

GC/MS BATCH NUMBER: N40101

ESSENTIAL OIL: NUTMEG
BOTANICAL NAME: MYRISTICA FRANGANS
ORIGIN: INDONESIA

KEY CONSTITUENTS PRESENT IN THIS BATCH OF NUTMEG OIL	%
α -PINENE	21.5
SABINENE	18.8
β -PINENE	15.0
MYRISTICIN	10.8
TERPINEN-4-OL	4.5
γ -TERPINENE	3.9
LIMONENE	3.8
α -TERPINENE	2.6
MYRCENE	2.3
β -PHELLANDRENE	2.2
TERPINOLENE	1.7
SAFROLE	1.6
α -THUJENE	1.6
Δ^3 -CARENE	1.2

Comments from Robert Tisserand: Smells like a very good quality Nutmeg oil, and conforms to all 10 key constituents of the ISO standard for Indonesian Nutmeg oil.

Date : March 11, 2016

SAMPLE IDENTIFICATION

Internal code : 16C01-PTH2-1-HM

Customer identification : Nutmeg - Indonesia - N4010149R

Type : Essential oil

Source : *Myristica fragrans*

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 : 2016-03-07

Checked and approved by :

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

Note: This report may not be published, including online, without the written consent from Laboratoire PhytoChemia.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.

IDENTIFIED COMPOUNDS

Identification	Column: BP5			Column: WAX			Molecular Class
	R.T.	R.I.	%	%	R.I.	R.T.	
Tricyclene	2.63	912	0.02	0.02	920	0.85	Monoterpene
α -Thujene	2.73	919	1.60	1.72	963	0.99	Monoterpene
α -Pinene	2.85	927	21.46	21.10	956	0.97	Monoterpene
Camphene	3.07*	940	0.41	0.32	1013	1.18	Monoterpene
α -Fenchene	3.07*	940	[0.41]	0.07	1006	1.13	Monoterpene
Sabinene	3.55†	971	34.21	18.76	1076	1.68	Monoterpene
β -Pinene	3.59†	974	[34.21]	14.95	1055	1.52	Monoterpene
Myrcene	3.85	990	2.31	2.32	1122	2.15	Monoterpene
Pseudolimonene	4.03	1001	0.03	0.06	1116	2.08	Monoterpene
α -Phellandrene	4.09*	1004	1.95	0.76	1114	2.06	Monoterpene
Δ^3 -Carene	4.09*	1004	[1.95]	1.21	1101	1.90	Monoterpene
α -Terpinene	4.27	1015	2.66	2.62	1128	2.23	Monoterpene
Limonene	4.51*	1028	6.76	3.83	1147	2.44	Monoterpene
β -Phellandrene	4.51*	1028	[6.76]	2.17	1153	2.51	Monoterpene
para-Cymene	4.51*	1028	[6.76]	0.80	1214	3.26	Monoterpene
cis- β -Ocimene	4.69	1038	0.01	3.96	1197	3.02*	Monoterpene
trans- β -Ocimene	4.86	1048	0.03	0.03	1207	3.17	Monoterpene
γ -Terpinene	5.04	1058	3.92	[3.96]	1197	3.02*	Monoterpene
cis-Sabinene hydrate	5.38	1078	0.29	0.30	1414	6.20	Monoterp. alcohol
Terpinolene	5.48	1084	1.65	1.62	1228	3.46	Monoterpene
para-Cymenene	5.70	1096	0.07	0.07	1373	5.55	Monoterpene
trans-Sabinene hydrate	5.95	1107	0.20	0.23	1492	7.68	Monoterp. alcohol
Linalool	5.98	1108	0.25	0.38	1506	7.94*	Monoterp. alcohol
endo-Fenchol	6.31	1123	0.02	0.02	1522	8.42	Monoterp. alcohol
cis-para-Menth-2-en-1-ol	6.37	1126	0.15	[0.38]	1506	7.94*	Monoterp. alcohol
trans-para-Menth-2-en-1-ol	6.79	1145	0.08	0.09	1565	9.70	Monoterp. alcohol
Borneol	7.53	1179	0.02	0.03	1627	11.82	Monoterp. alcohol
Terpinen-4-ol	7.67	1185	4.48	4.62	1537	8.86	Monoterp. alcohol
α -Terpineol	8.22	1205	0.82	0.80	1632	12.08	Monoterp. alcohol
trans-Piperitol	8.60	1215	0.04	0.05	1677	14.10	Monoterp. alcohol
Bornyl acetate	10.88	1276	0.10	0.09	1510	8.05	Monoterp. ester
Safrole	11.63	1296	1.62	1.57	1769	19.05	Phenylpropanoid
Unknown (m/z = 121, 77 (19), 178 (17), 122 (13))	12.15	1304	0.27				Phenylpropanoid
α -Cubebene	13.43	1327	0.05	0.06	1408	6.08	Sesquiterpene
α -Terpinyl acetate	14.11	1339	0.12	0.16	1621	11.55	Monoterp. ester
Citronellyl acetate	14.66	1348	0.05	0.04	1611	11.18	Monoterp. ester
α -Copaene	14.89	1352	0.30	0.29	1430	6.51	Sesquiterpene
Eugenol	15.24	1358	0.28	0.31	2071	36.95	Phenylpropanoid
Geranyl acetate	16.54	1381	0.16	0.16	1697	14.94	Monoterp. ester
β -Caryophyllene	17.39	1396	0.04	0.04	1520	8.35	Sesquiterpene

<i>trans</i> - α -Bergamotene	18.76*	1414	0.47	0.08	1527	8.56	Sesquiterpene
Methyleugenol	18.76*	1414	[0.47]	0.40	1943	30.53	Phenylpropanoid
(<i>E</i>)-Isoeugenol	22.13	1458	0.69	0.79	2246	41.99	Phenylpropanoid
β -Bisabolene	25.01	1495	0.03	0.04	1657	13.21	Sesquiterpene
δ -Cadinene	25.44	1500	0.14	0.11	1673	13.92	Sesquiterpene
Myristicin	28.10	1531	10.84	11.08	2154	39.59*	Phenylpropanoid
Elemicin	30.91	1565	0.31	[11.08]	2154	39.59*	Phenylpropanoid
Methoxyeugenol	34.32	1614	0.40	0.45	2452	46.52	Phenylpropanoid
Myristic acid	41.83	1803	0.13	0.22	2645	50.23	Fatty acid
Total identified			99.17%	98.8%			

*: 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 : Clear liquid

Refractive index : 1.4825 \pm 0.0003 (20 °C)

CONCLUSION

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



