

GC/MS BATCH NUMBER: C40104

ESSENTIAL OIL: CARROT SEED

BOTANICAL NAME: DAUCUS CAROTA

ORIGIN: FRANCE

KEY CONSTITUENTS PRESENT IN THIS BATCH OF CARROT SEED OIL	%
CAROTOL	30.0
β-CARYOPHYLLENE	9.3
β-BISABOLENE	7.1
α-PINENE	8.1
SABINENE	6.7
5,8-DAUCA-DIENE	4.9
GERANIOL	4.0
CARYOPHYLLENE OXIDE	2.5
trans-α-BERGAMOTENE	2.2
β-PINENE	1.7
GERANYL ACETATE	1.6
DAUCENE	1.5
trans-β-FARNESENE	1.3
trans-α-BISABOLENE	1.2
β-SELINENE	1.0
MYRCENE	1.0

Comments from Robert Tisserand: This is a good quality, complex Carrot Seed oil with a sophisticated odor profile.

Date : September 2, 2016

SAMPLE IDENTIFICATION

Internal code : 16H23-PTH3-1-DM

Customer identification : Carrot - C4010464R

Type : Essential oil

Source : *Daucus carota*

Customer : Plant Therapy

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 : 2016-09-02

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.	
Hexanal	1.67	801	0.01	0.01	1014	1.16	Aliphatic aldehyde
Heptanal	3.07	907	0.02	0.02	1127	2.12	Aliphatic aldehyde
2-Methylbutyric acid	3.11	910	0.01				Aliphatic acid
Tricyclene	3.16	913	0.03	0.02	928	0.79	Monoterpene
α -Thujene	3.25	918	0.09				Monoterpene
α -Pinene	3.37	925	8.05	8.32	950	0.88	Monoterpene
Camphene	3.64*	942	0.26	0.24	999	1.08	Monoterpene
α -Fenchene	3.64*	942	[0.26]	0.01	983	1.02	Monoterpene
Thuja-2,4(10)-diene	3.73	947	0.08	7.05	1059	1.52*	Monoterpene
Angelic acid	3.82	953	0.02	0.03	1710	14.75	Aliphatic acid
Sabinene	4.09	969	6.74	[7.05]	1059	1.52*	Monoterpene
β -Pinene	4.14	972	1.70	1.67	1040	1.37	Monoterpene
Myrcene	4.42	989	1.00	0.93	1116	1.99	Monoterpene
Octen-3-ol	4.49	993	0.07	0.06	1408	5.87	Aliphatic alcohol
Δ 3-Carene	4.68	1004	0.02	0.01	1109	1.92	Monoterpene
α -Terpinene	4.87	1014	0.08	0.10	1122	2.06	Monoterpene
para-Cymene	5.06	1025	0.52	0.52	1207	3.05	Monoterpene
Limonene	5.10	1027	0.82	0.73	1140	2.27	Monoterpene
β -Phellandrene	5.12	1029	0.05	0.12	1145	2.33*	Monoterpene
1,8-Cineole	5.16	1031	tr	[0.12]	1145	2.33*	Monoterp. ether
<i>cis</i> - β -Ocimene	5.28	1037	0.01	0.27	1187	2.82*	Monoterpene
<i>trans</i> - β -Ocimene	5.46	1047	0.02	0.01	1201	2.99	Monoterpene
γ -Terpinene	5.64	1057	0.29	[0.27]	1187	2.82*	Monoterpene
<i>cis</i> -Linalool oxide (fur.)	5.94	1073	0.01	0.01	1380	5.48	Monoterp. alcohol
<i>cis</i> -Sabinene hydrate	6.00	1076	0.07	0.07	1416	5.98	Monoterp. alcohol
Terpinolene	6.12	1083	0.06	0.04	1223	3.26	Monoterpene
para-Cymenene	6.46	1100	0.06	0.06	1359	5.15	Monoterpene
Linalool	6.65	1107	0.32	0.63	1492	7.41*	Monoterp. alcohol
Nonanal	6.72	1110	0.01	0.01	1338	4.86	Aliphatic aldehyde
<i>cis</i> -para-Menth-2-en-1-ol	7.16	1126	0.11	[0.63]	1492	7.41*	Monoterp. alcohol
<i>trans</i> -Pinocarveol	7.55	1141	0.16	0.15	1566	9.26	Monoterp. alcohol
<i>trans</i> -para-Menth-2-en-1-ol	7.63	1144	0.08	0.08	1575	9.55	Monoterp. alcohol
<i>trans</i> -Verbenol	7.76	1148	0.33	0.34	1614	10.71	Monoterp. alcohol
(2E)-Nonenal	8.11	1161	0.07				Aliphatic aldehyde
Terpinen-4-ol	8.68	1183	0.22	2.71	1536	8.38*	Monoterp. alcohol
Myrtenal	9.17	1199	0.09	[2.71]	1536	8.38*	Monoterp. aldehyde
α -Terpineol	9.40	1204	0.07	0.17	1629	11.23	Monoterp. alcohol
Verbenone	9.68	1211	0.11	2.48	1604	10.41*	Monoterp. ketone
Nerol	10.53	1230	0.11	0.19	1733	15.76	Monoterp. alcohol
Neral	10.99	1240	0.05	[2.48]	1604	10.41*	Monoterp. aldehyde
Cuminal	11.22	1245	0.09	0.09	1682	13.53	Monoterp. aldehyde

Geraniol	11.95	1262	3.96	4.05	1785	18.81	Monoterp. alcohol
Geranial	12.51	1273	0.09	0.12	1651	12.19	Monoterp. aldehyde
Bornyl acetate	12.72	1278	0.32	0.36	1504	7.62	Monoterp. ester
α -Terpinyl acetate	16.42	1340	0.19	0.74	1620	10.89	Monoterp. ester
α -Copaene	17.38	1355	0.09	1.56	1439	6.42*	Sesquiterpene
Daucene	17.62	1359	1.49	[1.56]	1439	6.42*	Sesquiterpene
Daucene isomer	18.12	1366	0.24	[0.63]	1492	7.41*	Sesquiterpene
β -Elemene	18.63	1374	0.23	[2.71]	1536	8.38*	Sesquiterpene
Geranyl acetate	19.20	1383	1.55	1.60	1694	14.05	Monoterp. ester
Isocaryophyllene	19.85	1393	0.11	[0.63]	1492	7.41*	Sesquiterpene
β -Caryophyllene	20.41	1400	9.31	8.31	1531	8.22	Sesquiterpene
<i>cis</i> - α -Bergamotene	20.67	1403	0.45	1.72	1522	7.96	Sesquiterpene
<i>trans</i> - α -Bergamotene	21.88	1418	2.16	[2.71]	1536	8.38*	Sesquiterpene
<i>cis</i> - β -Farnesene	22.61	1427	0.86	0.53	1582	9.77	Sesquiterpene
α -Humulene	23.05	1432	0.64	0.58	1597	10.21	Sesquiterpene
Acora-3,9-diene?	23.53	1438	0.10				Sesquiterpene
Dauca-5,8-diene	23.85	1442	4.92	3.30	1589	9.97	Sesquiterpene
<i>trans</i> - β -Farnesene	24.24	1447	1.27	1.45	1626	11.07*	Sesquiterpene
Dehydroaromadendrene	24.50	1450	0.50	[2.48]	1604	10.41*	Sesquiterpene
Germacrene D	25.24	1459	0.14	[1.45]	1626	11.07*	Sesquiterpene
β -Selinene	25.88*	1466	1.58	1.01	1636	11.47	Sesquiterpene
α -Amorphene	25.88*	1466	[1.58]	[2.48]	1604	10.41*	Sesquiterpene
<i>ar</i> -Curcumene	26.24	1470	0.15	0.09	1689	13.82	Sesquiterpene
Isodaucene	26.48	1473	0.41	0.75	1644	11.85*	Sesquiterpene
Germacrene A	26.76	1476	0.42	0.62	1701	14.37	Sesquiterpene
α -Muurolene	27.42	1484	0.15	[0.75]	1644	11.85*	Sesquiterpene
<i>cis</i> - α -Bisabolene	28.05	1492	0.18	0.15	1677	13.31	Sesquiterpene
β -Bisabolene	28.66	1500	7.14	7.29	1669	12.97	Sesquiterpene
Methyl (<i>E</i>)-isoeugenol	29.21	1507	0.08	0.07	2105	37.08	Phenylpropanoid
Dauca-4(11),8-diene	29.84	1516	0.54				Sesquiterpene
<i>trans</i> - α -Bisabolene	31.55	1539	1.19	1.04	1715	14.96	Sesquiterpene
Caryophyllene oxide	33.57*	1567	2.68	2.52	1855	23.11	Sesquiterp. ether
Spathulenol	33.57*	1567	[2.68]	0.05	2025	33.84	Sesquiterp. alcohol
Carotol	35.28*	1590	30.86	29.97	1922	27.69	Sesquiterp. alcohol
Unknown, not seen in MS (carrot)	35.28*	1590	[30.86]	1.50	1937	28.66	Oxygenated sesquiterp.
Daucol	37.46	1640	0.25	0.54	2190	39.65	Sesquiterp. alcohol
Total identified			96.16%	97.07%			

*: 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 : Faintly yellow liquid

Refractive index : 1.4875 ± 0.0003 (20 °C)

CONCLUSION

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



