

GC/MS BATCH NUMBER: N10105

ESSENTIAL OIL: NEROLI
BOTANICAL NAME: CITRUS X AURANTIUM
ORIGIN: MOROCCO

KEY CONSTITUENTS PRESENT IN THIS BATCH OF NEROLI OIL	%
LINALOOL	38.9
LIMONENE	13.9
β -PINENE	10.6
trans- β -OCIMENE	6.3
α -TERPINEOL	4.1
(E)-NEROLIDOL	3.5
GERANYL ACETATE	3.1
LINALYL ACETATE	3.4
GERANIOL	2.6
MYRCENE	2.0
(2E,6E)-FARNESOL	1.7
NERYL ACETATE	1.6

Comments from Robert Tisserand: Exquisite, green-fresh, floral odor quality. All seventeen ISO standards are within range for Moroccan Neroli oil.

Date : January 10, 2018

SAMPLE IDENTIFICATION

Internal code : 18A04-PTH5-1-CC

Customer identification : Neroli - Morocco - N1010576R

Type : Essential oil

Source : *Citrus aurantium ssp. amara*

Customer : Plant Therapy

ANALYSIS

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

Identifications double-checked by GC-MS

Analyst : Sylvain Mercier, M. Sc., chimiste

Analysis date : 2018-01-10

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.	
Ethanol	0.35	632	0.03	0.03	826	0.67	Aliphatic alcohol
Toluene	1.32	759	tr	0.74	943	1.04*	Simple phenolic
<i>trans</i> -Hex-2-en-1-ol	2.69	879	0.01	0.01	1356	5.66	Aliphatic alcohol
Hexanol	2.74	883	0.02	0.02	1306	4.92	Aliphatic alcohol
Tricyclene	3.24	916	0.01	0.01	916	0.95	Monoterpene
α -Thujene	3.32	921	0.03	0.03	955	1.08	Monoterpene
α -Pinene	3.43	927	0.75	[0.74]	943	1.04*	Monoterpene
Camphene	3.72*	944	0.05	0.05	994	1.30	Monoterpene
α -Fenchene	3.72*	944	[0.05]	tr	979	1.19	Monoterpene
Sabinene	4.16	970	0.93	0.92	1060	1.79	Monoterpene
β -Pinene	4.24	975	10.57	10.55	1043	1.66	Monoterpene
Myrcene	4.50	990	2.03	1.98	1114	2.33	Monoterpene
6-Methyl-5-hepten-2-one	4.57	994	0.03	0.03	1279	4.52	Aliphatic ketone
Δ 3-Carene	4.77*	1005	0.02	0.01	1091	2.05	Monoterpene
α -Phellandrene	4.77*	1005	[0.02]	0.01	1106	2.23	Monoterpene
α -Terpinene	4.96	1016	0.10	0.10	1120	2.40	Monoterpene
Limonene	5.23*	1030	14.00	13.89	1142	2.67	Monoterpene
<i>para</i> -Cymene	5.23*	1030	[14.00]	0.05	1208	3.50	Monoterpene
β -Phellandrene	5.23*	1030	[14.00]	0.20	1145	2.71*	Monoterpene
1,8-Cineole	5.25	1031	0.15	[0.20]	1145	2.71*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.37	1038	0.79	0.98	1182	3.20*	Monoterpene
<i>trans</i> - β -Ocimene	5.58	1049	6.33	6.28	1204	3.43	Monoterpene
γ -Terpinene	5.75	1058	0.21	[0.98]	1182	3.20*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	6.02	1073	0.11	0.11	1383	6.06	Monoterp. alcohol
Terpinolene	6.22	1084	0.43	0.43	1222	3.69	Monoterpene
<i>trans</i> -Linalool oxide (fur.)	6.34	1090	0.06	0.05	1408	6.51	Monoterp. alcohol
Linalool	6.90	1113	38.93	42.27	1505	8.67†	Monoterp. alcohol
<i>trans</i> - <i>para</i> -Mentha-2,8-dien-1-ol	7.26	1126	0.06	0.07	1574	10.88*	Monoterp. alcohol
Camphor	7.81	1146	0.01	0.01	1421	6.79	Monoterp. ketone
Phenylacetone nitrile	8.00	1153	0.17	0.17	1808	23.53	Simple phenolic
Terpinen-4-ol	8.86	1184	0.30	0.30	1529	9.43	Monoterp. alcohol
α -Terpineol	9.62	1206	4.13	4.15	1625	13.05	Monoterp. alcohol
Nerol	10.68	1229	0.93	1.00	1730	18.56	Monoterp. alcohol
Neral	11.26	1242	0.02	0.01	1599	11.81	Monoterp. aldehyde
Linalyl acetate	11.50	1247	3.41	[42.27]	1506	8.70†	Monoterp. ester
Geraniol	12.03	1259	2.62	2.74	1785	21.93	Monoterp. alcohol
Geranial	12.77	1275	0.03	0.02	1646	14.02	Monoterp. aldehyde
Indole	14.98	1315	0.17	0.19	2298	44.25	Indole
δ -Elemene	15.39	1321	0.05	0.04	1410	6.56	Sesquiterpene
α -Terpinyl acetate	16.74	1342	0.11	0.08	1607	12.18	Monoterp. ester

Methyl anthranilate	17.20	1349	0.25	0.26	2104	39.31	Phenolic ester
Neryl acetate	17.99	1360	1.56	1.55	1656	14.51	Monoterp. ester
β -Elemene	19.04	1376	0.02	0.01	1525	9.32	Sesquiterpene
Geranyl acetate	19.53	1384	3.06	3.03	1691	16.13*	Monoterp. ester
β -Caryophyllene	20.73	1401	0.59	0.60	1516	9.02	Sesquiterpene
α -Humulene	23.53	1434	0.05	[0.07]	1574	10.88*	Sesquiterpene
<i>trans</i> - β -Farnesene	24.62	1447	0.10	0.21	1611	12.37*	Sesquiterpene
Germacrene D	25.75	1461	0.11	[0.21]	1611	12.37*	Sesquiterpene
Bicyclogermacrene	27.00	1475	0.18	0.18	1631	13.33	Sesquiterpene
(<i>E,E</i>)- α -Farnesene	29.21	1503	0.04	[3.03]	1691	16.13*	Sesquiterpene
δ -Cadinene	29.50	1507	0.04	0.04	1664	14.85	Sesquiterpene
(<i>E</i>)-Nerolidol	34.10	1572	3.53	3.42	1980	34.83	Sesquiterp. alcohol
Spathulenol	34.22	1573	0.01	0.01	2013	36.21	Sesquiterp. alcohol
β -Bisabolol	38.92	1671	0.01	0.01	2078	38.48	Sesquiterp. alcohol
(<i>2E,6E</i>)-Farnesol	40.81	1723	1.74	1.87	2281	43.85	Sesquiterp. alcohol
(<i>2E,6E</i>)-Farnesyl acetate	44.22	1836	0.07	0.07	2180	41.37	Sesquiterp. ester
Total identified			98.96%	98.79%			

*: 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

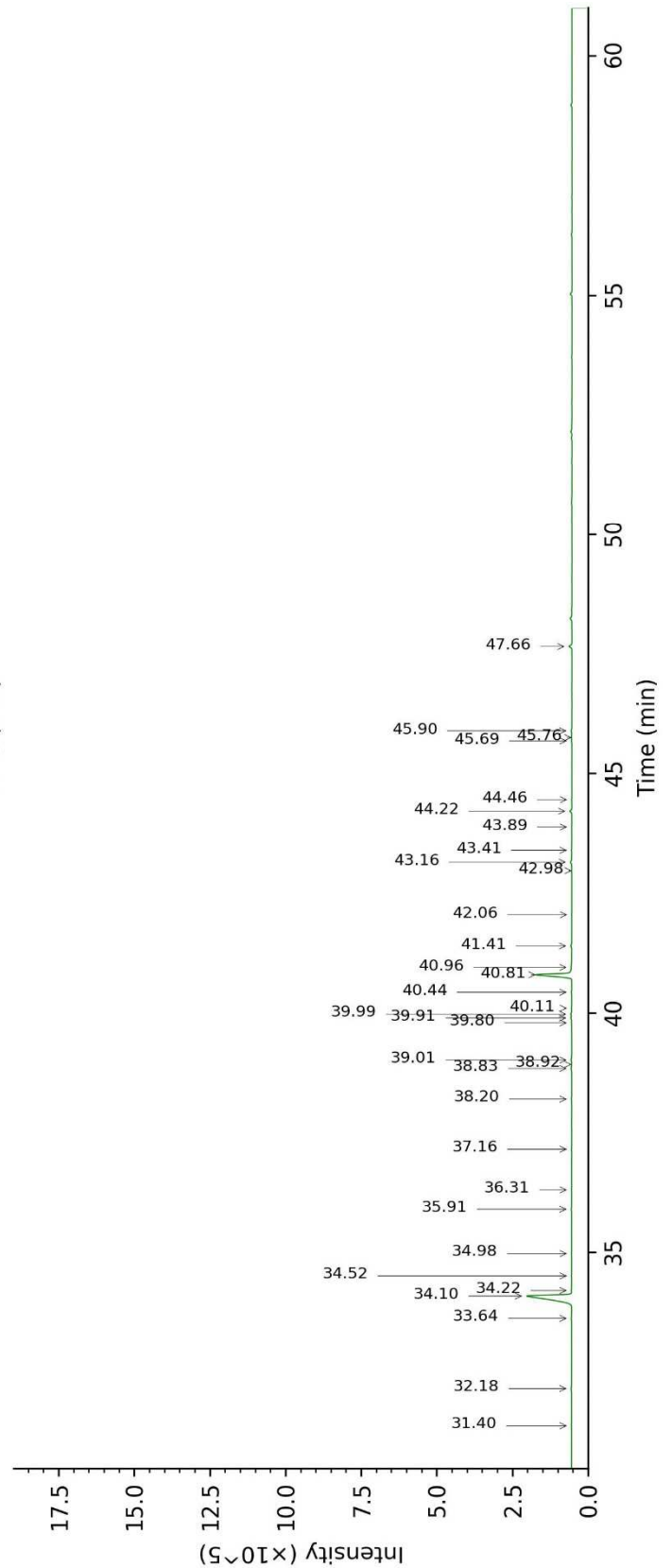
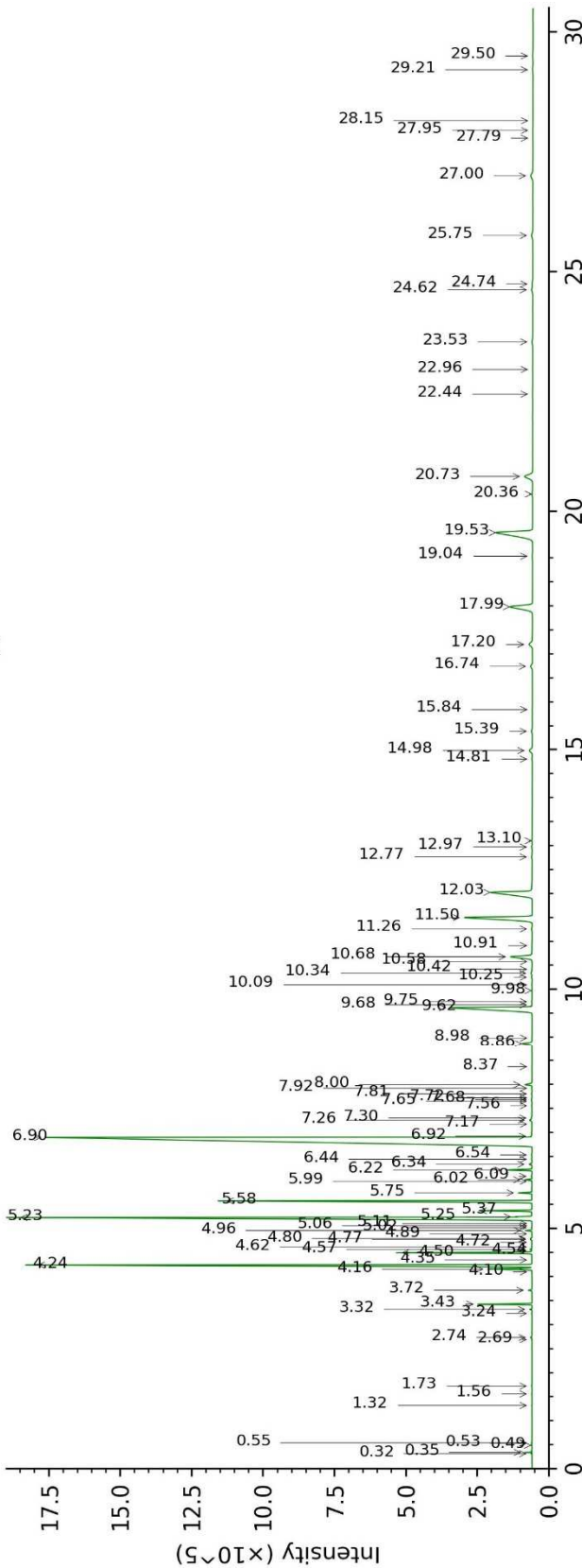
Physical aspect : Light yellow liquid

Refractive index : 1.4698 \pm 0.0003 (20 °C)

CONCLUSION

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

18A04-PTH5-1-CC_BP5



18A04-PTH5-1-CC_WAX

