Date : 2025-12-15

Certificate of Analysis - GC Profiling

Sample Identification

Internal code : 25J20-PTH02
Customer Identification : Cedarwood Atlas - Morocco - C61111R
Type : Essential Oil
Source : *Cedrus atlantica*
Customer : Plant Therapy

Checked an approved by:

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

Notes: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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. The compliance status of the sample is provided to facilitate the reading of the report. The client remains ultimately responsible for reviewing the results presented within this report and to establish compliance of the tested batch against relevant quality criteria.

This report is an update of the version first issued on 2025-10-22 to make a correction in the sample identification section.

Méthode certifiée ISO 17025:2017 Certified method

Laboratoire PhytoChemia

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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 : Sylvain Mercier, M. Sc., Chimiste 2014-005
Date : 2025-10-22

Physicochemical data

Refractive index : 1.5131 ± 0.0003 (20 °C)
Method : PC-MAT-016 - Measure of the refractive index of a liquid.
Analyst : Cindy Caron B. Sc.
Date : 2025-10-21

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
Mesityl oxide	0.06	Aliphatic ketone
α-Pinene	0.04	Monoterpene
Camphene	0.01	Monoterpene
3-Methyl-3-cyclohexenone	0.02	Aliphatic ketone
Myrcene	0.01	Monoterpene
Limonene	0.03	Monoterpene
para-Cresol	0.03	Simple phenolic
Terpinolene	0.01	Monoterpene
para-Cymenene	0.01	Monoterpene
Unknown CEAT III [m/z 85, 56 (50), 43 (50), 125 (36), 140 (35)...]	0.02	Unknown
Linalool	0.01	Monoterpenic alcohol
Phenylethyl alcohol	0.01	Simple phenolic
Limona ketone	0.56	Normonoterpenic ketone
α,4-Dimethyl-3-cyclohexene-1-methanol	0.05	Normonoterpenic alcohol
α,4-Dimethyl-3-cyclohexene-1-methanol epimer	0.05	Normonoterpenic alcohol
Borneol	0.02	Monoterpenic alcohol
4-Methylacetophenone	0.12	Simple phenolic
α-Terpineol	0.05	Monoterpenic alcohol
Unknown	0.01	Unknown
α-Longipinene	0.09	Sesquiterpene
α-Ylangene	0.07	Sesquiterpene
α-Copaene	0.03	Sesquiterpene
Unknown	0.30	Sesquiterpene
(3*Z*)-Hexenyl (3*Z*)-hexenoate	0.17	Aliphatic ester
Sativene	0.04	Sesquiterpene
Unknown	0.49	Sesquiterpene
β-Elemene	0.06	Sesquiterpene
Sibirene	0.62	Sesquiterpene
Longifolene	0.56	Sesquiterpene
α-Cedrene	0.01	Sesquiterpene
(*Z*?)-Vestitenone, or analog	0.12	Terpenic ketone
Unknown	0.03	Unknown
β-Caryophyllene	0.04	Sesquiterpene
Himachala-2,4-diene	0.52	Sesquiterpene
Unknown	0.03	Sesquiterpene
Unknown	0.16	Sesquiterpene
Himachala-2,4-diene isomer	0.19	Sesquiterpene
α-Himachalene	15.60	Sesquiterpene

(*E*)-Vestitenone	0.58	Terpenic ketone
α-Humulene	0.05	Sesquiterpene
Unknown	0.34	Sesquiterpene
(*E*)-β-Farnesene	0.22	Sesquiterpene
Unknown	0.43	Sesquiterpene
Unknown	0.08	Sesquiterpene
γ-Himachalene	9.46	Sesquiterpene
11-αH-Himachala-1,4-diene	1.88	Sesquiterpene
Unknown	0.33	Sesquiterpenic ether
α-Muurolene	0.20	Sesquiterpene
Unknown	0.21	Sesquiterpene
Cycloisolongifol-5-ol	0.32	Sesquiterpenic alcohol
β-Himachalene	39.47	Sesquiterpene
(*Z*)-α-Bisabolene	0.02	Sesquiterpene
Unknown	0.46	Sesquiterpene
α-Dehydro-ar-himachalene	1.46	Sesquiterpene
γ-Cadinene	0.05	Sesquiterpene
Unknown CEAT IV [m/z 146, 193 (97), 131 (89), 91 (54), 159 (54)...]	0.15	Unknown
trans-Calamenene	0.14	Sesquiterpene
δ-Cadinene	2.00	Sesquiterpene
Unknown	1.49	Sesquiterpene
γ-Dehydro-ar-himachalene	1.45	Sesquiterpene
Unknown	0.20	Sesquiterpene
ar-Himachalene	0.43	Sesquiterpene
α-Calacorene	0.68	Sesquiterpene
(*E*)-α-Bisabolene	0.57	Sesquiterpene
Unknown	0.14	Oxygenated sesquiterpene
(*E*)-Nerolidol	0.13	Sesquiterpenic alcohol
Himachalene epoxide	0.50	Sesquiterpenic ether
Unknown	0.35	Unknown
Unknown	0.13	Oxygenated sesquiterpene
Longiborneol	0.35	Sesquiterpenic alcohol
ar-Dihydroturmerone	0.07	Sesquiterpenic ketone
β-Himachalene oxide	0.32	Sesquiterpenic ether
Unknown	1.17	Oxygenated sesquiterpene
Unknown	0.20	Oxygenated sesquiterpene
1-epi-Cubenol	0.82	Sesquiterpenic alcohol
6-Methyl-6-*meta*-tolyl-heptan-2-one	0.07	Miscellaneous
Unknown	0.22	Oxygenated sesquiterpene
Himachalol	0.39	Sesquiterpenic alcohol
Unknown	0.07	Oxygenated sesquiterpene
Allohimachalol	0.91	Sesquiterpenic alcohol
β-Atlantone	0.14	Sesquiterpenic ketone
(*E*)-10,11-Dihydroatlantone	0.36	Sesquiterpenic ketone

(*Z*)-γ-Atlantone	0.88	Sesquiterpenic ketone
Deodarone epimer I	0.94	Sesquiterpenic ketone
Deodarone epimer II	0.89	Sesquiterpenic ketone
(*E*)-γ-Atlantone	1.00	Sesquiterpenic ketone
(*Z*)-α-Atlantone	0.66	Sesquiterpenic ketone
Unknown	0.17	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.04	Oxygenated sesquiterpene
Unknown	0.03	Oxygenated sesquiterpene
Unknown	0.08	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
(*E*)-α-Atlantone	2.93	Sesquiterpenic ketone
Unknown	0.11	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
Unknown	0.01	Oxygenated sesquiterpene
Unknown	0.02	Oxygenated sesquiterpene
Consolidated total	**97.06**	

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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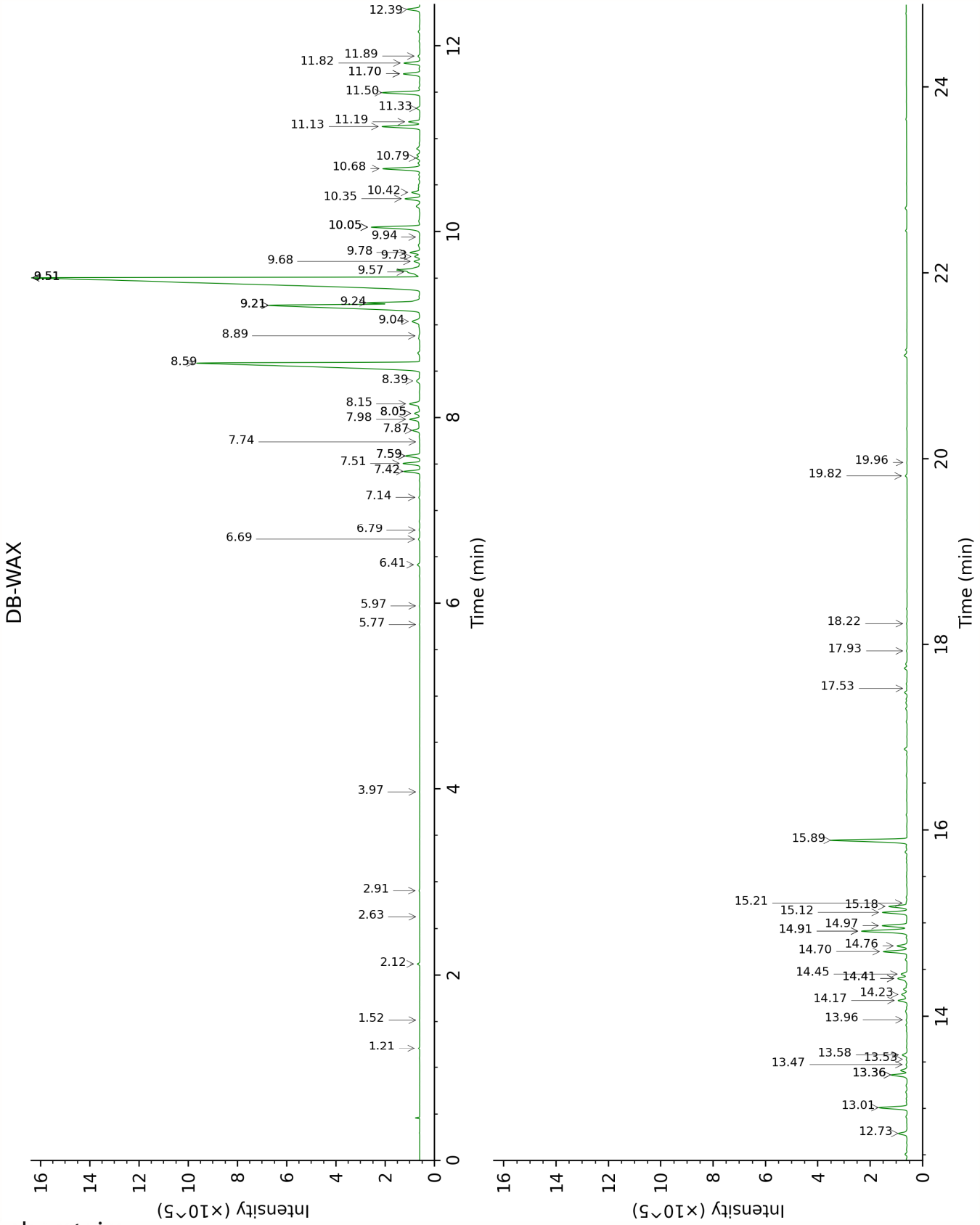
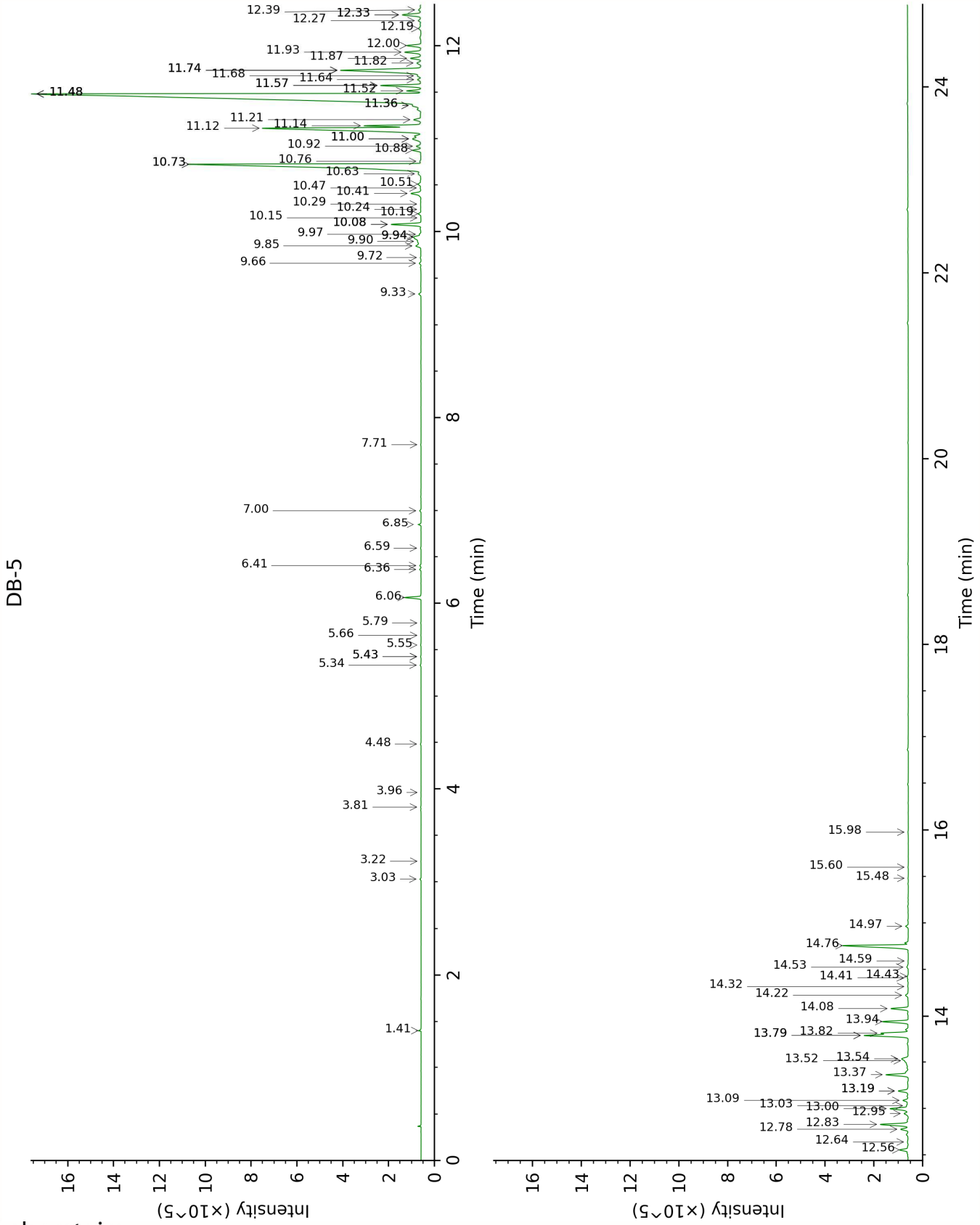

DB-WAX
Time (min)
Intensity (×10^5)
12.39
11.89
11.82
11.70
11.50
11.33
11.19
11.13
10.79
10.68
10.42
10.35
10.05
9.94
9.78
9.73
9.68
9.57
9.51
9.24
9.21
9.04
8.89
8.59
8.39
8.15
8.05
7.98
7.87
7.74
7.59
7.51
7.42
7.14
6.79
6.69
6.41
5.97
5.77
3.97
2.91
2.63
2.12
1.52
1.21
19.96
19.82
18.22
17.93
17.53
15.89
15.21
15.18
15.12
14.97
14.91
14.76
14.70
14.45
14.41
14.23
14.17
13.96
13.58
13.53
13.47
13.36
13.01
12.73


DB-5
Time (min)
Intensity (×10^5)
12.39
12.27
12.33
12.19
12.00
11.93
11.87
11.82
11.74
11.68
11.64
11.57
11.52
11.48
11.36
11.21
11.14
11.12
11.00
10.92
10.88
10.73
10.76
10.63
10.51
10.47
10.41
10.29
10.24
10.19
10.15
10.08
9.97
9.94
9.90
9.85
9.72
9.66
9.33
7.71
7.00
6.85
6.59
6.41
6.36
6.06
5.79
5.66
5.55
5.43
5.34
4.48
3.96
3.81
3.22
3.03
1.41
15.98
15.60
15.48
14.97
14.76
14.59
14.53
14.43
14.41
14.32
14.22
14.08
13.94
13.82
13.79
13.54
13.52
13.37
13.19
13.09
13.03
13.00
12.95
12.83
12.78
12.64
12.56

FULL ANALYSIS DATA

	Column DB-WAX			Column DB-5		
Mesityl oxide	2.12	1090.0	0.06	1.40	796.8	0.06
α-Pinene	1.21	990.0	0.03	3.03	930.5	0.04
Camphene	1.52	1027.7	0.01	3.22	943.3	0.01
3-Methyl-3-cyclohexenone	5.77	1369.8	0.01	3.80	982.3	0.02
Myrcene	2.63	1133.8	0.01	3.96	992.8	0.01
Limonene	2.91	1156.3	0.02	4.48	1026.4	0.03
para-Cresol	13.53	2016.5	0.03	5.34	1080.6	0.03
Terpinolene	3.97	1238.7	0.01	5.43*	1086.5	[0.02]
para-Cymenene	5.97	1384.5	0.01	5.43*	1086.5	[0.02]
Unknown CEAT III [m/z 85, 56 (50), 43 (50), 125 (36), 140 (35)...]				5.55	1094.4	0.02
Linalool	7.74	1517.8	0.01	5.66	1101.0	0.01
Phenylethyl alcohol	11.70*	1847.3	[0.64]	5.79	1109.5	0.01
Limona ketone	7.42	1493.4	0.56	6.06	1127.3	0.56
α,4-Dimethyl-3-cyclohexene-1-methanol				6.36	1146.9	0.05
α,4-Dimethyl-3-cyclohexene-1-methanol epimer				6.40	1149.6	0.05
Borneol	9.51*	1659.1	[39.60]	6.59	1161.8	0.02
4-Methylacetophenone	10.05*	1703.6	[2.04]	6.85	1178.5	0.12
α-Terpineol	9.51*	1659.1	[39.60]	7.00	1188.4	0.05
Unknown CEDE XXVIII [m/z 105, 145 (97), 160 (86), 119 (76), 91 (61)]				7.71	1236.0	0.01
α-Longipinene	6.41	1417.2	0.09	9.33	1344.8	0.09
α-Ylangene	6.69	1438.0	0.05	9.66	1368.2	0.07
α-Copaene	6.79	1445.3	0.02	9.72	1372.5	0.03
Unknown CEDE XXVII epimer I [m/z 131, 146 (36), 91 (22), 145 (19), 202 (18)]	7.86	1527.6	0.32	9.85	1381.4	0.30
(3*Z*)-Hexenyl (3*Z*)-hexenoate	9.68	1673.6	0.21	9.90	1384.8	0.17
Sativene	7.14	1472.4	0.04	9.94*	1388.2	[0.60]
Unknown CEDE XXVII epimer II [m/z 131,	7.98	1536.9	0.49	9.94*	1388.2	[0.60]

146 (33), 91 (20), 202 (18)]						
β-Elemene	8.05*	1541.9	[0.21]	9.97	1390.2	0.06
Sibirene	7.51	1499.9	0.62	10.08*	1397.8	[1.18]
Longifolene	7.59*	1506.0	[0.58]	10.08*	1397.8	[1.18]
α-Cedrene	7.59*	1506.0	[0.58]	10.15	1402.7	0.01
(*Z*?)-Vestitenone, or analog	11.33	1814.0	0.12	10.19	1405.9	0.12
Unknown CEDE II [m/z 105, 93 (61), 120 (55), 145 (54), 91 (52)...]	11.89	1864.3	0.07	10.24	1409.4	0.03
β-Caryophyllene	8.05*	1541.9	[0.21]	10.30	1413.7	0.04
Himachala-2,4-diene	8.15	1550.0	0.54	10.41	1422.2	0.52
Unknown CEDE III [m/z 91, 93 (90), 105 (72), 202 (71), 131 (68), 77 (63), 107 (55), 187 (54)]				10.47	1426.6	0.03
Unknown CEDE IV [m/z 105, 91 (70), 93 (65), 43 (61), 120 (57), 145 (50)... 204 (6)]				10.51	1429.7	0.16
Himachala-2,4-diene isomer	8.40	1569.3	0.18	10.63	1438.5	0.19
α-Himachalene	8.59	1584.4	15.60	10.73*	1446.2	[16.20]
(*E*)-Vestitenone	11.82	1857.7	0.58	10.73*	1446.2	[16.20]
α-Humulene	8.89	1608.0	0.03	10.76	1448.6	0.05
Unknown CEDE V [m/z 187, 131 (78), 202 (76), 105 (74), 91 (74), 117 (53), 145 (52)]	9.57	1664.2	0.47	10.88	1457.5	0.34
(*E*)-β-Farnesene	9.21*	1634.9	[9.59]	10.92	1460.7	0.22
Unknown CEDE VI [m/z 119, 91 (85), 93 (77), 105 (76), 79 (61), 134 (60), 94 (49), 204 (46)]	9.04	1620.7	0.43	11.00*	1466.7	[0.51]
Unknown CEDE VII [m/z 131, 202 (78), 91 (74), 105 (68), 187 (68), 119 (53), 145 (52)]				11.00*	1466.7	[0.51]
γ-Himachalene	9.21*	1634.9	[9.59]	11.12	1475.2	9.46

11-αH-Himachala-1,4-diene	9.24	1637.1	1.64	11.14	1477.2	1.88
Unknown CEDE VIII [m/z 137, 43 (84), 138 (63), 109 (53), 95 (51), 93 (50), 207 (46)... 222 (21)]	9.78	1681.4	0.37	11.21	1482.1	0.33
α-Muurolene	9.73	1677.8	0.20	11.36*	1493.5	[0.41]
Unknown CULA III [m/z 161, 119 (97), 93 (74), 105 (70), 91 (59), 120 (40), 79 934), 77 (28)... 204 (26)]				11.36*	1493.5	[0.41]
Cycloisolongifol-5-ol	10.42	1735.5	0.32	11.48*	1502.8	[39.81]
β-Himachalene	9.51*	1659.1	[39.60]	11.48*	1502.8	[39.81]
(*Z*)-α-Bisabolene	9.94	1694.9	0.02	11.48*	1502.8	[39.81]
Unknown CEAT I [m/z 105, 119 (89), 91 (69), 159 (62), 131 (42), 93 (41), 202 (38)]				11.52	1505.3	0.46
α-Dehydro-ar-himachalene	11.13	1796.9	1.46	11.58*	1509.8	[1.51]
γ-Cadinene	10.05*	1703.6	[2.04]	11.58*	1509.8	[1.51]
Unknown CEAT IV [m/z 146, 193 (97), 131 (89), 91 (54), 159 (54)...]				11.64	1514.8	0.15
trans-Calamenene	10.80	1767.7	0.13	11.68	1518.0	0.14
δ-Cadinene	10.05*	1703.6	[2.04]	11.74*	1522.7	[4.94]
Unknown CEDE IX [m/z 131, 202 (28), 91 (22), 159 (16), 145 (16), 132 (15), 115 (14)]	10.68	1758.0	1.49	11.74*	1522.7	[4.94]
γ-Dehydro-ar-himachalene	11.50	1829.1	1.45	11.74*	1522.7	[4.94]
Unknown CEAT II [m/z 93, 187 (70), 145 (59), 119 (42), 131 (39), 202 (33)]				11.82	1528.9	0.20
ar-Himachalene	11.18	1801.2	0.39	11.87	1532.8	0.43
α-Calacorene	11.70*	1847.3	[0.64]	11.93	1538.1	0.68
(*E*)-α-Bisabolene	10.35	1729.7	0.52	12.00	1543.7	0.57
Unknown CEDE X [m/z 189, 91 (85), 43	13.58	2021.1	0.20	12.19	1558.1	0.14

(74), 105 (67), 133 (66), 107 (63), 135 (52)... 220 (20)]						
(*E*)-Nerolidol	13.36*	2000.5	[0.62]	12.27	1564.8	0.13
Himachalene epoxide	12.39	1909.7	0.50	12.33*	1569.8	[0.84]
Unknown CEDE XI [m/z 96, 95 (18), 83 (15), 125 (13), 119 (12), 55 (12), 41 (11)... 218? (tr)]	14.41*	2101.8	[0.44]	12.33*	1569.8	[0.84]
Unknown CEDE XII [m/z 177, 202 (79), 91 (76), 159 (75), 43 (65), 107 (59), 105 (57)...]	13.96	2058.6	0.04	12.39	1574.0	0.13
Longiborneol	14.17	2078.8	0.33	12.56	1587.4	0.35
ar-Dihydroturmerone	13.47	2011.0	0.04	12.64	1594.1	0.07
β-Himachalene oxide	12.73	1941.5	0.36	12.78	1604.9	0.32
Unknown CEDE XIII [m/z 138, 110 (77), 137 (75), 107 (62), 91 (61), 93 (60), 109 (57)... 220 (34)]	13.01	1967.5	1.06	12.83	1609.2	1.17
Unknown CEDE XIV [m/z 137, 119 (69), 43 (51), 95 (50), 109)40)... 222 (1)]	14.45	2106.3	0.25	12.95	1618.9	0.20
1-epi-Cubenol	13.36*	2000.5	[0.62]	13.00	1623.3	0.82
6-Methyl-6-*meta*-tolyl-heptan-2-one	15.22	2183.6	0.04	13.03	1625.9	0.07
Unknown CEDE XV [m/z 119, 163 (80), 107 (64), 95 (61), 93 (57), 91 (53)... 220 (11)]				13.09	1630.6	0.22
Himachalol	14.76	2137.0	0.39	13.19*	1639.1	[0.45]
Unknown CEDE XVI [m/z 119, 91 (44), 94 (36), 107 (35), 93 (29)... 202 (19)...]				13.19*	1639.1	[0.45]
Allohimachalol	15.12	2173.5	0.90	13.36	1653.6	0.91
β-Atlantone	14.41*	2101.8	[0.44]	13.52	1666.1	0.14
(*E*)-10,11-Dihydroatlantone	14.23	2085.0	0.29	13.54	1667.7	0.36
(*Z*)-γ-Atlantone	14.70	2130.9	0.88	13.79*	1689.2	[1.82]

Deodarone epimer I	14.91*	2153.1	[1.93]	13.79*	1689.2	[1.82]
Deodarone epimer II	14.97	2159.0	0.89	13.82	1691.3	0.89
(*E*)-γ-Atlantone	14.91*	2153.1	[1.93]	13.94	1701.6	1.00
(*Z*)-α-Atlantone	15.18	2180.1	0.67	14.08	1713.5	0.66
Unknown CEDE XVII [m/z 105, 119 (89), 59 (68), 120 (65), 43 (65), 93 (62), 121 (61)...]				14.22	1725.9	0.17
Unknown CEDE XVIII [m/z 91, 79 (83), 105 (68), 109 (63), 41 (590), 93 (58), 107 (57)...]	17.53	2430.4	0.02	14.32	1734.1	0.03
Unknown CEDE XIX [m/z 83, 91 (28), 105 (25), 55 (21), 43 (17), 119 (17)...]				14.41	1742.3	0.04
Unknown CEDE XX [m/z 43, 105 (99), 119 (90), 91 (87), 147 (76), 41 (69), 93 (63)...]				14.43	1743.6	0.03
Unknown CEDE XXI [m/z 83, 55 (17), 91 (14), 105 (9), 216 (6)...]				14.53	1752.2	0.08
Unknown CEDE XXII [m/z 91, 105 (74), 93 (67), 79 (59), 133 (54), 41 (47), 107 (46)...]	17.93	2475.9	0.02	14.59	1757.9	0.01
(*E*)-α-Atlantone	15.89	2253.6	2.93	14.76	1772.3	2.93
Unknown CEDE XXIII [m/z 95, 43 (59), 69, (57), 67 (43), 163 (42), 94 (37), 107 (37)... 178 (26), 218 (2)]				14.97	1790.4	0.11
Unknown CEDE XXIV [m/z 83, 134 (28), 119 (19), 55 (18), 91 (14), 43 (11), 109 (10)... 216 (4), 249? (0)]	19.82	2698.4	0.06	15.48	1836.6	0.01
Unknown CEDE XXV [m/z 83, 134 (30), 119 (19), 55 (18), 91 (12)... 216 (4)...]	19.96	2716.2	0.01	15.60	1847.4	0.01
Unknown CEDE XXVI	18.22	2509.1	0.02	15.98	1881.7	0.02

[m/z 173, 83 (83), 91 (80), 201 (79), 115 (65)... 216 (31)]						
Total reported	94.20%			97.13%		

*: 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