			
1-Dehydro-[8]-gingerdione	23.93	2752	0.09			
[12]-Isoshogaol?	24.12	2778	0.03			
Unknown [m/z 137, 138 (8), 122 (6), 372 (6)]	24.18	2785	0.07			
[12]-Shogaol	25.16	2916	0.06			
[12]-Gingerdione	25.44	2955	0.03			
[6]-Gingerdiol nerual acetal?	25.64	2983	0.01			
[6]-Gingerdiol geranial acetal	26.44	3091	0.39			
(E)-Gingerenone A	26.67	3119	0.04			
<b>Total identified</b>		<b>88.72%</b>			<b>81.99%</b>	
<b>Total reported</b>		<b>92.51%</b>			<b>84.00%</b>	

\*: 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