

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Piper nigrum

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
22	GABA	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
29	SAFROLE	Fruit				--
15	CITRONELLOL	Essential Oil				--
4	2-UNDECANONE	Fruit				--
11	ALPHA-PHELLANDRENE	Seed Essent. Oil				--
29	SAFROLE	Fruit Essent. Oil				--
22	MYRCENE	Fruit				--
0	N-FORMYLPIPERIDINE	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
5	EUGENOL-METHYL-ETHER	Leaf Essent. Oil				--
61	PIPERINE	Seed Essent. Oil				--
20	BENZOIC-ACID	Fruit				--
0	CIS-TRANS-PIPERINE	Fruit				--
0	1(7),2-P-MENTHADIEN-4-OL	Fruit				--
0	(-)-PHELLANDRENE	Seed Essent. Oil				--
2	PIPERONAL	Essential Oil				--
2	PHENYLACETIC-ACID	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
19	D-LIMONENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PIPEROLEIN-A	Fruit				--
9	CAMPHENE	Seed Essent. Oil				--
0	CIS-SABINENE-HYDRATE	Fruit				--
11	NEROLIDOL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOBUTYL-ISOVALERATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	TRANS-CARVEOL	Fruit				--
0	EPOXYDIHYDROCARYOPHYLLENE	Essential Oil				--
0	CARYOPHYLLA-3(12),7(15)DIEN-4-BETA-OL	Fruit				--
2	OCIMENE	Seed Essent. Oil				--
3	BETA-SELINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	STEARIC-ACID	Fruit				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	2-METHYL-PENTANOIC-ACID	Fruit				--
5	SABINENE	Seed Essent. Oil				--
0	METHYL-OCTANOATE	Fruit				--
76	EUGENOL	Leaf Essent. Oil				--
61	PIPERINE	Seed				--
0	LIPASE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
11	PERILLALDEHYDE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	BETA-CARYOPHYLLENE	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	LINALYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	N-(2-METHYLPROPYL)-DECA-TRANS-2-TRANS-4-DIENAMIDE	Fruit				--
0	CIS-P-2-MENTHEN-1-OL	Fruit				--
0	N-TRIDECANE	Fruit				--
0	HENTRIACONTAN-16-ONE	Leaf				--
0	ISOBUTYL-CAPROATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	DIHYDROCARVEOL	Essential Oil				--
0	CARYOPHYLLA-2,7(15)-DIEN-4-OL	Fruit				--
11	NEROLIDOL	Fruit Essent. Oil				--
2	ALPHA-HUMULENE	Fruit				--
0	TRANS-CIS-PIPERINE	Fruit				--
0	BETA-PINONE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	HENTRIACONTANONE	Stem				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	2,8-P-MENTHADIEN-1-OL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	METHYL-HEPTANOATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
75	KAEMPFEROL	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	CUMAPERINE	Fruit				--
0	LINALOL	Fruit				--
2	TRANS-PINOCARVEOL	Fruit				--
0	(-)-3,4-DIMETHOXY-3,4-DEMETHYLENEDIOXY-CUBEBIN	Leaf				--
3	CIS-OCIMENE	Fruit				--
0	N-NONANE	Fruit				--
5	TERPINYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CARYOPHYLLA-2,7(15)-DIEN-4-BETA-OL	Fruit				--
0	ALPHA-GUAIENE	Fruit				--
0	THUJENE	Seed Essent. Oil				--
31	MYRISTICIN	Fruit Essent. Oil				--
0	HENTRIACONTANOL	Stem				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	1-TERPINEN-5-OL	Fruit				--
87	RUTIN	Fruit				--
20	METHYL-EUGENOL	Fruit				--
0	ISOPIPERINE	Fruit				--
76	EUGENOL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Leaf				--
2	P-METHYL-ACETOPHENONE	Fruit				--
0	LIMONEN-4-OL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
19	CARVONE	Fruit				--
0	(-)-CUBEBIN	Leaf				--
0	CIS-CARVEOL	Fruit				--
10	PIPERIDINE	Essential Oil				--
3	AR-CURCUMENE	Fruit				--
0	N-NONADECANE	Fruit				--
9	TERPINOLENE	Fruit				--
0	CARVETONACETONE	Fruit				--
0	ALPHA-CUBEBINE	Fruit				--
13	ALPHA-TERPINENE	Seed Essent. Oil				--
0	CUBEBINE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PIPEROLEINE-B	Fruit				--
0	BETA-FARNESENE	Fruit				--
22	MYRCENE	Seed Essent. Oil				--
0	HENTRIACONTANE	Stem				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	1-TERPINEN-4-OL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	4-METHYL-TRITRIACONTANE	Leaf				--
0	RHAMNETIN-O-TRIGLUCOSIDE	Fruit				--
0	DL-LIMONENE	Essential Oil				--
0	METHYL-CYCLOHEPTA-2,4-DIEN-6-ONE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	ISOCHAVICINE	Fruit				--
0	BETA-FARNESENE	Fruit Essent. Oil				--
0	EPOXYDIHYDROCARYOPHYLLENE	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
7	ASTRAGALIN	Fruit				--
3	N-HENTRIACONTANE	Leaf				--
41	CAMPHOR	Fruit				--
0	CIS-2,8-MENTHADIEN-2-OL	Fruit				--
10	PIPERIDINE	Seed				--
0	ALPHA-TRANS-BERGAMOTENE	Fruit				--
0	N-METHYL-PYRROLINE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	3,4-DIHYDROXY-6-(N-ETHYL-AMINO)-BENZAMIDE	Fruit				--
2	HEXANOIC-ACID	Fruit				--
23	TERPINEN-4-OL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
9	DELTA-CADINENE	Leaf Essent. Oil				--
37	CARVACROL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-COPAENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
9	TERPINOLENE	Seed Essent. Oil				--
0	CRYPTONE	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
5	BETA-ELEMENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	1,8-MENTHADIEN-2-OL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CALAMENENE	Fruit Essent. Oil				--
0	(+)-LIMONENE	Essential Oil				--
5	METHYL-CINNAMATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	HENTRIACONTAN-16-ONE	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
13	BETA-PINENE	Seed Essent. Oil				--
0	P-CYMENE-8-METHYL-ETHER	Fruit				--
0	M-MENTHA-3(8),6-DIENE	Seed Essent. Oil				--
2	L-LIMONENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
16	P-CYMENE	Fruit Essent. Oil				--
18	CINNAMIC-ACID	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-THUJENE	Fruit				--
0	HELIOTROPIN	Fruit				Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	ALPHA-CIS-BERGAMOTENE	Fruit				--
0	N-BUTYOPHENONE	Fruit				--
61	PIPERINE	Shoot				--
0	BETA-CUBEKINE	Fruit				--
22	ISOQUERCITRIN	Fruit				--
1	BEHENIC-ACID	Fruit				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
67	1,8-CINEOLE	Fruit				--
44	QUERCITRIN	Fruit				--
0	(+)-LIMONENE	Seed Essent. Oil				--
0	METHYL-CARVACROL	Fruit				--
0	DIHYDROCARVONE	Fruit				--
0	PIPERYLINE	Fruit				--
31	CARYOPHYLLENE	Seed Essent. Oil				--
0	L-ALPHA-PHELLANDRENE	Fruit				--
35	BORNEOL	Fruit				--
16	P-CYMENE	Seed Essent. Oil				--
23	ALPHA-TERPINEOL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	GERANYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CRYPTONE	Essential Oil				--
0	5,10(15)-CADINEN-4-OL	Fruit				--
0	ALPHA-SANTALENE	Fruit Essent. Oil				--
0	TERPIN-1-EN-4-OL	Fruit Essent. Oil				--
2	MYRTENOL	Fruit				--
61	PIPERINE	Seed Oil				--
0	BETA-CARYOPHYLLENE-ALCOHOL	Fruit				--
0	ARACHIDIC-ACID	Fruit				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	1,8(9)-P-MENTHADIEN-5-OL	Fruit				--
0	QUERCETIN-3-O-ALPHA-D-GALACTOSIDE	Fruit				--
0	PIPERANINE	Fruit				--
35	BORNEOL	Fruit Essent. Oil				--
0	METHYL-CAFFEIC-ACID-PIPERIDIDE	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
2	ALPHA-HUMULENE	Leaf Essent. Oil				--
2	DIHYDROCARVEOL	Fruit				--
0	PIPERONIC-ACID	Fruit				--
0	P-CYMEN-8-OL	Fruit Essent. Oil				--
13	ALPHA-TERPINENE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	BETA-PINENE	Essential Oil				--
0	TRICHOSTACHINE	Fruit				--
11	GAMMA-TERPINENE	Fruit				--
0	CRYPTONE	Fruit Essent. Oil				--
0	CALAMENENE	Fruit				--
2	N-ISOBUTYL-OCTADECAN-2-TRANS-4-DIENAMIDE	Fruit				--
0	4,10,10-TRIMETHYL-7-METHYLENE-BICYCLO-(6.2.0)DECANE-4-CAR...	Plant				--
28	ALPHA-PINENE	Seed Essent. Oil				--
5	MYRTENAL	Fruit				--
61	PIPERINE	Leaf				--
0	BETA-CARYOPHYLLENE	Fruit				Chemical Constituents of Oriental Herbs (3 diff. books)
11	GAMMA-TERPINENE	Seed Essent. Oil				--
0	1,8(9)-P-MENTHADIEN-4-OL	Fruit				--
0	PYRROPERINE	Seed				--
0	BETA-CUBEBENE	Fruit Essent. Oil				--
0	P-MENTH-CIS-2-EN-1-OL	Seed Essent. Oil				--
0	DELTA-ELEMENE	Fruit				--
2	PIPERONAL	Fruit				--
2	CITRONELLYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ALPHA-CIS-BERGAMOTENE	Seed Essent. Oil				--
60	LIMONENE	Seed Essent. Oil				--
3	ISOPULEGOL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
25	P-COUMARIC-ACID	Fruit				--
1	CHAVICINE	Fruit				--
2	PHENYLACETIC-ACID	Essential Oil				--
3	ALPHA-SELINENE	Fruit				--
0	GAMMA-MUUROLENE	Fruit				--
0	CALAMENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	N-ISOBUTYL-13-(3,4-METHYLENEDIOXY-PHENYL)-TRIDECA-TRANS-2-TRANS-4-TRANS-12-TRIENAMIDE	Fruit				--
0	3-METHYL-BUTYRIC-ACID	Fruit				--
0	SESQUISABINENE	Seed Essent. Oil				--
31	MYRISTICIN	Fruit				--
18	RHAMNETIN	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
61	PIPERINE	Leaf Essent. Oil				--
0	4-METHYL-TRIACONTANE	Plant				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	1,1,4-TRIMETHYLCYCLOHEPTA-2,4-DIEN-6-ONE	Fruit				--
0	1-PIPERYL-PYRROLIDINE	Fruit				--
1	PYRROLIDINE	Seed				--
0	BETA-CARYOPHYLLENE	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	DELTA-CADINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PIPEROLEIN-C	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	CITRONELLAL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ALPHA-CIS-BERGAMOTENE	Fruit Essent. Oil				--
0	KAEMPFEROL-3-O-ARABINOSYL-7-O-RHAMNOSIDE	Fruit				--
0	ISOCHAVINIC-ACID	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
8	UBIQUINONE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	ISOCARYOPHYLLENE	Fruit Essent. Oil				--
8	CARYOPHYLLENE-OXIDE	Fruit				Chemical Constituents of Oriental Herbs (3 diff. books)
2	PELLITORINE	Fruit				--
0	ALPHA-SANTALENE	Fruit				--
3	BETA-PHELLANDRENE	Seed Essent. Oil				--
0	GAMMA-CADINENE	Fruit				--
0	SESQUISABINENE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
6	BUTYRIC-ACID	Fruit				--
0	N-ISOBUTYL-11-(3,4-METHYLENEDIOXY-PHENYL)-UNDECA-TRANS-2-TRANS-4-TRANS-10-TRIENAMIDE	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3,8(9)-P-MENTHADIEN-1-OL	Fruit				--
28	ALPHA-PINENE	Essential Oil				--
0	SESQUISABINENE	Fruit				--
176	QUERCETIN	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
5	EUGENOL-METHYL-ETHER	Fruit Essent. Oil				--
61	PIPERINE	Root				--
6	BETA-BISABOLENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	DIHYDROPIPERCIDE	Fruit				--
0	1(7),2-P-MENTHADIEN-6-OL	Fruit				--
0	1-ALPHA-PHELLANDRENE	Essential Oil				--
0	PIPERYLIN	Fruit				--
0	P-MENTH-8-EN-2-OL	Fruit Essent. Oil				--
0	M-METHYL-ACETOPHENONE	Fruit				--
0	CAR-3-ENE	Seed Essent. Oil				--
53	CITRAL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
30	HYPEROSIDE	Fruit				--
1	ISOCARYOPHYLLENE	Fruit				--
0	TRANS-SABINENE-HYDRATE	Fruit				--
0	GAMMA-CADINENE	Fruit Essent. Oil				--
0	CARYOPHYLLENE-KETONE	Fruit				--
2	TRANS-PINOCARVEOL	Seed Essent. Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
32	ALPHA-TOCOPHEROL	Fruit		0.054	-1.1207877074947452	Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp.
12	IODINE	Fruit		0.09	-0.2902538943414157	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
53	BETA-CAROTENE	Fruit	0.114	0.128	-0.1505532074368425	--
0	TOCOPHEROLS	Fruit		0.3		Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp.
0	PIPERICINE	Fruit		0.4		--
2	COBALT	Fruit	0.3	0.4	-0.48669151400918487	--
31	THIAMIN	Fruit	0.5	1.6	-0.4778065908058602	--
3	NICKEL	Fruit	0.7	2.4	-0.04957166517347313	--
15	RIBOFLAVIN	Fruit	0.4	2.8	-0.4731582297112136	--
24	CHROMIUM	Fruit	3.0	3.5	-0.01602978329031414	--
3	FLUORIDE	Fruit		3.6	1.4608696696245176	=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
0	RETROFRACTAMIDE-A	Fruit		4.0		--
0	2-TRANS-8-TRANS-PIPERAMIDE-C-9-2	Fruit		5.0		--
102	CAFFEIC-ACID	Fruit		6.0	-0.33780275264769194	--
0	N-ISOBUTYL-11-(3,4-METHYLENEDIOXY-PHENYL)-UNDECA-TRANS-2-TRANS-4-TRANS-10-TRIENAMIDE	Fruit		7.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	N-5-(4-HYDROXY-3-METHOXY-PHENYL)-PENT-TRANS-2-DIENOYL-PIPERIDINE	Fruit		9.0		--
112	ASCORBIC-ACID	Fruit		10.0	-0.2838672355464054	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	1-(2,4-DODECADIENOYL)-PYRROLIDINE	Fruit		10.0		--
0	N-TRANS-FERULOYL-PIPERIDINE	Fruit		11.0		--
0	PIPERCIDE	Fruit		13.0		--
39	NIACIN	Fruit	2.0	14.5	-0.6175885994937399	--
0	P-CYMENE-8-OL	Fruit		15.0	-1.0	--
0	FERUPERINE	Fruit		17.0		--
4	BORON	Fruit	0.5	18.0	-0.44149735010956404	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).
12	COPPER	Fruit	9.0	20.0	0.5588968590110831	--
19	ACETYL-CHOLINE	Seed		23.0	-1.1887435300844578	--
0	1-(2,4-DECADIENOYL)-PYRROLIDINE	Fruit		30.0		--
0	GUINEENSINE	Fruit		31.0		--
77	ZINC	Fruit	11.2	35.7	0.16241717653889182	--
0	HENTRIACONTAN-16-ONE	Stem		40.0		--
0	HENTRIACONTAN-16-OL	Stem		40.0		--
0	CIS-CARVEOL	Fruit Essent. Oil		50.0	-1.0	--
19	CARVONE	Fruit Essent. Oil		50.0	-0.7219111602348719	--
14	MANGANESE	Fruit	19.0	56.0	-0.03428079513973251	--
2	CAMPESTEROL	Fruit	30.0	60.0	-0.14986892201478846	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	SALICYLATES	Fruit	10.0	65.0	-0.1503568703758442	--
0	2-TRANS-4-TRANS-8-TRANS-PIPERAMIDE-C-9-3	Fruit		69.0		--
0	2-TRANS-PIPERAMIDE-C-5-1	Fruit		75.0		--
0	2-TRANS-6-TRANS-PIPERAMIDE-C-7-2	Fruit		80.0		--
53	LINALOOL	Fruit		90.0	-0.5606025868093102	--
0	6-TRANS-PIPERAMIDE-C-7-1	Fruit		98.0		--
2	DIHYDROCARVEOL	Fruit Essent. Oil		100.0	-1.0	--
1	TRANS-CARVEOL	Fruit Essent. Oil		100.0	-1.0	--
0	P-MENTH-TRANS-2-EN-1-OL	Fruit Essent. Oil		100.0		--
0	CARVONE-OXIDE	Fruit Essent. Oil		100.0		--
0	N-ISOBUTYL-EICOSA-TRANS-2-TRANS-4-CIS-8-TRIENAMIDE	Fruit		105.0		--
3	N-HENTRIACONTANE	Stem		110.0		--
9	CAMPHENE	Fruit		120.0	-0.3020426178192843	--
0	(Z)-OCIMENOL	Fruit		135.0		--
16	P-CYMENE	Fruit		150.0	-0.5599100466638004	--
47	BETA-SITOSTEROL	Stem		160.0	-1.327402794862025	--
0	PIPEROLEIN-B	Fruit		160.0		--
0	N-ISOBUTYL-EICOSA-TRANS-2-TRANS-4-DIENAMIDE	Fruit		190.0		--
0	8-TRANS-PIPERAMIDE-C-9-1	Fruit		197.0		--
0	P-MENTH-CIS-2-EN-1-OL	Fruit Essent. Oil		200.0		--
15	CITRONELLOL	Fruit Essent. Oil		200.0	-1.0	--
12	STIGMASTEROL	Fruit	140.0	210.0	1.7404035436813556	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
3	ELEMENE	Fruit		225.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	P-MENTH-8-EN-1-OL	Fruit Essent. Oil		300.0		--
0	PIPERANINE	Seed Oil		320.0		--
7	PIPERITONE	Fruit Essent. Oil		400.0	-1.0	--
6	IRON	Fruit	24.0	407.0	1.0869711226719216	--
7	LAURIC-ACID	Fruit	400.0	447.0	-0.44001415319735687	USDA's Ag Handbook 8 and sequelae)
1	SODIUM	Fruit	320.0	627.0	-0.1244930806267503	USDA's Ag Handbook 8 and sequelae)
47	BETA-SITOSTEROL	Fruit	380.0	650.0	0.059781582959947475	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
3	CEDROL	Fruit Essent. Oil		700.0		--
1	CARYOPHYLLENE-ALCOHOL	Fruit Essent. Oil		700.0		--
3	ALPHA-SELINENE	Fruit Essent. Oil		700.0		--
6	MYRISTIC-ACID	Fruit	700.0	782.0	-0.23225222845607665	USDA's Ag Handbook 8 and sequelae)
5	BETA-ELEMENE	Fruit Essent. Oil		900.0	-0.8343192281159078	--
23	ALPHA-TERPINEOL	Fruit Essent. Oil		1000.0	-0.910301229242406	--
9	TERPINOLENE	Fruit Essent. Oil		1000.0	-0.7286391135831505	--
32	ALPHA-TOCOPHEROL	Resin, Exudate, Sap		1000.0		--
2	OCIMENE	Fruit Essent. Oil		1000.0		--
2	PHYTOSTEROLS	Fruit	550.0	1028.0	0.10644427802757993	--
2	ELEMOL	Fruit Essent. Oil		1100.0		--
61	PIPERINE	Stem		1100.0		--
0	ALPHA-GUAIENE	Fruit Essent. Oil		1100.0	-1.0	--
0	PHYTIN-PHOSPHORUS	Fruit		1150.0	-0.13177293449153588	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	TRANS-NEROLIDOL	Fruit Essent. Oil		1200.0		--
9	DELTA-CADINENE	Fruit Essent. Oil		1200.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GERANIOL-ACETATE	Fruit Essent. Oil		1200.0		--
9	CAMPHENE	Fruit Essent. Oil	1000.0	1400.0	-1.0221892865520528	--
0	CLOVENE	Fruit Essent. Oil		1400.0		--
0	TRANS-SABINENE-HYDRATE	Fruit Essent. Oil		1400.0		--
20	CHOLINE	Seed		1642.0	-0.028583716787024864	--
23	TERPINEN-4-OL	Fruit Essent. Oil		1900.0	-0.669433558721516	--
0	CIS-NEROLIDOL	Fruit Essent. Oil		2000.0		--
2	MYRTENOL	Fruit Essent. Oil		2000.0		--
0	BETA-BISABOLOL	Fruit Essent. Oil		2000.0		--
0	NEROL-ACETATE	Fruit Essent. Oil		2000.0		--
8	DELTA-3-CARENE	Fruit	500.0	2000.0	2.7325194789368674	--
4	PHOSPHORUS	Fruit	700.0	2040.0	-0.3571963668725839	--
53	LINALOOL	Fruit Essent. Oil		2200.0	-0.6866142547714452	--
65	MAGNESIUM	Fruit	1809.0	2319.0	0.08763983825273146	USDA's Ag Handbook 8 and sequelae)
13	BETA-PINENE	Fruit		2355.0	-0.2223943577434541	--
15	ALPHA-LINOLENIC-ACID	Fruit	2200.0	2458.0	-0.03933424045785113	USDA's Ag Handbook 8 and sequelae)
3	AR-CURCUMENE	Fruit Essent. Oil		2600.0		--
10	PIPERIDINE	Fruit	606.0	2700.0	0.7468101297426346	--
0	KILOCALORIES	Fruit	2550.0	2856.0	-1.2219755197031514	USDA's Ag Handbook 8 and sequelae)
13	ALPHA-TERPINENE	Fruit Essent. Oil		3000.0	-0.5711872077128709	--
28	ALPHA-PINENE	Fruit		3810.0	0.2759330241103953	--
0	SILICA	Fruit	750.0	3900.0	1.371867681308522	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
28	CALCIUM	Fruit	2700.0	4989.0	0.26138541132704457	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	RESIN	Fruit		5000.0	-0.7191073491736661	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
6	ACETOPHENONE	Fruit Essent. Oil		5000.0		--
7	CHLORINE	Fruit	2700.0	5100.0	2.9820406376676973	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	TOCOPHEROLS	Resin, Exudate, Sap		5400.0		--
14	SULFUR	Fruit	1750.0	5760.0	3.0243404637527247	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
31	CARYOPHYLLENE	Fruit	1000.0	6000.0	-0.21726348790373295	--
3	BETA-SELINENE	Fruit Essent. Oil		6400.0	-1.0	--
0	GAMMA-MUUROLENE	Fruit Essent. Oil		7300.0		--
0	SESQUITERPENES	Fruit	2000.0	7800.0		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ALPHA-GURJUNENE	Fruit Essent. Oil		7800.0		--
60	LIMONENE	Fruit	1500.0	8000.0	0.397130905101767	--
0	PIPERETTINE	Fruit	234.0	8200.0		--
0	ALPHA-BULNESENE	Fruit Essent. Oil		8200.0	-1.0	--
0	ALPHA-TERPINEOL ACETATE	Fruit Essent. Oil		8600.0	-1.0	--
8	CARYOPHYLLENE-OXIDE	Fruit Essent. Oil		9000.0	1.0	--
5	SABINENE	Fruit	1500.0	10000.0	2.605271050216115	--
11	GAMMA-TERPINENE	Fruit Essent. Oil	100.0	11000.0	-0.34330658093433575	--
13	PALMITIC-ACID	Fruit	12200.0	13633.0	-0.1532986318862056	USDA's Ag Handbook 8 and sequelae)
1	CUPARENE	Fruit Essent. Oil		13800.0		--
27	LINOLEIC-ACID	Fruit	13200.0	14750.0	-0.1472997456034458	USDA's Ag Handbook 8 and sequelae)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	EO	Fruit		15000.0	-0.5284067258944188	--
14	POTASSIUM	Fruit	11718.0	15077.0	-0.251221490492334	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-AMORPHENE	Fruit Essent. Oil		15100.0		--
18	OLEIC-ACID	Fruit	13700.0	15309.0	-0.3627535701002104	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-COPAENE	Fruit Essent. Oil	8200.0	15800.0	1.0	--
0	DELTA-ELEMENE	Fruit Essent. Oil		16200.0		--
0	ALPHA-CUBEBENE	Fruit Essent. Oil		16200.0	-1.0	--
0	N-PENTADECENE	Fruit Essent. Oil		17900.0		--
0	GERMACRENE-B	Fruit Essent. Oil		18300.0		--
2	ALPHA-HUMULENE	Fruit Essent. Oil	2100.0	19500.0	-1.0	--
0	MONOTERPENES	Fruit	7000.0	20800.0		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ALPHA-BISABOLENE	Fruit Essent. Oil		21200.0		--
0	N-HEPTADECENE	Fruit Essent. Oil		25300.0		--
0	GLOBULOL	Fruit Essent. Oil		26200.0		--
0	ALPHA-THUJENE	Fruit Essent. Oil	7300.0	29000.0	-0.22630241280017493	--
0	SPATHULENOL	Fruit Essent. Oil		29600.0		--
0	BETA-CARYOPHYLLENE	Leaf Essent. Oil		30000.0	-0.22730263739281492	--
0	TRANS-TRANS-PIPERINE	Fruit		30000.0		--
9	OXALIC-ACID	Fruit	4000.0	34000.0	1.5684920731098055	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
11	ALPHA-PHELLANDRENE	Fruit Essent. Oil	6800.0	36000.0	-0.5597624933275978	--
3	BETA-PHELLANDRENE	Fruit Essent. Oil		41000.0	-0.47230877878271366	--
2	GERMACRENE-D	Fruit Essent. Oil	400.0	49300.0		--
1	ALPHA-ZINGIBERENE	Fruit Essent. Oil		50100.0		--
0	N-HEPTADECANE	Fruit Essent. Oil		56600.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ASH	Fruit	42932.0	60000.0	0.08639308861203618	--
22	MYRCENE	Fruit Essent. Oil	22300.0	64000.0	1.0393197116265955	--
0	N-TRIDECANE	Fruit Essent. Oil		67800.0		--
28	ALPHA-PINENE	Fruit Essent. Oil	45000.0	94000.0	0.39522346445492856	--
0	FAT	Fruit	30940.0	100000.0	0.12253986651771635	--
0	WATER	Fruit	103109.0	107091.0	-2.8848937391548306	USDA's Ag Handbook 8 and sequelae)
6	BETA-BISABOLENE	Fruit Essent. Oil	21200.0	111600.0	1.0	--
0	PROTEIN	Fruit	108386.0	123888.0	0.1928969684345906	USDA's Ag Handbook 8 and sequelae)
13	BETA-PINENE	Fruit Essent. Oil	85000.0	138000.0	0.9556217102868814	--
15	FIBER	Fruit	130056.0	148449.0	0.06390968642828075	USDA's Ag Handbook 8 and sequelae)
61	PIPERINE	Fruit	5000.0	150000.0	1.0	--
0	CAR-3-ENE	Fruit Essent. Oil	28200.0	151000.0		--
0	N-PENTADECANE	Fruit Essent. Oil		177800.0		--
5	SABINENE	Fruit Essent. Oil	85000.0	204000.0	0.47619676977008224	--
60	LIMONENE	Fruit Essent. Oil	130500.0	210600.0	-0.6891296619826244	--
0	BETA-CARYOPHYLLENE	Fruit Essent. Oil	160000.0	352000.0	2.205325345517652	--
0	POLYSACCHARIDES	Fruit		450000.0	1.0	--
5	STARCH	Fruit	280000.0	565000.0	0.4063516312545475	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	CARBOHYDRATE	Fruit		648100.0	-0.7817175730480762	USDA's Ag Handbook 8 and sequelae)
0	CARBOHYDRATES	Fruit		648100.0	-0.7207468961442081	--