

Rock Rose Essential Oil

ANALYSIS

Laboratoire
PhytoChemia





Date : May 15, 2017

SAMPLE IDENTIFICATION

Internal code : 17E05-FSE19-1-DM

Customer identification : Rock Rose - Lot #B177688

Type : Essential oil

Source : *Cistus ladaniferus*

Customer : Flowers Shining Everywhere Inc.



ANALYSIS

Method : PC-PA-001-15E06, "Analysis of the composition of a liquid essential oil by GC-FID" (in French).

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2017-05-15

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.	
1,3-Pentadiene	0.38	635	0.14				Alkene
1,2,3-Trimethylcyclopentene	1.13	734	0.36				Alkene
Toluene	1.30	757	0.09	18.78	953	1.14*	Simple phenolic
Hexanal	1.71	806	0.04	0.03	1015	1.51	Aliphatic aldehyde
1,2,4,4-Tetramethylcyclopentene	2.29	851	0.51				Alkene
cis-Hex-3-en-1-ol	2.48	865	0.02	0.15	1329	5.43	Aliphatic alcohol
Styrene	2.87	895	0.13	0.12	1184	3.34	Phenylpropanoid
Tricyclene	3.22	917	0.40	0.41	921	1.01	Monoterpene
α -Thujene	3.31	922	0.15	0.48	957	1.16	Monoterpene
α -Pinene	3.45	931	18.81	[18.78]	953	1.14*	Monoterpene
Camphene	3.70*	946	2.17	2.15	1001	1.39	Monoterpene
α -Fenchene	3.70*	946	[2.17]	0.08	995	1.33	Monoterpene
Thuja-2,4(10)-diene	3.79	951	1.39	1.41	1054	1.88*	Monoterpene
6-Methyl-2-heptanone	3.97	961	0.05				Aliphatic ketone
Sabinene	4.13	971	0.10	[1.41]	1054	1.88*	Monoterpene
Benzaldehyde	4.19*	975	0.37	0.15	1438	7.32	Simple phenolic
β -Pinene	4.19*	975	[0.37]	0.25	1039	1.72	Monoterpene
Myrcene	4.44	989	0.25	0.30	1110	2.36	Monoterpene
6-Methyl-5-hepten-2-one	4.48	992	0.07	0.07	1276	4.64	Aliphatic ketone
Mentha-1,5,8-triene	4.73	1006	0.71				Monoterpene
α -Terpinene	4.93	1017	0.71	0.69	1122	2.53	Monoterpene
para-Cymene	5.12	1028	2.79	2.88	1209	3.65	Monoterpene
Limonene	5.16	1030	0.83	0.79	1140	2.76	Monoterpene
β -Phellandrene	5.18	1031	0.53	0.72	1146	2.84*	Monoterpene
1,8-Cineole	5.22	1033	0.29	[0.72]	1146	2.84*	Monoterp. ether
Cymene analog	5.29	1037	0.09				Monoterpene
2,2,6-Trimethylcyclohexanone	5.35	1040	2.56	2.59	1246	4.20	Aliphatic ketone
γ -Terpinene	5.70	1060	1.08	1.47	1188	3.38	Monoterpene
3,3,5-Trimethylcyclohexenone?	5.79	1065	0.30				Aliphatic ketone
Unknown (m/z = 79, 93 (67), 43 (55), 94 (49), 137 (32)... 152 (20))	5.98	1075	0.33				Oxygenated monoterp.
Acetophenone	6.02*	1077	0.58	1.64	1559	10.75*	Simple phenolic
Unknown (m/z = 91, 92 (72), 43 (16), 59 (10)...)	6.02*	1077	[0.58]				
Terpinolene	6.18	1085	0.40	0.38	1223	3.86	Monoterpene
para-Cymenene	6.38	1096	2.28	2.03	1366	6.01	Monoterpene

γ -Campholenal	6.47	1101	0.11				Monoterp. aldehyde
Linalool	6.62	1107	0.24	0.21	1492	8.61	Monoterp. alcohol
cis-Rose oxide	6.68	1109	0.09	0.08	1299	4.97	Monoterp. ether
Unknown (m/z = 109, 43 (93), 41 (72), 71 (61), 55 (59), 82 (57)... 154 (2))	6.75	1111	0.45				Oxygenated monoterp.
Nonanal	6.81	1114	0.13	0.15	1336	5.54	Aliphatic aldehyde
trans-Rose oxide	7.07	1123	0.15	0.16	1319	5.26	Monoterp. ether
α -Campholenal	7.21	1128	0.93				Monoterp. aldehyde
trans-Pinocarveol	7.55	1141	3.95	4.48	1568	11.03	Monoterp. alcohol
(3E)-Nonen-2-one	7.60	1142	0.65				Aliphatic ketone
Camphor	7.72	1147	0.42	0.52	1419	6.88*	Monoterp. ketone
meta-Mentha-4,6-dien-8-ol	7.87	1152	0.28				Monoterp. alcohol
(E)-Tagetone	7.93	1154	0.16	0.22	1437	7.27	Monoterp. ketone
Pinocamphone	8.07	1160	0.47	0.55	1423	6.97*	Monoterp. ketone
Pinocarvone	8.14*	1162	1.38	1.08	1472	8.11	Monoterp. ketone
(Z)-Tagetone	8.14*	1162	[1.38]	0.38	1447	7.52	Monoterp. ketone
α -Phellandren-8-ol	8.42	1172	0.18				Monoterp. alcohol
Borneol	8.51	1176	0.97	8.11	1619	12.95*	Monoterp. alcohol
Isopinocamphone	8.56	1177	1.84	4.31	1505	8.91*	Monoterp. alcohol
Terpinen-4-ol	8.71	1183	1.05	2.69	1529	9.63*	Monoterp. alcohol
para-Cymen-8-ol	9.05	1195	0.18	0.10	1766	21.08	Monoterp. alcohol
Myrtenal	9.23	1201	0.67	[2.69]	1529	9.63*	Monoterp. aldehyde
α -Terpineol	9.30*	1203	0.93	0.27	1626	13.21*	Monoterp. alcohol
Myrtenol	9.30*	1203	[0.93]	0.89	1704	17.30	Monoterp. alcohol
Unknown (m/z 95, 93 (32), 121 (24), 79 (22), 91 (21), 105 (16)... 154 (2))	9.43	1206	0.12				Oxygenated monoterp.
Verbenone	9.72	1212	0.33	0.68	1610	12.62	Monoterp. ketone
trans-Carveol	10.27	1224	0.41	0.26	1755	20.32	Monoterp. alcohol
(Z)-Tagetenone	10.74	1235	0.94	1.41	1605	12.39*	Monoterp. ketone
Cuminal	11.18	1244	0.11	0.16	1678	15.99	Monoterp. aldehyde
Carvone	11.32	1248	0.45	0.44	1651	14.58	Monoterp. ketone
Phellandral	12.72	1279	0.17	0.15	1627	13.29	Monoterp. aldehyde
Bornyl acetate	12.88	1282	3.99	[4.31]	1505	8.91*	Monoterp. ester
trans-Pinocarvyl acetate	13.29	1291	0.12	0.28	1535	9.84	Monoterp. ester
Unknown thymol analogue	13.50	1296	0.29	0.51	2126	40.04*	Monoterp. alcohol
Myrtenyl acetate	15.09	1321	0.41	0.43	1596	12.06	Monoterp. ester
Verbanol acetate	15.26	1324	0.28				Monoterp. ester
trans-Carvyl acetate	15.90	1334	0.26				Monoterp. ester
α -Cubebene	16.23	1339	0.06	[0.52]	1419	6.88*	Sesquiterpene
Ethyl hydrocinnamate	16.90	1349	0.11				Phenolic ester
Cyclosativene	17.04*	1351	0.75	0.66	1431	7.17	Sesquiterpene
Longicyclene	17.04*	1351	[0.75]	[0.55]	1423	6.97*	Sesquiterpene

α -Copaene	17.62	1360	0.95	0.94	1428	7.08	Sesquiterpene
7-Cubebene	18.38	1371	0.32				Sesquiterpene
α -Cedrene	19.55	1389	0.22				Sesquiterpene
β -Caryophyllene	20.43	1402	0.10	0.08	1512	9.09	Sesquiterpene
Aromadendrene	22.00	1421	0.74	[2.69]	1529	9.63*	Sesquiterpene
allo-Aromadendrene	23.50	1439	1.45	[1.64]	1559	10.75*	Sesquiterpene
γ -Muurolene	24.88	1455	0.22	[1.41]	1605	12.39*	Sesquiterpene
<i>trans</i> -Cadina-1(6),4-diene	25.27	1460	0.20	0.21	1585	11.69	Sesquiterpene
allo-Aromadendr-9-ene	25.87	1467	0.95				Sesquiterpene
β -Selinene	26.01	1469	0.14	[0.27]	1626	13.21*	Sesquiterpene
Viridiflorene	26.41	1474	6.81	[8.11]	1619	12.95*	Sesquiterpene
α -Muurolene	27.42	1486	0.22	0.24	1645	14.22	Sesquiterpene
γ -Cadinene	27.77	1490	0.29	0.51	1666	15.34	Sesquiterpene
1,1,5,6-Tetramethyl-1,2-dihydronaphthalene	28.50	1499	0.57				
δ -Cadinene	29.14	1508	0.97	1.23	1672	15.67	Sesquiterpene
<i>trans</i> -Calamenene	29.45	1512	0.28	0.24	1735	19.02	Sesquiterpene
<i>trans</i> -Cadina-1,4-diene	30.21	1523	0.16	0.21	1690	16.56	Sesquiterpene
α -Calacorene	31.03	1534	0.49	0.61	1801	23.40	Sesquiterpene
Palustrol	32.83	1559	0.54	0.71	1818	24.46	Sesquiterp. alcohol
Spathulenol	33.64	1570	0.50	0.36	2020	36.59	Sesquiterp. alcohol
Viridiflorol	34.67	1585	4.97	5.25	1982	34.88	Sesquiterp. alcohol
Cubeban-11-ol	34.82	1587	0.97	1.13	1952	33.58	Sesquiterp. alcohol
Ledol	35.05	1590	1.69	1.64	1914	31.36	Sesquiterp. alcohol
Copaborneol	35.48	1596	0.75				Sesquiterp. alcohol
1,10-diepi-Cubenol	36.10	1608	0.12	0.12	1943	33.13	Sesquiterp. alcohol
1-epi-Cubenol	36.43	1616	0.15	0.14	1962	34.03	Sesquiterp. alcohol
β -Eudesmol	37.60	1645	0.09	0.10	2111	39.62	Sesquiterp. alcohol
Selin-11-en-4- α -ol	38.06	1656	0.18	[0.51]	2126	40.04*	Sesquiterp. alcohol
Cadalene	38.46	1666	0.16	0.16	2077	38.54	Sesquiterpene
Ambroxan	42.25	1776	0.05				Terpenic ether
Sclareoloxide	44.74	1863	0.06	0.07	2093	39.08	Diterp. ether
Total identified			86.97%			80.70%	

*: 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

OTHER DATA

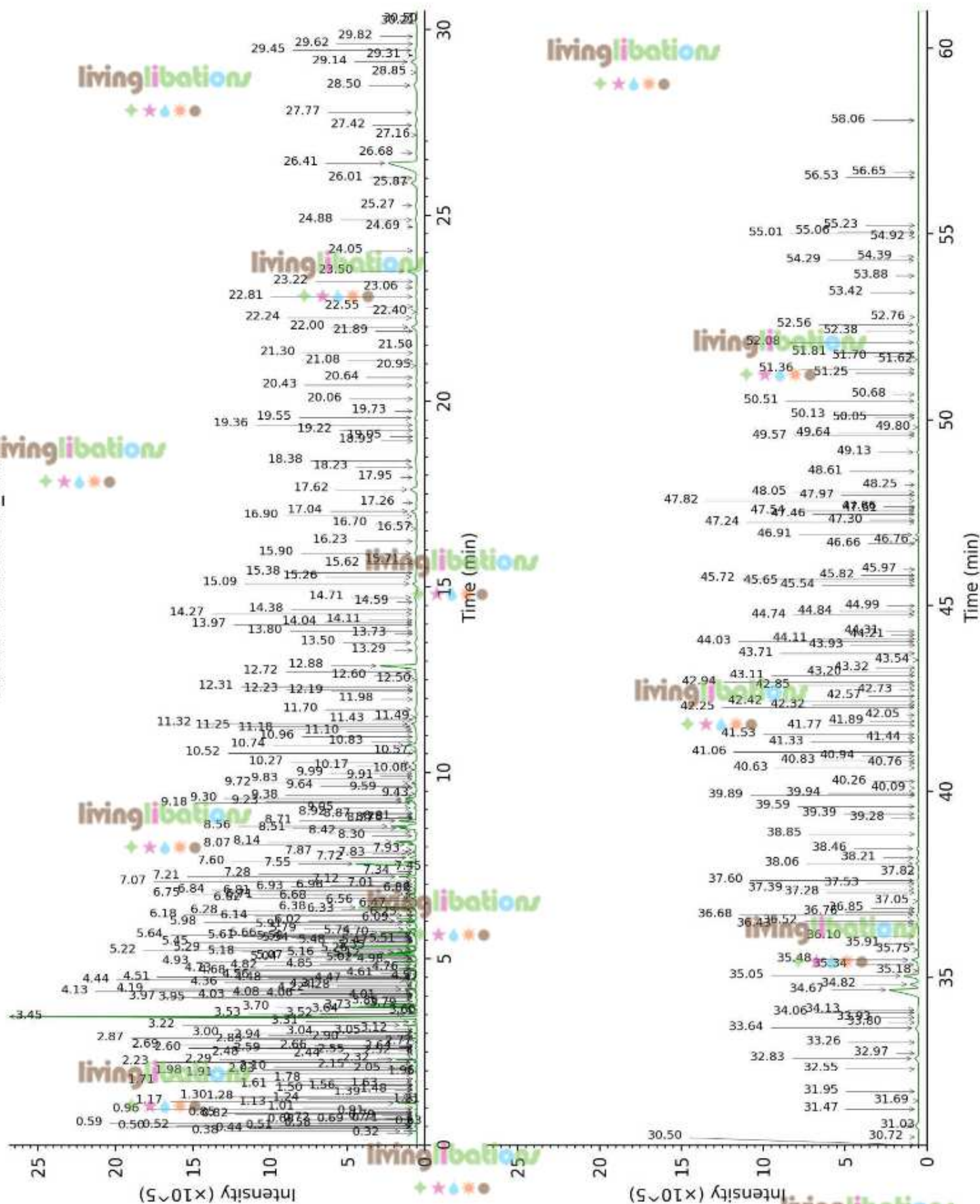
Physical aspect : Yellow liquid

Refractive index : 1.4833 \pm 0.0003 (20 °C)

CONCLUSION

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

17E05-FSE19-1-DM_BP5



17E05-FSE19-1-DM_WAX

