

Date : August 11, 2023

CERTIFICATE OF ANALYSIS – GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 23D12-BRA02


Customer identification : Black Spruce Organic - Picea mariana - Canada - NPS00107 - Lot # NP210

Type : Essential oil

Source : Picea mariana

Customer : Nature Packaged

ANALYSIS

Method: PC-MAT-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 : Amélie Simard, Analyste

Analysis date : April 21, 2023

Checked and approved by :



Alexis St-Gelais, Ph. D., Chimiste 2013-174

Notes: 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 from the first version issued on April 24, 2023 to format it for online publication.

PHYSICOCHEMICAL DATA

Physical aspect: Clear liquid

Refractive index: 1.4714 ± 0.0003 (20 °C; method PC-MAT-016)

CONCLUSION

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

ANALYSIS SUMMARY – CONSOLIDATED CONTENTS

New readers of similar reports are encouraged to read table footnotes at least once.

Identification	%	Class
Isovaleral	tr	Aliphatic aldehyde
2-Methylbutyral	tr	Aliphatic aldehyde
4,5-Dihydrotoluene	0.01	Alkene
Hexanal	0.01	Aliphatic aldehyde
Octane	tr	Alkane
(3Z)-Hexenol	0.04	Aliphatic alcohol
Hexanol	0.03	Aliphatic alcohol
Santene	3.44	Normonoterpene
Styrene	0.01	Simple phenolic
Unknown	0.04	Normonoterpene
Bornylene	0.01	Monoterpene
Unknown	0.01	Unknown
Tricyclene	1.76	Monoterpene
α -Thujene	0.21	Monoterpene
α -Pinene	18.43	Monoterpene
α -Fenchene	0.08	Monoterpene
Camphene	15.55	Monoterpene
Thuja-2,4(10)-diene	0.03	Monoterpene
Benzaldehyde	0.01	Simple phenolic
3,7,7-Trimethylcyclohepta-1,3,5-triene	0.04	Monoterpene
β -Pinene	6.69	Monoterpene
Sabinene	0.11	Monoterpene
6-Methyl-5-hepten-2-one	0.01	Aliphatic ketone
Dehydro-1,8-cineole	0.01	Monoterpenic ether
2-Pentylfuran	0.01	Furan
Myrcene	3.15	Monoterpene
2-Carene	0.02	Monoterpene
Pseudolimonene	0.01	Monoterpene
α -Phellandrene	0.30	Monoterpene
Unknown	0.04	Oxygenated monoterpene
Δ^3 -Carene	8.16	Monoterpene
α -Terpinene	0.23	Monoterpene
meta-Cymene	0.02	Monoterpene
para-Cymene	0.18	Monoterpene
Unknown	0.03	Unknown
1,8-Cineole	0.01	Monoterpenic ether
Limonene	3.17	Monoterpene
β -Phellandrene	1.29	Monoterpene
(Z)- β -Ocimene	0.03	Monoterpene
(E)- β -Ocimene	0.02	Monoterpene
γ -Terpinene	0.24	Monoterpene
Unknown	0.05	Oxygenated monoterpene
Unknown	0.01	Unknown
meta-Cymenene	0.02	Monoterpene
Fenchone	0.01	Monoterpenic ketone

γ-Campholenal	0.06	Aliphatic alcohol
para-Cymenene	0.09	Monoterpene
Terpinolene	1.04	Monoterpene
2-Nonanone	0.02	Aliphatic ketone
Linalool	0.19	Monoterpenic alcohol
Nonanal	0.01	Aliphatic aldehyde
Unknown	0.01	Monoterpenic alcohol
endo-Fenchol	0.06	Monoterpenic alcohol
3-Methyl-3-butenyl isovalerate	0.01	Aliphatic ester
cis-para-Menth-2-en-1-ol	0.06	Monoterpenic alcohol
α-Campholenal	0.14	Monoterpenic aldehyde
Cosmene isomer I	0.02	Monoterpene
trans-Pinocarveol	0.09	Monoterpenic alcohol
Camphor	0.10	Monoterpenic ketone
trans-para-Menth-2-en-1-ol	0.04	Monoterpenic alcohol
Camphene hydrate	0.55	Monoterpenic alcohol
Isoborneol	0.02	Monoterpenic alcohol
Citronellal	0.07	Monoterpenic aldehyde
Pinocamphone	0.02	Monoterpenic ketone
Pinocarvone	0.01	Monoterpenic ketone
Borneol	1.37	Monoterpenic alcohol
Unknown	0.07	Unknown
Isopinocamphone	0.03	Monoterpenic ketone
Terpinen-4-ol	0.30	Monoterpenic alcohol
meta-Cymen-8-ol	0.02	Monoterpenic alcohol
para-Cymen-8-ol	0.06	Monoterpenic alcohol
α-Terpineol	0.52	Monoterpenic alcohol
Myrtenal	0.03	Monoterpenic aldehyde
Myrtenol	0.02	Monoterpenic alcohol
Methylchavicol	0.04	Phenylpropanoid
Verbenone	0.02	Monoterpenic ketone
Unknown	0.11	Unknown
trans-Piperitol	0.02	Monoterpenic alcohol
endo-Fenchyl acetate	0.28	Monoterpenic ester
trans-Carveol	0.03	Monoterpenic alcohol
Citronellol	0.19	Monoterpenic alcohol
Carvone	0.04	Monoterpenic ketone
Unknown	0.01	Unknown
Unknown	0.02	Oxygenated monoterpene
Piperitone	0.04	Monoterpenic ketone
Geraniol	0.06	Monoterpenic alcohol
Geranial	0.02	Monoterpenic aldehyde
Unknown	0.04	Unknown
Undec-(5Z)-en-2-one	0.06	Aliphatic ketone
Isobornyl acetate	0.63	Monoterpenic ester
trans-Verbenyl acetate	0.03	Monoterpenic ester
Bornyl acetate	20.77	Monoterpenic ester
cis-Verbenyl acetate	0.13	Monoterpenic ester
Unknown	0.24	Unknown
Unknown	0.15	Monoterpenic ester
trans-Pinocarvyl acetate	0.13	Monoterpenic ester
(2E,4E)-Decadienal	0.01	Aliphatic aldehyde

Myrtenyl acetate	0.03	Monoterpenic ester
Terpinyl acetate analog	0.09	Monoterpenic ester
<i>trans</i> -Carvyl acetate	0.05	Monoterpenic ester
exo-2-Hydroxycineole acetate	0.04	Monoterpenic ester
Unknown	0.03	Unknown
α -Terpinyl acetate	0.10	Monoterpenic ester
Citronellyl acetate	0.10	Monoterpenic ester
Longicyclene	0.03	Sesquiterpene
Unknown	0.03	Oxygenated monoterpene
α -Copaene	0.05	Sesquiterpene
β -Bourbonene	0.02	Sesquiterpene
Geranyl acetate	0.28	Monoterpenic ester
β -Elemene	0.15	Sesquiterpene
Longifolene	0.19	Sesquiterpene
Methyleugenol	0.01	Phenylpropanoid
β -Caryophyllene	0.29	Sesquiterpene
β -Copaene	0.03	Sesquiterpene
<i>cis</i> -Muurolo-3,5-diene	0.04	Sesquiterpene
<i>trans</i> -Muurolo-3,5-diene	0.06	Sesquiterpene
α -Humulene	0.08	Sesquiterpene
Unknown	tr	Unknown
(<i>E</i>)- β -Farnesene	0.02	Sesquiterpene
<i>cis</i> -Muurolo-4(15),5-diene	0.06	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	0.12	Sesquiterpene
γ -Muurolole	0.18	Sesquiterpene
Germacrene D	0.12	Sesquiterpene
Dodecanol	0.05	Aliphatic alcohol
β -Selinene	0.07	Sesquiterpene
<i>trans</i> -Muurolo-4(15),5-diene	0.01	Sesquiterpene
Unknown	0.07	Unknown
Bicyclogermacrene	0.02	Sesquiterpene
α -Selinene	0.07	Sesquiterpene
α -Muurolole	0.42	Sesquiterpene
γ -Cadinene	0.50	Sesquiterpene
Cubebol	0.02	Sesquiterpenic alcohol
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	0.01	Sesquiterpene
endo-1-Bourbonanol	0.02	Sesquiterpenic alcohol
<i>trans</i> -Calamenene	0.09	Sesquiterpene
δ -Cadinene	1.68	Sesquiterpene
Zonarene	0.08	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	0.07	Sesquiterpene
α -Cadinene	0.11	Sesquiterpene
α -Calacorene	0.03	Sesquiterpene
(<i>E</i>)- α -Bisabolene	0.25	Sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
β -Calacorene	0.03	Sesquiterpene
(<i>E</i>)-Nerolidol	0.03	Sesquiterpenic alcohol
Spathulenol	0.02	Sesquiterpenic alcohol
Caryophyllene oxide	0.02	Sesquiterpenic ether
Globulol	0.03	Sesquiterpenic alcohol
Unknown	0.02	Unknown
10- <i>epi</i> -Cubebol	0.05	Sesquiterpenic alcohol

1-epi-Cubenol	0.05	Sesquiterpenic alcohol
τ -Cadinol	0.18	Sesquiterpenic alcohol
Cubenol	0.04	Sesquiterpenic alcohol
τ -Muurolol	0.20	Sesquiterpenic alcohol
α -Muurolol	0.06	Sesquiterpenic alcohol
α -Cadinol	0.33	Sesquiterpenic alcohol
<i>cis</i> -Calamene-10-ol	0.01	Sesquiterpenic alcohol
Unknown	0.04	Aliphatic ester
Unknown	0.02	Oxygenated sesquiterpene
Unknown	tr	Oxygenated sesquiterpene
(1,8Z,11Z,14Z)-Heptadecatetraene	0.03	Alkene
(8Z)-Heptadecene	0.01	Alkene
Amorpha-4,9-dien-2-ol	0.03	Sesquiterpenic alcohol
(5Z)-Tetradecen-14-olide?	0.04	Aliphatic lactone
Unknown	0.02	Oxygenated sesquiterpene
Oplopanone	tr	Sesquiterpenic alcohol
Unknown	0.05	Oxygenated sesquiterpene
(3E)-Cembrene A	0.01	Diterpene
Unknown	0.03	Oxygenated diterpene
Unknown	0.02	Diterpene
13-epi-Manoyl oxide	0.02	Diterpenic ether
(E,E)-Geranyllinalool	0.03	Diterpenic alcohol
Manool	0.05	Diterpenic alcohol
7,13-Abietadiene	0.01	Diterpene
(Z)-Abienol	0.06	Diterpenic alcohol
Isopimaral	0.01	Diterpenic aldehyde
Palustral	0.02	Diterpenic aldehyde
Dehydroabietal	0.01	Diterpenic aldehyde
Abietal	0.01	Diterpenic aldehyde
Consolidated total	99.09%	

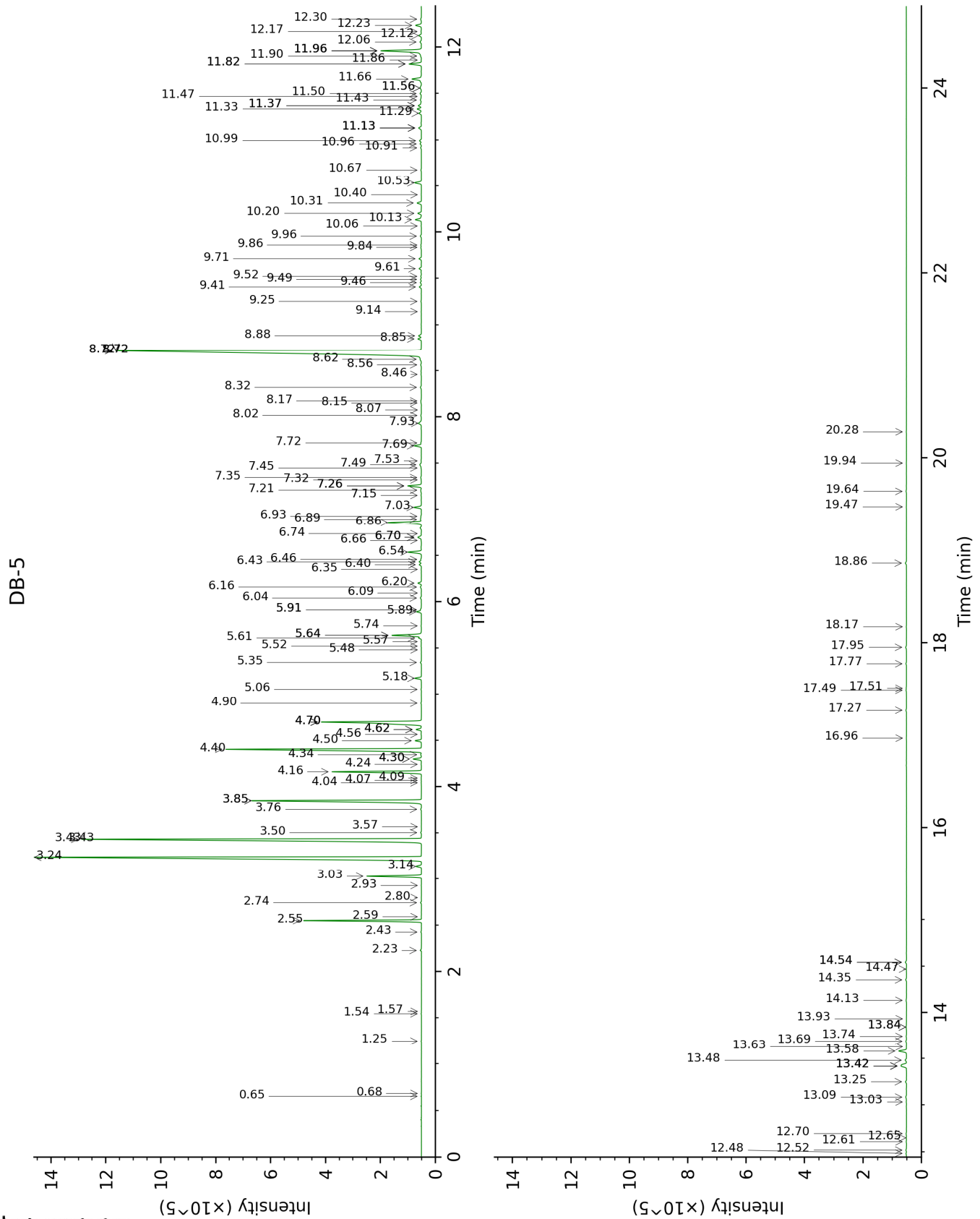
tr: The compound has been detected below 0.005% of total signal.

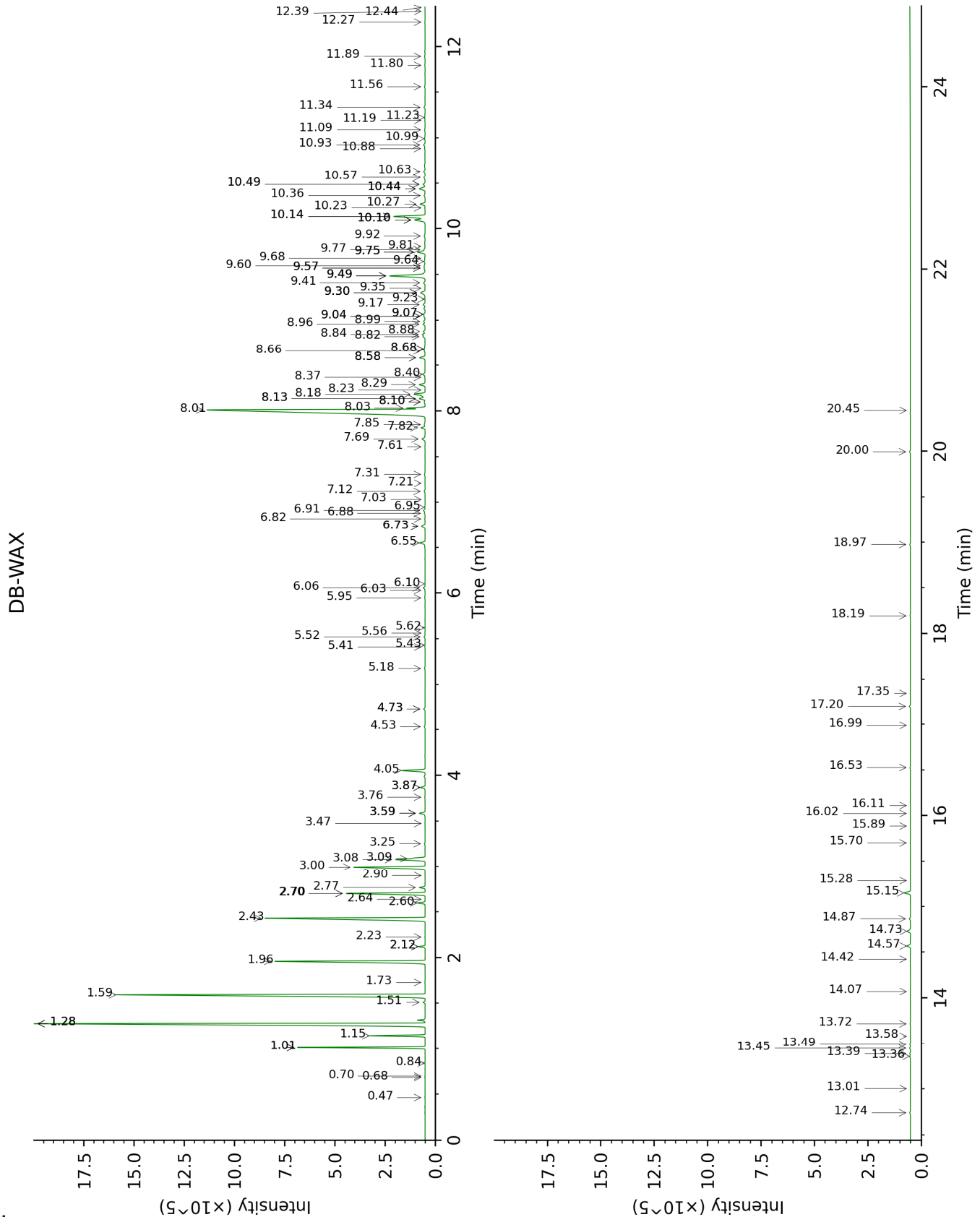
Note: no correction factor was applied

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 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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FULL ANALYSIS DATA

Identification	Column DB-5			Column DB-WAX		
	R.T	R.I	%	R.T	R.I	%
Isovaleral	0.65	642	tr	0.70	886	tr
2-Methylbutyral	0.68	652	tr	0.68	880	tr
4,5-Dihydrotoluene	1.25	760	0.01	0.84	918	tr
Hexanal	1.54	800	0.01	1.73	1042	0.01
Octane	1.57	804	tr	0.47	783	0.01
(3Z)-Hexenol	2.23	858	0.04	5.52	1346	0.05
Hexanol	2.43	874	0.03	5.18	1320	0.03
Santene	2.55	884	3.44	1.01*	948	3.50
Styrene	2.59	887	0.01	3.59*	1207	0.27
Unknown [m/z 79, 93 (66), 94 (52), 91 (39), 77 (37), 122 (31)]	2.74	900	0.04	1.28*	995	18.93
Bornylene	2.80	904	0.01	1.01*	948	[3.50]
Unknown [m/z 43, 59 (71), 44 (40), 85 (30), 41 (28), 45 (27)...]	2.93	913	0.01			
Tricyclene	3.03	919	1.76	1.15	972	1.76
α-Thujene	3.14	927	0.21	1.28*	995	[18.93]
α-Pinene	3.24	933	18.43	1.28*	995	[18.93]
α-Fenchene	3.43*	946	15.47	1.51	1020	0.08
Camphene	3.43*	946	[15.47]	1.59	1028	15.55
Thuja-2,4(10)-diene	3.50	950	0.03	2.12*	1083	0.23
Benzaldehyde	3.57	955	0.01	7.03	1457	0.01
3,7,7-Trimethylcyclohepta-1,3,5-triene	3.76	967	0.04	2.70*	1134	3.22
β-Pinene	3.85*	973	6.80	1.96	1066	6.69
Sabinene	3.85*	973	[6.80]	2.12*	1083	[0.23]
6-Methyl-5-hepten-2-one	4.04	986	0.01	4.73*	1295	0.07
Dehydro-1,8-cineole	4.07	988	0.01	2.90	1150	0.01
2-Pentylfuran	4.09	989	0.01	3.47	1198	0.01
Myrcene	4.16	994	3.15	2.70*	1134	[3.22]
2-Carene	4.24	999	0.02	2.22	1094	0.01
Pseudolimonene	4.30*	1003	0.31	2.64	1129	0.01
α-Phellandrene	4.30*	1003	[0.31]	2.60	1126	0.30
Unknown [m/z 109, 81 (35), 43 (34), 69 (33), 67 (29), 152 (29)]	4.34	1006	0.04	3.25	1180	0.04
Δ3-Carene	4.40	1009	8.16	2.43	1112	8.25
α-Terpinene	4.50	1015	0.23	2.77	1140	0.22
meta-Cymene	4.56	1019	0.02	3.87*	1228	0.21
para-Cymene	4.62*	1022	0.22	3.87*	1228	[0.21]
Unknown [m/z 109, 43 (58), 95 (26)... 137 (15)...]	4.62*	1022	[0.22]	5.95	1377	0.03
1,8-Cineole	4.70*	1028	4.76	3.09	1166	0.01

Limonene	4.70*	1028	[4.76]	3.00	1158	3.17
β-Phellandrene	4.70*	1028	[4.76]	3.08	1165	1.29
(Z)-β-Ocimene	4.90	1040	0.03	3.59*	1207	[0.27]
(E)-β-Ocimene	5.06	1050	0.02	3.76	1220	0.02
γ-Terpinene	5.18	1058	0.24	3.59*	1207	[0.27]
Unknown [m/z 79, 93 (60), 43 (40), 94 (35), 137 (33), 77 (26), 91 (20), 152 (18)]	5.35	1068	0.05	4.53	1280	0.04
Unknown [m/z 94, 79 (74), 67 (33), 41 (22), 95 (21)...]	5.48	1077	0.01			
meta-Cymenene	5.52	1079	0.02	6.03	1383	0.01
Fenchone	5.57	1082	0.01	5.43	1339	0.01
γ-Campholenal	5.61†	1085	1.24	4.73*	1295	[0.07]
para-Cymenene	5.64*†	1086	[1.24]	6.06	1385	0.09
Terpinolene	5.64*†	1086	[1.24]	4.05	1243	1.04
2-Nonanone	5.74	1093	0.02	5.56	1349	0.01
Linalool	5.89	1102	0.19	7.82	1517	0.19
Nonanal	5.91*	1104	0.05	5.62	1353	0.01
Unknown [m/z 119, 109 (94), 43 (61), 95 (56), 91 (48), 77 (32), 152 (32), 137 (31), 134 (24)]	5.91*	1104	[0.05]	8.23	1549	0.01
endo-Fenchol	6.04	1112	0.06	8.10*	1539	0.06
3-Methyl-3-butenyl isovalerate	6.10	1115	0.01	5.41	1338	0.02
cis-para-Menth-2-en-1-ol	6.16	1119	0.06	7.85	1520	0.06
α-Campholenal	6.20	1122	0.14	6.73*	1435	0.21
Cosmene isomer I	6.35	1131	0.02	6.10	1388	0.01
trans-Pinocarveol	6.40	1134	0.09	8.88	1600	0.09
Camphor	6.43	1136	0.10	6.91	1448	0.09
trans-para-Menth-2-en-1-ol	6.46	1138	0.04	8.68*	1584	0.05
Camphene hydrate	6.54	1143	0.55	8.18†	1545	[0.97]
Isoborneol	6.66	1151	0.02	9.07*	1615	0.08
Citronellal	6.70*	1153	0.18	6.73*	1435	[0.21]
Pinocamphone	6.70*	1153	[0.18]	6.95	1451	0.02
Pinocarvone	6.74	1156	0.01	7.61	1501	0.02
Borneol	6.86	1164	1.37	9.49*	1650	2.11
Unknown [m/z 109, 108 (48), 67 (41), 81 (40), 41 (28)...]	6.89	1166	0.07	7.12	1464	0.05
Isopinocamphone	6.93	1168	0.03	7.31	1478	0.04
Terpinen-4-ol	7.02	1174	0.30	8.29	1554	0.30
meta-Cymen-8-ol	7.15	1182	0.02	11.19	1793	0.02
para-Cymen-8-ol	7.21	1186	0.06	11.23	1796	0.03
α-Terpineol	7.26*	1189	0.55	9.49*	1650	[2.11]
Myrtenal	7.26*	1189	[0.55]	8.37	1560	0.03
Myrtenol	7.32	1193	0.02	10.57	1740	0.08

Methylchavicol	7.35	1195	0.04	9.04*	1613	0.07
Verbenone	7.45	1201	0.02	9.35	1638	0.02
Unknown [m/z 95, 93 (32), 121 (24), 79 (22), 91 (21), 105 (16)... 154 (2)]	7.48	1204	0.11	10.63	1745	0.07
<i>trans</i> -Piperitol	7.53	1206	0.02	10.10*	1699	0.60
endo-Fenchyl acetate	7.69	1217	0.28	6.55	1421	0.30
<i>trans</i> -Carveol	7.72	1219	0.03	11.09	1784	0.04
Citronellol	7.93	1233	0.19	10.44*	1729	0.38
Carvone	8.02	1239	0.04	9.68	1665	0.03
Unknown [m/z 41, 44 (99), 69 (73), 108 (50), 93 (44), 119 (37)...]	8.08	1243	0.01			
Unknown [m/z 109, 119 (84), 91 (81), 134 (55)... 137 (27)...]	8.15	1248	0.02	10.99	1776	0.03
Piperitone	8.17	1249	0.04	9.60	1658	0.06
Geraniol	8.32	1259	0.06	11.34	1805	0.06
Geranial	8.46	1268	0.02	9.81	1676	0.02
Unknown [m/z 43, 119 (72), 81 (66), 54 (48), 41 (47), 58 (44)...]	8.56	1275	0.04			
Undec-(5Z)-en-2-one	8.62	1279	0.06	8.66	1583	0.05
Isobornyl acetate	8.72*	1286	21.65	8.03	1534	0.63
<i>trans</i> -Verbenyl acetate	8.72*	1286	[21.65]	9.04*	1613	[0.07]
Bornyl acetate	8.72*	1286	[21.65]	8.01	1532	20.77
<i>cis</i> -Verbenyl acetate	8.72*	1286	[21.65]	8.40	1562	0.13
Unknown [m/z 119, 43 (87), 91 (78), 92 (70), 134 (50)...]	8.72*	1286	[21.65]	8.58*	1577	0.30
Unknown [m/z 107, 43 (76), 150 (42), 91 (28), 108 (23)]	8.85	1294	0.15	8.84	1597	0.14
<i>trans</i> -Pinocarvyl acetate	8.88	1297	0.13	8.82	1595	0.11
(2E,4E)-Decadienal	9.14	1315	0.01	10.88	1767	0.04
Myrtenyl acetate	9.25	1322	0.03	9.30*	1634	0.33
Terpinyl acetate analog	9.41	1333	0.09	9.30*	1634	[0.33]
<i>trans</i> -Carvyl acetate	9.46	1337	0.05	9.92	1685	0.06
exo-2-Hydroxycineole acetate	9.49	1339	0.04	9.77	1673	0.05
Unknown [m/z 133, 105 (45), 91 (38), 119 (36)... 150 (3)]	9.52	1341	0.03			
α -Terpinyl acetate	9.60	1347	0.10	9.41	1643	0.09
Citronellyl acetate	9.71	1355	0.10	9.17	1624	0.11

Longicyclene	9.84	1363	0.03	6.82	1441	0.02
Unknown [m/z 93, 121 (68), 43 (67), 67 (44), 136 (36), 107 (34)... 180 (4)]	9.86	1365	0.03	9.75*	1671	0.44
α -Copaene	9.96	1372	0.05	6.88	1446	0.04
β -Bourbonene	10.06	1380	0.02	7.21	1471	0.01
Geranyl acetate	10.13	1384	0.28	10.27	1714	0.26
β -Elemene	10.20	1389	0.15	8.14*†	1542	0.97
Longifolene	10.31	1397	0.19	7.69	1507	0.20
Methyleugenol	10.40	1403	0.01	13.00	1956	0.02
β -Caryophyllene	10.53	1413	0.29	8.14*†	1542	[0.97]
β -Copaene	10.67	1424	0.03	8.10*	1539	[0.06]
<i>cis</i> -Muurolo-3,5-diene	10.92	1442	0.04	8.68*	1584	[0.05]
<i>trans</i> -Muurolo-3,5-diene	10.96	1445	0.06	8.58*	1577	[0.30]
α -Humulene	10.99	1447	0.08	8.99	1609	0.09
Unknown [m/z 95, 43 (94), 79 (93), 91 (71), 93 (65), 177 (54), 41 (52)...]	11.13*	1457	0.14	10.49*	1733	0.11
(<i>E</i>)- β -Farnesene	11.13*	1457	[0.14]	9.23	1629	0.02
<i>cis</i> -Muurolo-4(15),5-diene	11.13*	1457	[0.14]	9.07*	1615	[0.08]
<i>trans</i> -Cadina-1(6),4-diene	11.29	1469	0.12	8.96	1606	0.11
γ -Muurolole	11.33	1473	0.18	9.30*	1634	[0.33]
Germacrene D	11.37*	1475	0.17	9.49*	1650	[2.11]
Dodecanol	11.37*	1475	[0.17]	12.74	1932	0.05
β -Selinene	11.43	1480	0.07	9.57*	1656	0.07
<i>trans</i> -Muurolo-4(15),5-diene	11.47	1483	0.01	9.57*	1656	[0.07]
Unknown [m/z 95, 43 (59), 107 (38), 59 (37), 110 (31), 41 (21)...]	11.50	1485	0.07			
Bicyclogermacrene	11.56*	1489	0.09	9.75*	1671	[0.44]
α -Selinene	11.56*	1489	[0.09]	9.64	1662	0.07
α -Muurolole	11.66	1497	0.42	9.75*	1671	[0.44]
γ -Cadinene	11.82*	1509	0.52	10.10*	1699	[0.60]
Cubebol	11.82*	1509	[0.52]	12.27	1888	0.02
(3 <i>E</i> ,6 <i>E</i>)- α -Farnesene	11.86	1512	0.01	10.23	1711	0.02
endo-1-Bourbonanol	11.90	1516	0.02			
<i>trans</i> -Calamenene	11.96*	1520	1.85	10.92	1770	0.09
δ -Cadinene	11.96*	1520	[1.85]	10.14*	1703	1.69
Zonarene	11.96*	1520	[1.85]	10.10*	1699	[0.60]
<i>trans</i> -Cadina-1,4-diene	12.06	1528	0.07	10.36	1722	0.06
α -Cadinene	12.12	1533	0.11	10.49*	1733	[0.11]
α -Calacorene	12.17	1536	0.03	11.80	1846	0.02
(<i>E</i>)- α -Bisabolene	12.24	1542	0.25	10.44*	1729	[0.38]

Unknown [m/z 95, 81 (70), 109 (68), 93 (59), 67 (53), 41 (49), 139 (40)... 220 (3)]	12.30	1547	0.04	11.89	1855	0.04
β-Calacorene	12.48	1561	0.03	12.39	1899	0.02
(E)-Nerolidol	12.52	1564	0.03	13.49	2002	0.04
Spathulenol	12.61	1571	0.02	14.07	2058	0.01
Caryophyllene oxide	12.65	1574	0.02	12.44	1904	0.01
Globulol	12.70	1578	0.03	13.58	2010	0.01
Unknown0 [m/z 108, 43 (56), 109 (33), 93 (26), 119 (24)... 212 (2)]	13.03	1604	0.02	14.42	2092	0.01
10-epi-Cubenol	13.08	1608	0.05	13.39	1992	0.03
1-epi-Cubenol	13.25	1622	0.05	13.45	1998	0.04
τ-Cadinol	13.42*	1636	0.38	14.57	2106	0.18
Cubenol	13.42*	1636	[0.38]	13.36	1989	0.04
τ-Muurolol	13.42*	1636	[0.38]	14.73	2122	0.20
α-Muurolol	13.48	1641	0.06	14.87	2136	0.06
α-Cadinol	13.58	1649	0.33	15.15	2165	0.33
cis-Calamenen-10-ol	13.63	1653	0.01	16.11	2264	0.01
Unknown [m/z 79, 43 (66), 67 (59), 80 (56), 41 (41), 81 (37), 55 (29)...]	13.69	1658	0.04	13.72	2024	0.03
Unknown [m/z 159, 177 (59), 135 (57), 91 (47), 105 (47)... 220? (25)]	13.74	1663	0.02			
Unknown [m/z 177, 159 (98), 93 (94), 136 (84), 121 (68), 135 (65), 91 (57)... 220 (23)]	13.84*	1671	0.03			
(1,8Z,11Z,14Z)-Heptadecatetraene	13.84*	1671	[0.03]	11.56	1826	0.03
(8Z)-Heptadecene	13.93	1678	0.01	10.14*	1703	[1.69]
Amorpha-4,9-dien-2-ol	14.13	1695	0.03	16.53	2308	0.03
(5Z)-Tetradecen-14-olide?	14.35	1713	0.04			
Unknown [m/z 159, 220 (92), 93 (88), 177 (63), 91 (57), 107 (55)]	14.47	1723	0.02	17.35	2397	0.02
Oplopanone	14.54*	1730	0.06			
Unknown [m/z 159, 132 (79), 135 (37), 91 (35), 177 (33)... 220 (16)]	14.54*	1730	[0.06]	17.20	2380	0.05
(3E)-Cembrene A	16.96	1948	0.01	15.28	2178	0.01

Unknown [m/z 105, 91 (100), 81 (89), 79 (86), 109 (86), 257 (83)... 275 (12)...]	17.27	1977	0.03	15.70	2221	0.01
Unknown [m/z 257, 258 (20), 91 (19), 272 (18)]	17.49	1998	0.02	15.89	2241	0.02
13-epi-Manoyl oxide	17.51	2000	0.02	16.02	2255	0.02
(<i>E,E</i>)-Geranylinalool	17.77	2026	0.03	18.19	2492	0.03
Manool	17.95	2043	0.05	18.97	2582	0.04
7,13-Abietadiene	18.17	2065	0.01	16.99	2358	0.01
(<i>Z</i>)-Abienol	18.86	2135	0.06	20.00	2705	0.05
Isopimaral	19.47	2198	0.01			
Palustral	19.64	2216	0.02	20.45	2761	0.01
Dehydroabietal	19.94	2249	0.01			
Abietal	20.28	2285	0.01			
Total identified		98.39%			98.44%	
Total reported		99.26%			99.03%	

*: 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