

**Dr. Duke's Phytochemical and Ethnobotanical Database**

**Chemicals Found in Myristica fragrans**

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
38	(-)-EPICATECHIN	Seed	--	--		
67	1,8-CINEOLE	Seed	440	5600	0.18974198009521376	
16	ACETIC-ACID	Seed	--	--		
16	ACETIC-ACID	Seed Essent. Oil	--	--		
2	ALPHA-HUMULENE	Essential Oil	--	30000	-0.20980400443514668	
11	ALPHA-PHELLANDRENE	Leaf Essent. Oil	--	--		
11	ALPHA-PHELLANDRENE	Essential Oil	7000	16000	-0.28335092930230876	
11	ALPHA-PHELLANDRENE	Seed	180	1440	-0.46169629087131775	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
11	ALPHA-PHELLANDRENE	Seed Essent. Oil	4000	10000	1.1900603576383573	
28	ALPHA-PINENE	Seed	--	--		
28	ALPHA-PINENE	Seed Essent. Oil	106000	265000	1.0864685364033468	
28	ALPHA-PINENE	Leaf Essent. Oil	--	--		
28	ALPHA-PINENE	Essential Oil	132000	265000	1.7717899589754602	
13	ALPHA-TERPINENE	Seed Essent. Oil	8000	40000	1.5419966835859091	
13	ALPHA-TERPINENE	Essential Oil	14000	42000	0.4005162309634348	
13	ALPHA-TERPINENE	Seed	400	3200	1.9998919730740246	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
23	ALPHA-TERPINEOL	Seed	120	9600	2.4318339377092832	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
23	ALPHA-TERPINEOL	Essential Oil	6000	14000	-0.15304926088773244	
23	ALPHA-TERPINEOL	Seed Essent. Oil	50000	77000	-0.24509218035216662	
2	ARSENIC	Seed	0.01	0.01	-0.7399437215016571	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
6	BETA-BISABOLENE	Essential Oil	--	--		
3	BETA-PHELLANDRENE	Essential Oil	--	20000	0.6280219486295257	
3	BETA-PHELLANDRENE	Seed Essent. Oil	--	34000	0.31642638473198437	
13	BETA-PINENE	Essential Oil	80000	150000	2.600267389132106	
13	BETA-PINENE	Seed Essent. Oil	78000	191000	0.5792140753710214	
13	BETA-PINENE	Seed	--	--		
13	BETA-PINENE	Leaf Essent. Oil	--	--		
47	BETA-SITOSTEROL	Aril	--	560		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
47	BETA-SITOSTEROL	Seed	--	460	-0.4544572566816562	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
3	BETA-TERPINEOL	Seed Essent. Oil	--	--		
35	BORNEOL	Essential Oil	--	--		
4	BORON	Seed	3	13	-0.527070146985773	Betting on Boron, Unpublished draft by J. A. Duke on file at USDA, draft and papers relating to boron percentages. Includes Internat. Z. Vit. Ern. Forschung 43:1973 (boron).

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	BUTYRIC-ACID	Seed	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
102	CAFFEIC-ACID	Plant	--	16	-1.0832422412570573	
28	CALCIUM	Seed	1110	2000	-0.3942068364194249	
28	CALCIUM	Aril	2400	2400	1.0290157581919714	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
2	CAMPESTEROL	Aril	--	60		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
2	CAMPESTEROL	Seed	--	30	-0.5601817141925177	
9	CAMPHENE	Essential Oil	2000	4000	-0.5737485608606457	
9	CAMPHENE	Seed Essent. Oil	2000	4000	-0.09681853268597942	
9	CAMPHENE	Leaf Essent. Oil	--	--		
9	CAMPHENE	Seed	80	640	0.6230692441110584	
41	CAMPHOR	Seed Essent. Oil	--	34000	-1	
5	CAPRYLIC-ACID	Seed	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
31	CARYOPHYLLENE	Essential Oil	--	--		
1	CATECHINS	Seed	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
24	CHROMIUM	Aril	13.2	13.2		
24	CHROMIUM	Seed	16.4	16.4	1.7067997322516597	
15	CITRONELLOL	Seed Essent. Oil	--	--		
15	CITRONELLOL	Essential Oil	--	--		
2	COBALT	Seed	0.6	0.6	-0.1799211298921931	
2	COBALT	Aril	0.4	0.4		
1	COPAENE	Seed Essent. Oil	2000	3000		
1	COPAENE	Essential Oil	2000	8000	1.4001731038549101	
1	COPAENE	Seed	--	--		Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
12	COPPER	Aril	6	25		
12	COPPER	Seed	10	21	0.5610574180917248	
7	CYANIDIN	Plant	--	--		
7	CYANIDIN	Seed	--	--		
4	D-BORNEOL	Seed	4200	25600		
3	DEHYDROISOEUGENOL	Plant	--	--		
3	DEHYDROISOEUGENOL	Seed	--	--		
9	DELPHINIDIN	Seed	--	--		
9	DELTA-CADINENE	Essential Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	DIPENTENE	Seed	3200	12800		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	ELEMENE	Aril	--	--		Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
16	ELEMICIN	Seed Essent. Oil	1000	21000		
16	ELEMICIN	Fruit	--	--		
16	ELEMICIN	Seed	20	3500	1.3156336050888344	
16	ELEMICIN	Essential Oil	1000	12000	1	
76	EUGENOL	Essential Oil	2000	3000	-0.7024628939882881	
76	EUGENOL	Seed	40	320	-0.9281295905730291	
76	EUGENOL	Seed Essent. Oil	1000	38000		
5	EUGENOL-METHYL-ETHER	Seed Essent. Oil	1000	6000		
5	EUGENOL-METHYL-ETHER	Seed	--	--		
5	EUGENOL-METHYL-ETHER	Fruit	--	--		
5	EUGENOL-METHYL-ETHER	Essential Oil	1000	3000	-0.6504264790408124	
1	FENCHYL-ALCOHOL	Essential Oil	--	--		
15	FIBER	Aril	38000	48000	-0.5756191235157304	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
15	FIBER	Seed	40000	116000	-0.1482807912686459	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
13	FORMIC-ACID	Seed	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
13	FORMIC-ACID	Seed Essent. Oil	--	--		
6	FURFURAL	Seed	15000	15000	-1	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
11	GAMMA-TERPINENE	Essential Oil	21000	47000	-0.18034222798075647	
11	GAMMA-TERPINENE	Seed Essent. Oil	19000	68000	0.310243679218955	
11	GAMMA-TERPINENE	Seed	580	4640	0.008532146585622945	
8	GENTISIC-ACID	Leaf	--	--		Griffiths, L. A. 1959. On the Distribution of Gentisic Acid in Green Plants. J. Exp. Biol. 10: 437.
35	GERANIOL	Seed	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
35	GERANIOL	Seed Essent. Oil	36000	119000	1.166054423172743	
35	GERANIOL	Essential Oil	--	--		
5	GERANYL-ACETATE	Seed	20	160		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	GERMACRENE-D	Essential Oil	--	--		
7	GLUCOSE	Seed	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	HEPTADECANOIC-ACID	Seed Essent. Oil	--	--		
1	HEPTADECANOIC-ACID	Seed	--	--		
6	IRON	Aril	126	140	0.8010516701400016	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
6	IRON	Seed	30	45	-0.49154717004924897	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
3	ISOELEMICIN	Seed	--	150		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
16	ISOEUGENOL	Essential Oil	--	--		
16	ISOEUGENOL	Seed	40	320		
16	ISOEUGENOL	Seed Essent. Oil	1000	2000		
75	KAEMPFEROL	Plant	--	--		
7	LAURIC-ACID	Seed	375	1600	-0.49798238492984703	
7	LAURIC-ACID	Seed Essent. Oil	--	--		
2	LICARIN-A	Aril	--	--		Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
1	LICARIN-B	Seed	--	--		
60	LIMONENE	Seed	720	5760	-0.35141280144595843	
60	LIMONENE	Seed Essent. Oil	31000	119000	-0.37380387125652204	
60	LIMONENE	Essential Oil	36000	44000	-0.4838069631863494	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
60	LIMONENE	Leaf Essent. Oil	--	--		
53	LINALOOL	Seed	--	--		
53	LINALOOL	Seed Essent. Oil	2000	106000	-0.16178245106593325	
53	LINALOOL	Essential Oil	2000	10000	-0.538306617674772	
27	LINOLEIC-ACID	Seed	--	6000	-0.8664250199668236	
65	MAGNESIUM	Aril	1630	1630		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
65	MAGNESIUM	Seed	1830	2030	-0.36194664273049376	
4	MALABARICONE-B	Seed	172	172		
4	MALABARICONE-C	Seed	172	172		
14	MANGANESE	Aril	14	14		
14	MANGANESE	Seed	23	29	-0.30545615474189847	
20	METHYL-EUGENOL	Seed	20	900		
15	METHYL-ISOEUGENOL	Seed	550	550		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
22	MYRCENE	Seed Essent. Oil	25000	38000	-0.3184704257903154	
22	MYRCENE	Essential Oil	16000	37000	0.041079332889888936	
22	MYRCENE	Seed	740	5920	2.345991167533613	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
6	MYRISTIC-ACID	Seed Essent. Oil	--	3000	-1	
6	MYRISTIC-ACID	Essential Oil	--	--		



Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	MYRISTIC-ACID	Seed	60	304000	3.8930735310997324	
31	MYRISTICIN	Leaf	410	620	-0.5531219396450161	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
31	MYRISTICIN	Seed Essent. Oil	5000	124000	1	
31	MYRISTICIN	Seed	800	12800	0.5261119980916963	
31	MYRISTICIN	Fruit	--	--		
31	MYRISTICIN	Leaf Essent. Oil	--	--		
31	MYRISTICIN	Essential Oil	9000	140000	-1	
10	NEROL	Essential Oil	--	--		
5	OCTANOIC-ACID	Seed Essent. Oil	--	--		
64	OLEANOLIC-ACID	Seed	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
18	OLEIC-ACID	Seed Essent. Oil	--	--		
18	OLEIC-ACID	Seed	13000	176000	0.46772312643074876	
25	P-COUMARIC-ACID	Seed	--	7	-0.5214490785338048	
16	P-CYMENE	Essential Oil	5000	8000	-0.5673446390180718	
16	P-CYMENE	Seed Essent. Oil	6000	43000	0.477275515406428	
16	P-CYMENE	Seed	120	960	-0.48494618071752577	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
16	P-CYMENE	Leaf Essent. Oil	--	--		
13	PALMITIC-ACID	Seed	25000	128000	1.9414542745504888	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	PALMITIC-ACID	Seed Essent. Oil	--	--		
24	PECTIN	Seed	5000	6000	-0.9783303927231646	
1	PENTADECANOIC-ACID	Seed	--	--		
1	PENTADECANOIC-ACID	Seed Essent. Oil	--	--		
4	PHOSPHORUS	Aril	1000	1100	-1.325160187171999	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
4	PHOSPHORUS	Seed	2130	2400	-0.7804502800829126	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
2	PHYTOSTEROLS	Seed	620	620	-0.4806663138594772	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
2	PHYTOSTEROLS	Aril	730	730		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
12	PINENE	Seed	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
14	POTASSIUM	Aril	4630	4630		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
14	POTASSIUM	Seed	3500	5210	-0.6472690069248516	
176	QUERCETIN	Plant	--	--		
15	RIBOFLAVIN	Aril	4	5	1.3970013970020942	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
15	RIBOFLAVIN	Seed	--	1	-0.9674166926890354	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	SABINENE	Seed Essent. Oil	178000	507000	2.2344499180505175	
5	SABINENE	Essential Oil	210000	420000	2.3799502610756456	
5	SABINENE	Seed	5420	43360	2.448238521283371	
29	SAFROLE	Essential Oil	1000	33000		
29	SAFROLE	Seed Essent. Oil	1000	60000		
29	SAFROLE	Seed	120	2720		
7	SALICYLATES	Aril	30	320		
7	SALICYLATES	Seed	2	25	-0.20604527298924552	
5	SCLAREOL	Seed	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
1	SODIUM	Aril	800	800		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
1	SODIUM	Seed	109	160	-0.4617295086785716	
5	STARCH	Aril	317000	317000		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
5	STARCH	Seed	300000	300000	-0.04114411632752793	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
8	STEARIC-ACID	Seed	--	--		
8	STEARIC-ACID	Seed Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
12	STIGMASTEROL	Aril	--	110		Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
12	STIGMASTEROL	Seed	--	130	-0.3650596814937978	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
23	TERPINEN-4-OL	Seed	600	4800	1.9180648061337349	
23	TERPINEN-4-OL	Essential Oil	30000	63000	-0.0049821192011661975	
23	TERPINEN-4-OL	Seed Essent. Oil	30000	247000	1.729953772502488	
18	TERPINEOL	Seed	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
9	TERPINOLENE	Seed Essent. Oil	14000	26000	1.7063760230495335	
9	TERPINOLENE	Essential Oil	10000	17000	-0.26806226806153055	
9	TERPINOLENE	Seed	340	2720	1.6783192383826524	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	THIAMIN	Aril	3	3	0.23017413505937473	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
31	THIAMIN	Seed	3	4	-0.6165338688916807	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
2	TRIDECANOIC-ACID	Seed	--	--		
2	TRIDECANOIC-ACID	Seed Essent. Oil	--	--		
28	VANILLIN	Essential Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
77	ZINC	Aril	20	20		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
77	ZINC	Seed	13	20	-0.7135039207289134	