



Ledum-Labrador Tea (Greenland Moss)

Ledum groenlandicum

Batch No. #CA-58710
 Organically Produced, Canada

Monoterpenes	52.29%
tricyclene	0.10
α thujene	0.65
α pinene	4.73
α fenchene	0.09
camphene	1.45
thuja-2,4(10)-diene	0.01
sabinene	26.66
β pinene	5.40
myrcene	0.28
α phellandrene	0.31
d3-carene	0.01
α terpinene	2.21
Menthatriene analog A	0.03
para cymene	1.78
limonene	0.71
β phellandrene	1.11
cis-β-ocimene	0.16
trans-β-ocimene	0.07
γ terpinene	5.42
terpinolene	0.97
para-cymenene	0.07
α phellandrene epoxide	0.07

Esters	2.49%
bornyl acetate	2.46
myrtenyl acetate	0.03

Monoterpenols	8.37%	Specs
cis-sabinene hydrate	0.09	
linalol	0.08	
cis-para-Menth-2-en-1-ol	0.18	
trans-para-Mentha-2,8-dien-1-ol	0.30	
trans-pinocarveol	1.33	
borneol	0.12	
terpinen-4-ol	5.26	
trans-para-Mentha-1,(7),8-dien-2-ol	0.10	
α terpineol	0.53	
cis-para-Mentha-1,(7),8-dien-2-ol	0.04	
cuminol	0.10	
para-Mentha-1,4-dien-7-ol	0.24	

Sesquiterpenols	1.13%
palustrol	0.18
rosifoliol	0.21
rosifoliol analog	0.74

Ketones	4.46%
dehydrosabinaketone	0.80
sabinaketone	1.00
pinocarvone	0.74
germacrone	0.92
cyclocolorenone	0.46
eudesma-3,11-dien-2-one	0.54

Aldehydes	0.09%
nonanal	0.09
thuj-3-en-10-al	1.34
myrtenal	2.74
cuminal	0.86

Sesquiterpenes	21.07%
δ elemene	0.09
α cubebene	0.03
α copaene	0.19
β elemene	0.41
α gurjunene	0.26
β caryophyllene	0.36
α-trans-bergamotene	0.16
cis-muuroala-3,5-diene	0.10
α humulene	1.39
allo-Aromadendrene	0.26
trans β farnesene	0.18
eudesma-2,4,11-triene	0.33
germacrene D	0.33
β selinene	8.68
α selinene	2.03
α muurolene	0.28
germacrene A	0.26
γ cadinene	0.08
β bisabolene	2.16
zonarene	0.22
δ cadinene	0.82
trans-calamenene	0.09
trans-cadina-1,4-diene	0.11
trans-α-bisabolene	0.20
germacrene B	1.33
Sesquiterpenes	0.72

Raw Material: Ledum-Labrador Tea (Greenland Moss)
 INCI Name: Ledum groenlandicum
 Production Method: Steam Dist., leaves
 Date of Analysis: August, 2017

Date: August 30, 2017

SAMPLE /DENT/FICAT/ON

Internal code: 17H25-NG3-1-DM

Customer identification: HE Ledum groenlandicum - B-LEGRCAN08RI C

Type: Essential oil

Source : *Ledum groenlandicum*

Customer: Nature's Gift

ANALYSIS

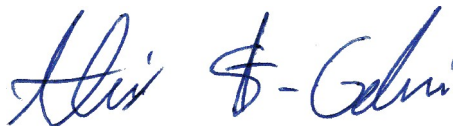
Method: PC-PA-001-1 SE06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Identifications double-checked by GC-MS

Analyst: Alexis St-Gelais, M.Sc., chimiste

Analysis date: 2017-08-27

Checked and approved by:



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

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IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
<i>cis</i> -Hex-3-en-1-ol	2.50	865	0.03	0.04	1324	5.64	Aliphatic alcohol
<i>trans</i> -Hex-2-en-1-ol	2.61	874	0.03	0.05	1355	6.13	Aliphatic alcohol
Tricyclene	3.23	915	0.10	0.08	919	1.11	Monoterpene
α -Thujene	3.32	920	0.65	5.35	956	1.27†	Monoterpene
α -Pinene	3.43	927	4.73	[5.35]	947	1.22†	Monoterpene
α -Fenchene	3.65	940	0.09	0.01	986	1.46	Monoterpene
Camphene	3.71	944	1.45	1.39	994	1.53	Monoterpene
Thuja-2,4(10)-diene	3.80	949	0.01	27.13	1067	2.13*	Monoterpene
Sabinene	4.19	972	26.66	[27.13]	1067	2.13*	Monoterpene
β -Pinene	4.24	975	5.40	5.23	1041	1.91	Monoterpene
Myrcene	4.48	989	0.28	0.26	1115	2.67	Monoterpene
α -Phellandrene	4.76*	1005	0.31	0.25	1108	2.58	Monoterpene
Δ 3-Carene	4.76*	1005	[0.31]	0.01	1098	2.45	Monoterpene
α -Terpinene	4.95	1015	2.21	2.27	1123	2.77	Monoterpene
Menthatriene analog A	5.09	1023	0.03	5.69	1194	3.67*	Monoterpene
para-Cymene	5.14	1026	1.78	1.86	1212	3.93	Monoterpene
Limonene	5.18†	1028	1.78	0.71	1140	3.00	Monoterpene
β -Phellandrene	5.21†	1029	[1.78]	1.11	1147	3.08	Monoterpene
<i>cis</i> - β -Ocimene	5.35	1037	0.16	[5.69]	1194	3.67*	Monoterpene
<i>trans</i> - β -Ocimene	5.53	1047	0.07	0.09	1205	3.83	Monoterpene
γ -Terpinene	5.75	1059	5.42	[5.69]	1194	3.67*	Monoterpene
<i>cis</i> -Sabinene hydrate	6.06	1076	0.09	0.16	1404	6.99*	Monoterp. alcohol
Terpinolene	6.20	1084	0.97	1.00	1226	4.16	Monoterpene
para-Cymenene	6.42	1095	0.07	0.06	1369	6.35	Monoterpene
Linalool	6.70	1106	0.08	0.17	1495	9.20*	Monoterp. alcohol
Nonanal	6.78	1109	0.09	0.06	1337	5.83	Aliphatic aldehyde
Dehydrosabinaketone	7.19	1124	0.80	9.51	1528	10.38*	Normonoterp. ketone
<i>cis</i> -para-Menth-2-en-1-ol	7.22	1125	0.18	[0.17]	1495	9.20*	Monoterp. alcohol
<i>trans</i> -para-Mentha-2,8-dien-1-ol	7.27	1127	0.30	0.29	1560	11.61*	Monoterp. alcohol
Unknown (m/z = 81, 67 (89), 79 (71), 109 (64), 41 (55)... 152 (5))	7.33	1129	0.09				Oxygenated sesquiterp.
<i>trans</i> -Pinocarveol	7.62	1140	1.33	1.49	1568	11.90	Monoterp. alcohol
Sabinaketone	8.21*	1161	1.00	1.53	1582	12.44*	Normonoterp. ketone
Pinocarvone	8.21*	1161	[1.00]	0.74	1475	8.69	Monoterp. ketone
Borneol	8.68	1178	0.12	0.39	1618	14.07*	Monoterp. alcohol
Terpinen-4-ol	8.87	1185	5.26	[9.51]	1528	10.38*	Monoterp. alcohol
Thuj-3-en-10-al	8.97	1189	1.34	1.44	1534	10.62	Monoterp. aldehyde
<i>trans</i> -para-Mentha-1(7),8-dien-2-ol	9.21	1197	0.10	0.24	1749	21.73*	Monoterp. alcohol

Myrtenal	9.35	1201	2.74	[9.51]	1528	10.38*	Monoterp. aldehyde
α -Terpineol	9.47	1203	0.53	9.55	1627	14.55*	Monoterp. alcohol
α -Phellandrene epoxide	9.93	1213	0.07	1.49	1719	19.73*	Monoterpene
<i>cis</i> -para-Mentha-1(7),8-dien-2-ol	10.95	1236	0.04	0.15	1799	25.07	Monoterp. alcohol
Cuminal	11.33	1244	0.86	0.81	1673	17.05	Monoterp. aldehyde
Bornyl acetate	12.94	1279	2.46	2.59	1505	9.57	Monoterp. ester
Cuminol	14.25	1305	0.10	0.11	1997	37.02	Monoterp. alcohol
Myrtenyl acetate	15.19	1319	0.03	[0.39]	1618	14.07*	Monoterp. ester
δ -Elemene	15.36	1322	0.09	0.07	1415	7.27	Sesquiterpene
α -Cubebene	15.97	1331	0.03	[0.16]	1404	6.99*	Sesquiterpene
para-Mentha-1,4-dien-7-ol	16.30	1336	0.24	0.22	1960	35.36*	Monoterp. alcohol
α -Copaene	17.69	1357	0.19	0.24	1431	7.62	Sesquiterpene
β -Elemene	18.92	1376	0.41	0.30	1519	10.06	Sesquiterpene
α -Gurjunene	19.66	1387	0.26	0.27	1464	8.44	Sesquiterpene
β -Caryophyllene	20.58	1400	0.36	[9.51]	1528	10.38*	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.87	1415	0.16	[9.51]	1528	10.38*	Sesquiterpene
<i>cis</i> -Muurolo-3,5-diene	22.97	1429	0.10	0.25	1554	11.36	Sesquiterpene
α -Humulene	23.41	1434	1.39	[1.53]	1582	12.44*	Sesquiterpene
allo-Aromadendrene	23.65	1437	0.26	[0.29]	1560	11.61*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.52	1447	0.18	[0.39]	1618	14.07*	Sesquiterpene
Eudesma-2,4,11-triene?	25.14	1454	0.33				Sesquiterpene
Germacrene D	25.62	1460	0.33	[9.55]	1627	14.55*	Sesquiterpene
β -Selinene	26.42	1470	8.68	[9.55]	1627	14.55*	Sesquiterpene
α -Selinene	26.95	1476	2.03	2.10	1632	14.84	Sesquiterpene
α -Muurolole	27.51 ⁺⁺	1483	0.61	0.28	1648	15.67	Sesquiterpene
Germacrene A	27.59 ⁺⁺	1484	[0.61]	0.26	1693	18.04*	Sesquiterpene
γ -Cadinene	28.74	1497	0.08	2.43	1658	16.21*	Sesquiterpene
β -Bisabolene	28.91	1500	2.16	[2.43]	1658	16.21*	Sesquiterpene
Zonarene	29.08	1502	0.22	[2.43]	1658	16.21*	Sesquiterpene
δ -Cadinene	29.38	1506	0.82	0.90	1670	16.84	Sesquiterpene
<i>trans</i> -Calamenene	29.55	1508	0.09	[0.24]	1749	21.73*	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	30.48	1522	0.11	[0.26]	1693	18.04*	Sesquiterpene
<i>trans</i> - α -Bisabolene	31.86	1541	0.20	0.18	1699	18.36	Sesquiterpene
Germacrene B	32.06	1544	1.33	[1.49]	1719	19.73*	Sesquiterpene
Palustrol	32.49	1550	0.18	0.13	1825	27.04	Sesquiterp. alcohol
Unknown (m/z = 205, 43 (88), 41 (78), 67 (64), 91 (59), 109 (58), 69 (56), 93 (55), 55 (50)... 220(12))	34.53	1578	0.24				Oxygenated sesquiterp.
Rosifoliol	35.52	1592	0.21	[0.22]	1960	35.36*	Sesquiterp. alcohol
Rosifoliol analog?	35.88	1598	0.74	0.71	2008	37.43	Sesquiterp. alcohol
Unknown (m/z = 159, 131 (66), 119 (32), 185 (31), 104	36.05	1601	0.18	0.14	1884	31.40	Sesquiterpene

(30), 157 (28), 202 (28))							
Germacrene	39.19	1678	0.92	0.87	2077	39.61	Sesquiterp. ketone
Unknown (m/z = 41, 55 (91), 93 (90), 67 (84), 107 (80), 81 (78)... 220 (49))	39.36	1683	0.21				Oxygenated sesquiterp.
Unknown (m/z = 109, 67 (99), 93 (99), 81 (99), 107 (97), 41 (94), 55 (81), 220 (75))	40.50	1714	0.18				Oxygenated sesquiterp.
Cyclocolorenone	41.28	1739	0.46	0.49	2197	42.88	Sesquiterp. ketone
Eudesma-3,11-dien-2-one	42.60	1780	0.54	0.58	2333	45.99	Sesquiterp. ketone
Total identified			93.46%	93.59%			

*: 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

OTHER DATA

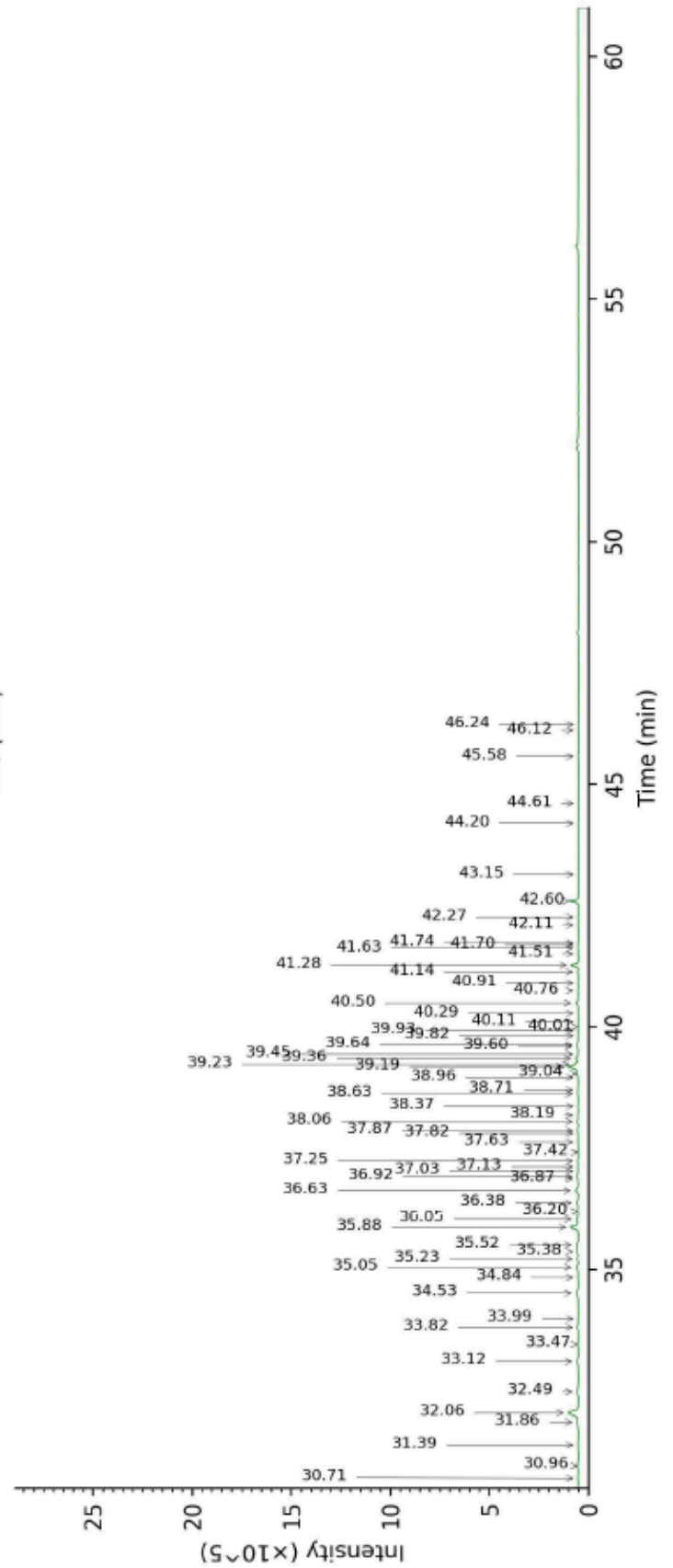
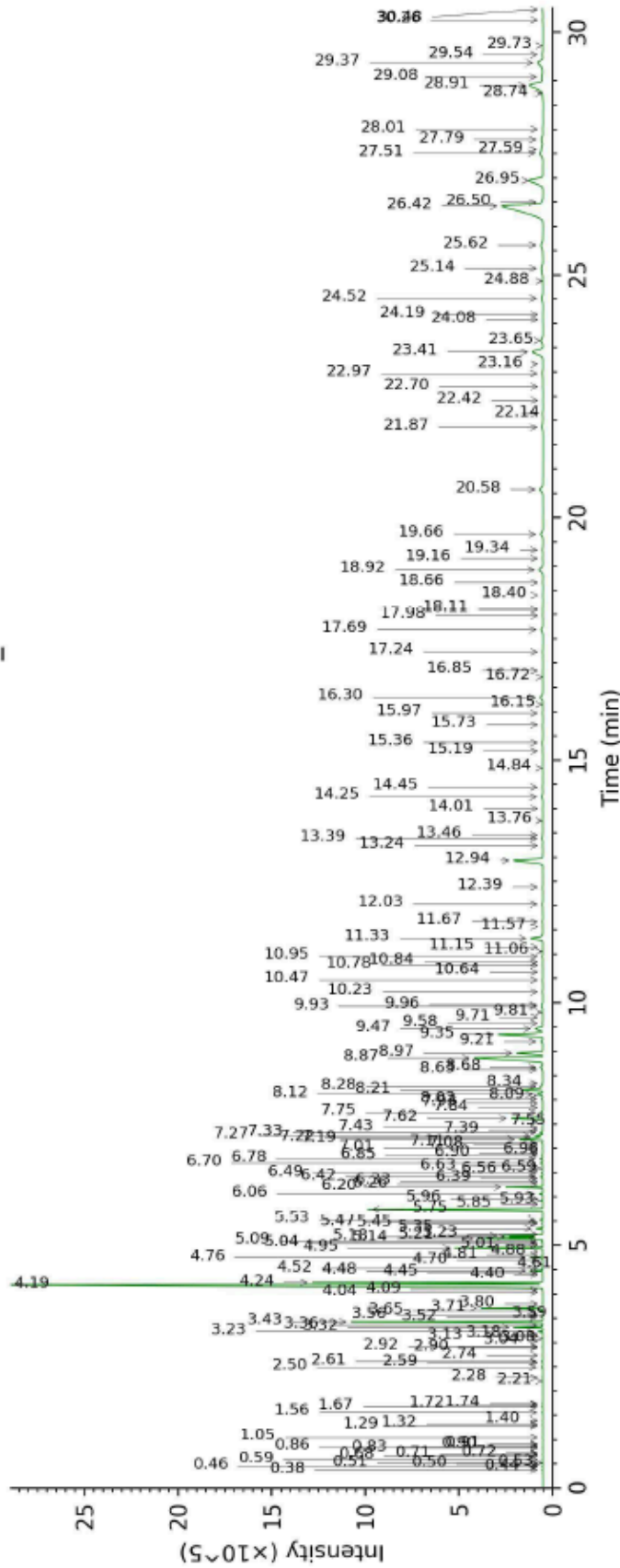
Physical aspect : Light yellow liquid

Refractive index : 1.4818 ± 0.0003 (20 °C)

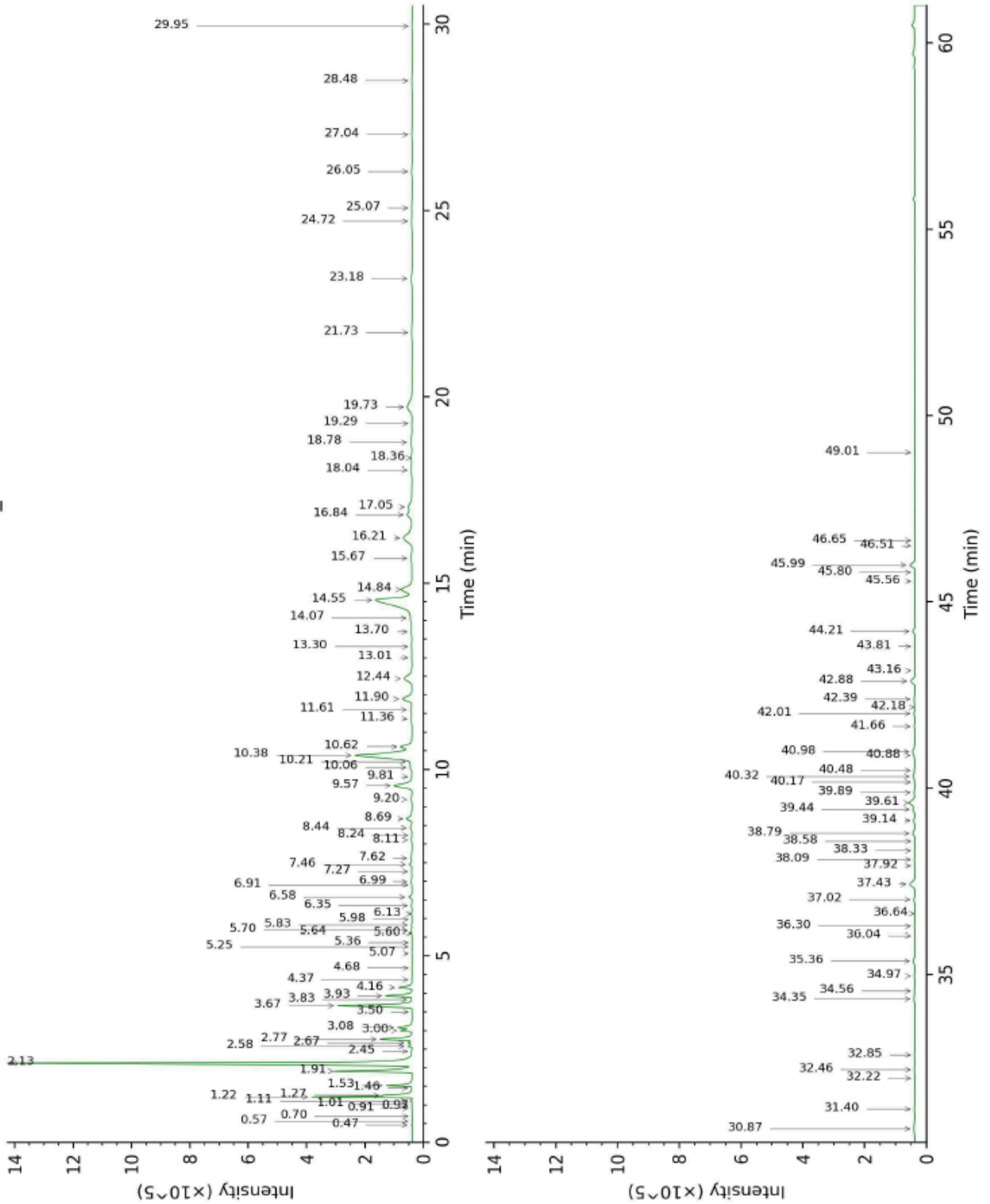
CONCLUSION

No adulterant, contaminant or diluent were detected using this method.

17H25-ALK3-1-DM_BP5



17H25-ALK3-1-DM_WAX



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Plus que des analyses... des conseils