CERTIFICATE OF ANALYSIS - GC PROFILING

SAMPLE IDENTIFICATION

Internal code : 24D04-PTH03
Customer Identification : Yuzu - Japan - Y40105R
Type : Essential Oil
Source : *Citrus junos ct. Distilled*
Customer : Plant Therapy

Checked an approved by:

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

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MÉTHODE CERTIFIÉE
*ISO 17025:2017
CERTIFIED METHOD

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GAS CHROMATOGRAPHIC ANALYSIS

Method : PC-MAT-014 - Analysis of the composition of an essential oil or other volatile liquide by FAST GC-FID

✳ISO

Results : See analysis summary (next page)

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

Date : 2024-04-18

PHYSICOCHEMICAL DATA

Refractive index : 1.4738 ± 0.0003 (20 ℃)

Method : PC-MAT-016 - Measure of the refractive index of a liquid.

Analyst : Cindy Caron B. Sc.

Date : 2024-04-05

CONCLUSION

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

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ANALYSIS SUMMARY – CONSOLIDATED CONTENTS

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

Identification	%	Class
α-Thujene	0.29	Monoterpene
α-Pinene	1.06	Monoterpene
Camphene	0.01	Monoterpene
β-Pinene	0.59	Monoterpene
Sabinene	0.16	Monoterpene
Myrcene	1.36	Monoterpene
Pseudolimonene	0.02	Monoterpene
α-Phellandrene	0.24	Monoterpene
Δ3-Carene	tr	Monoterpene
α-Terpinene	0.10	Monoterpene
para-Cymene	2.13	Monoterpene
Limonene	80.22	Monoterpene
β-Phellandrene	2.38	Monoterpene
(*Z*)-β-Ocimene	0.01	Monoterpene
(*E*)-β-Ocimene	0.14	Monoterpene
γ-Terpinene	6.92	Monoterpene
cis-Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Octanol	0.01	Aliphatic alcohol
para-Cymenene	0.04	Monoterpene
trans-Linalool oxide (fur.)	0.03	Monoterpenic alcohol
Terpinolene	0.28	Monoterpene
Linalool	1.53	Monoterpenic alcohol
trans-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
cis-Limonene oxide	0.08	Monoterpenic ether
cis-para-Mentha-2,8-dien-1-ol	0.02	Monoterpenic alcohol
trans-Limonene oxide	0.06	Monoterpenic ether
trans-Sabinol	0.01	Monoterpenic alcohol
Epoxyterpinolene	0.02	Monoterpenic ether
Terpinen-4-ol	0.11	Monoterpenic alcohol
Cryptone	0.02	Normonoterpenic ketone
α-Terpineol	0.09	Monoterpenic alcohol
Decanal	0.01	Aliphatic aldehyde
trans-Carveol	0.02	Monoterpenic alcohol
cis-Carveol	0.02	Monoterpenic alcohol
Carvone	0.01	Monoterpenic ketone
Thymol	0.06	Monoterpenic alcohol
α-Copaene	0.02	Sesquiterpene
β-Cubebene	0.02	Sesquiterpene
β-Elemene	0.02	Sesquiterpene
β-Caryophyllene	0.09	Sesquiterpene

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α-Humulene	0.02	Sesquiterpene
all*o*-Aromadendrene	0.01	Sesquiterpene
(*E*)-β-Farnesene	0.22	Sesquiterpene
Germacrene D	0.04	Sesquiterpene
Bicyclogermacrene	0.01	Sesquiterpene
α-Muurolene	0.01	Sesquiterpene
δ-Cadinene	0.04	Sesquiterpene
trans-Cadina-1,4-diene	0.02	Sesquiterpene
β-Sesquiphellandrene	0.01	Sesquiterpene
Germacrene B	0.04	Sesquiterpene
Spathulenol	0.33	Sesquiterpenic alcohol
Isospathulenol	0.02	Sesquiterpenic alcohol
τ-Cadinol	0.01	Sesquiterpenic alcohol
α-Cadinol	0.01	Sesquiterpenic alcohol
Consolidated total	**99.07**	

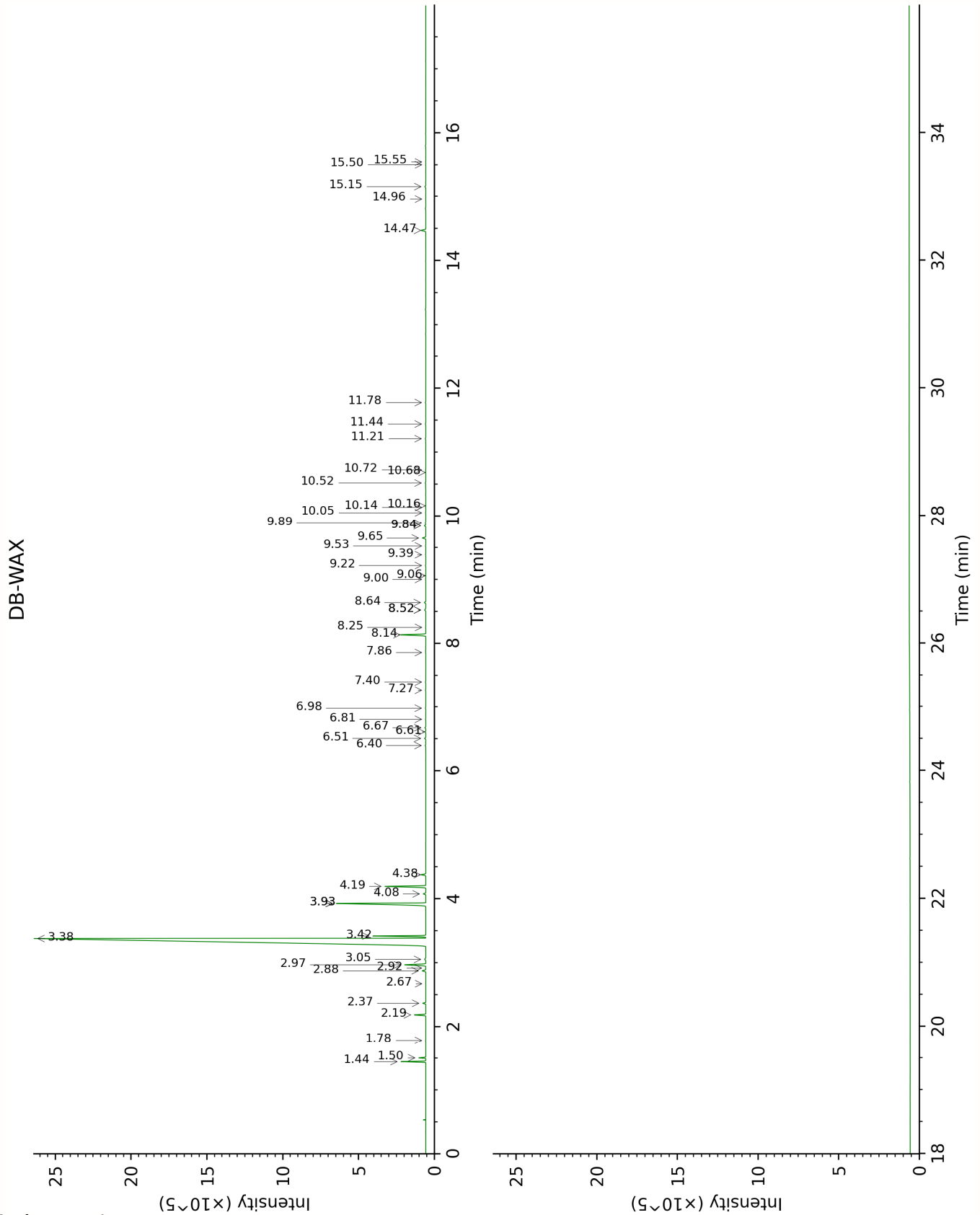tr: The compound has been detected below 0.005% of the total signal

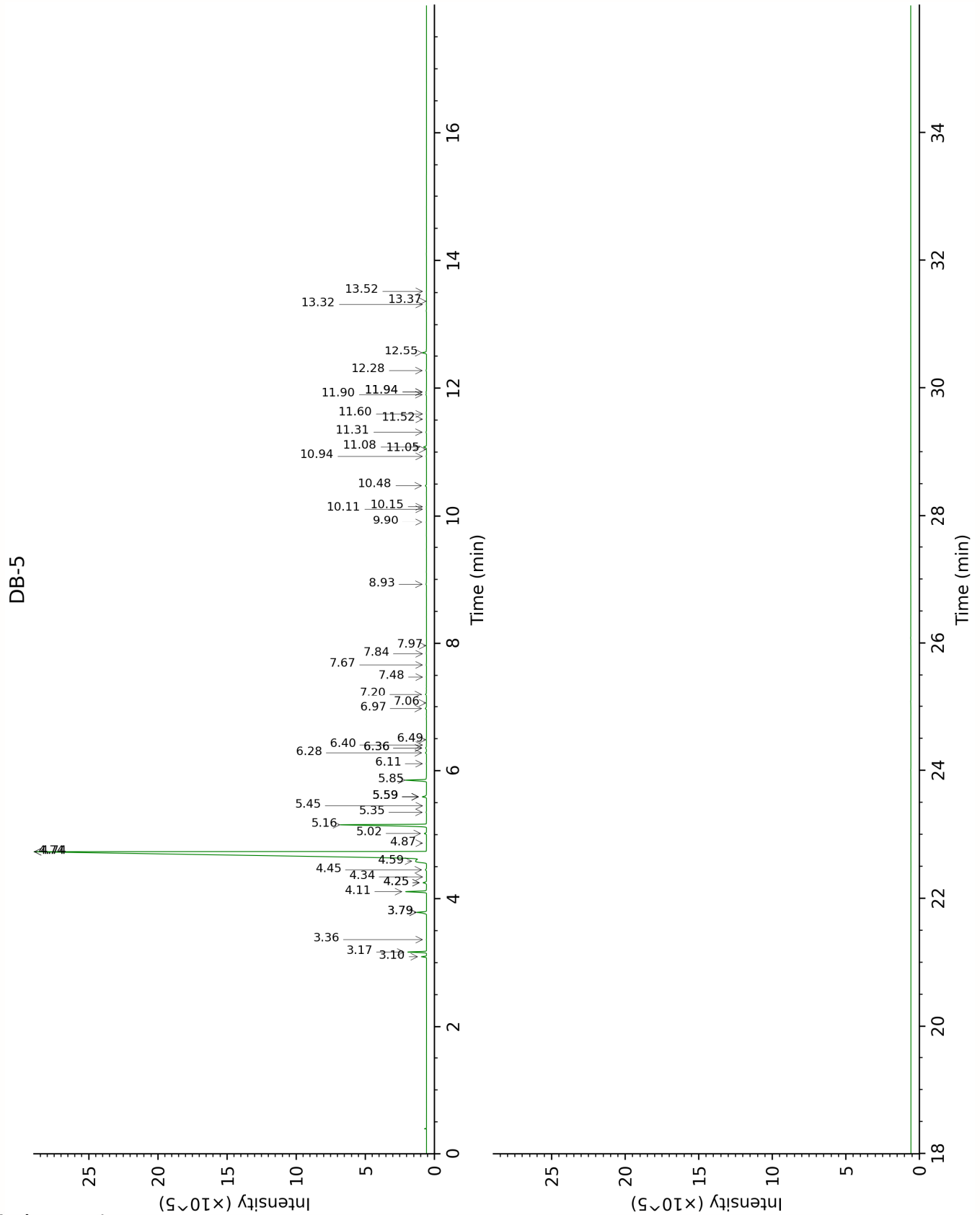Note: no correction factor was applied

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.

Bracketed value ([xx]): A bracketed percent value indicate that two or more compound percentage could not be solved due to coelution.

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DB-WAX

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DB-5

Time (min)

Intensity (×10^5)

Time (min)

Intensity (×10^5)

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FULL ANALYSIS DATA

α-Thujene	Column DB-WAX			Column DB-5		
	1.50	1001.8	0.29	3.10	926.3	0.29
α-Pinene	1.44	992.8	1.05	3.17	931.1	1.06
Camphene	1.78	1029.9	0.01	3.36	943.9	0.01
β-Pinene	2.19	1067.6	0.59	3.79*	971.9	[0.75]
Sabinene	2.37	1084.7	0.16	3.79*	971.9	[0.75]
Myrcene	2.97	1134.3	1.37	4.11	993.2	1.36
Pseudolimonene	2.92	1130.4	0.02	4.25*	1002.4	[0.26]
α-Phellandrene	2.88	1127.2	0.24	4.25*	1002.4	[0.26]
Δ3-Carene	2.67	1111.9	0.01	4.34	1008.2	tr
α-Terpinene	3.05	1140.7	0.10	4.45	1015.2	0.10
para-Cymene	4.19	1225.9	2.44	4.59	1023.6	2.13
Limonene	3.38	1165.4	80.22	4.74*	1032.8	[83.23]
β-Phellandrene	3.42	1168.4	2.38	4.74*	1032.8	[83.23]
(*Z*)-β-Ocimene	3.93*	1206.9	[6.93]	4.87	1041.2	0.01
(*E*)-β-Ocimene	4.08	1217.5	0.15	5.02	1050.7	0.14
γ-Terpinene	3.93*	1206.9	[6.93]	5.16	1059.2	6.92
cis-Linalool oxide (fur.)	6.61	1399.2	0.04	5.35	1071.3	0.03
Octanol	8.25	1523.0	0.02	5.45	1077.7	0.01
para-Cymenene	6.40	1383.8	0.04	5.59*	1086.5	[0.33]
trans-Linalool oxide (fur.)	6.98	1426.7	0.03	5.59*	1086.5	[0.33]
Terpinolene	4.38	1238.9	0.28	5.59*	1086.5	[0.33]
Linalool	8.14	1513.9	1.55	5.85	1102.8	1.53
trans-para-Mentha-2,8-dien-1-ol	9.00	1582.0	0.02	6.11	1119.1	0.02
cis-Limonene oxide	6.51	1391.8	0.08	6.28	1129.9	0.08
cis-para-Mentha-2,8-dien-1-ol	9.53	1624.0	0.02	6.36*	1134.8	[0.07]
trans-Limonene oxide	6.67	1403.9	0.06	6.36*	1134.8	[0.07]
trans-Sabinol	9.84*	1650.3	[0.09]	6.40	1137.8	0.01
Epoxyterpinolene	6.81	1413.7	0.02	6.49	1143.0	0.02
Terpinen-4-ol	8.64	1553.5	0.10	6.97	1174.1	0.11
Cryptone	9.22	1599.1	0.03	7.06	1179.7	0.02
α-Terpineol	9.84*	1650.3	[0.09]	7.20	1188.8	0.09
Decanal	7.40	1458.1	0.03	7.48	1206.2	0.01
trans-Carveol	11.44	1776.2	0.03	7.67	1218.9	0.02
cis-Carveol	11.78	1805.7	0.03	7.84	1230.5	0.02
Carvone	10.05	1667.5	0.02	7.97	1239.1	0.01
Thymol	15.15	2126.2	0.07	8.93	1303.2	0.06
α-Copaene	7.27	1448.5	0.03	9.90	1372.0	0.02
β-Cubebene	7.86	1492.8	0.02	10.11	1386.5	0.02

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β-Elemene	8.52*	1544.4	[0.10]	10.15	1389.2	0.02
β-Caryophyllene	8.52*	1544.4	[0.10]	10.48	1412.8	0.09
α-Humulene	9.39	1612.6	0.02	10.94	1446.9	0.02
allo-Aromadendrene	9.06	1586.6	tr	11.05	1455.0	0.01
(*E*)-β-Farnesene	9.65	1634.2	0.23	11.08	1457.8	0.22
Germacrene D	9.89	1653.7	0.04	11.31	1475.0	0.04
Bicyclogermacrene	10.14	1674.6	0.01	11.52	1490.1	0.01
α-Muurolene	10.16	1676.7	0.01	11.60	1496.2	0.01
δ-Cadinene	10.52	1706.3	0.04	11.90	1519.3	0.04
trans-Cadina-1,4-diene	10.72	1723.8	0.02	11.94*	1522.6	[0.04]
β-Sesquiphellandrene	10.68	1720.4	0.01	11.94*	1522.6	[0.04]
Germacrene B	11.21	1756.2	0.04	12.28	1548.8	0.04
Spathulenol	14.47	2058.8	0.33	12.56	1570.7	0.33
Isospathulenol	15.50	2162.2	0.01	13.32	1631.8	0.02
τ-Cadinol	14.96	2106.5	0.01	13.37	1636.0	0.01
α-Cadinol	15.55	2166.6	0.01	13.52	1648.6	0.01
Total reported		99.45%			99.69%	

*: Two or more compounds are coeluting on this column

[xx]: Duplicate percentage due to coelutions, only the first one is 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

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