

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Piper nigrum

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.
60	LIMONENE	Fruit Essent. Oil	130500.0	210600.0	-0.6891296619826244	--
5	SABINENE	Fruit Essent. Oil	85000.0	204000.0	0.47619676977008224	--
61	PIPERINE	Fruit	5000.0	150000.0	1.0	--
15	FIBER	Fruit	130056.0	148449.0	0.06390968642828075	USDA's Ag Handbook 8 and sequelae)
13	BETA-PINENE	Fruit Essent. Oil	85000.0	138000.0	0.9556217102868814	--
6	BETA-BISABOLENE	Fruit Essent. Oil	21200.0	111600.0	1.0	--
28	ALPHA-PINENE	Fruit Essent. Oil	45000.0	94000.0	0.39522346445492856	--
22	MYRCENE	Fruit Essent. Oil	22300.0	64000.0	1.0393197116265955	--
1	ALPHA-ZINGIBERENE	Fruit Essent. Oil		50100.0		--
2	GERMACRENE-D	Fruit Essent. Oil	400.0	49300.0		--
3	BETA-PHELLANDRENE	Fruit Essent. Oil		41000.0	-0.47230877878271366	--
11	ALPHA-PHELLANDRENE	Fruit Essent. Oil	6800.0	36000.0	-0.5597624933275978	--
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.
2	ALPHA-HUMULENE	Fruit Essent. Oil	2100.0	19500.0	-1.0	--
18	OLEIC-ACID	Fruit	13700.0	15309.0	-0.3627535701002104	USDA's Ag Handbook 8 and sequelae)
14	POTASSIUM	Fruit	11718.0	15077.0	-0.251221490492334	USDA's Ag Handbook 8 and sequelae)
27	LINOLEIC-ACID	Fruit	13200.0	14750.0	-0.1472997456034458	USDA's Ag Handbook 8 and sequelae)
1	CUPARENE	Fruit Essent. Oil		13800.0		--
13	PALMITIC-ACID	Fruit	12200.0	13633.0	-0.1532986318862056	USDA's Ag Handbook 8 and sequelae)
11	GAMMA-TERPINENE	Fruit Essent. Oil	100.0	11000.0	-0.34330658093433575	--
5	SABINENE	Fruit	1500.0	10000.0	2.605271050216115	--
8	CARYOPHYLLENE-OXIDE	Fruit Essent. Oil		9000.0	1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
60	LIMONENE	Fruit	1500.0	8000.0	0.397130905101767	--
3	BETA-SELINENE	Fruit Essent. Oil		6400.0	-1.0	--
31	CARYOPHYLLENE	Fruit	1000.0	6000.0	-0.21726348790373295	--
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.
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.
6	ACETOPHENONE	Fruit Essent. Oil		5000.0		--
28	CALCIUM	Fruit	2700.0	4989.0	0.26138541132704457	--
28	ALPHA-PINENE	Fruit		3810.0	0.2759330241103953	--
13	ALPHA-TERPINENE	Fruit Essent. Oil		3000.0	-0.5711872077128709	--
10	PIPERIDINE	Fruit	606.0	2700.0	0.7468101297426346	--
3	AR-CURCUMENE	Fruit Essent. Oil		2600.0		--
15	ALPHA-LINOLENIC-ACID	Fruit	2200.0	2458.0	-0.03933424045785113	USDA's Ag Handbook 8 and sequelae)
13	BETA-PINENE	Fruit		2355.0	-0.2223943577434541	--
65	MAGNESIUM	Fruit	1809.0	2319.0	0.08763983825273146	USDA's Ag Handbook 8 and sequelae)
53	LINALOOL	Fruit Essent. Oil		2200.0	-0.6866142547714452	--
4	PHOSPHORUS	Fruit	700.0	2040.0	-0.3571963668725839	--
8	DELTA-3-CARENE	Fruit	500.0	2000.0	2.7325194789368674	--
2	MYRTENOL	Fruit Essent. Oil		2000.0		--
23	TERPINEN-4-OL	Fruit Essent. Oil		1900.0	-0.669433558721516	--
20	CHOLINE	Seed		1642.0	-0.028583716787024864	--
9	CAMPHENE	Fruit Essent. Oil	1000.0	1400.0	-1.0221892865520528	--
9	DELTA-CADINENE	Fruit Essent. Oil		1200.0		--
61	PIPERINE	Stem		1100.0		--
2	ELEMOL	Fruit Essent. Oil		1100.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PHYTOSTEROLS	Fruit	550.0	1028.0	0.10644427802757993	--
32	ALPHA-TOCOPHEROL	Resin, Exudate, Sap		1000.0		--
9	TERPINOLENE	Fruit Essent. Oil		1000.0	-0.7286391135831505	--
23	ALPHA-TERPINEOL	Fruit Essent. Oil		1000.0	-0.910301229242406	--
2	OCIMENE	Fruit Essent. Oil		1000.0		--
5	BETA-ELEMENE	Fruit Essent. Oil		900.0	-0.8343192281159078	--
6	MYRISTIC-ACID	Fruit	700.0	782.0	-0.23225222845607665	USDA's Ag Handbook 8 and sequelae)
3	ALPHA-SELINENE	Fruit Essent. Oil		700.0		--
3	CEDROL	Fruit Essent. Oil		700.0		--
1	CARYOPHYLLENE-ALCOHOL	Fruit Essent. Oil		700.0		--
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.)
1	SODIUM	Fruit	320.0	627.0	-0.1244930806267503	USDA's Ag Handbook 8 and sequelae)
7	LAURIC-ACID	Fruit	400.0	447.0	-0.44001415319735687	USDA's Ag Handbook 8 and sequelae)
6	IRON	Fruit	24.0	407.0	1.0869711226719216	--
7	PIPERITONE	Fruit Essent. Oil		400.0	-1.0	--
3	ELEMENE	Fruit		225.0		--
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.)
15	CITRONELLOL	Fruit Essent. Oil		200.0	-1.0	--
47	BETA-SITOSTEROL	Stem		160.0	-1.327402794862025	--
16	P-CYMENE	Fruit		150.0	-0.5599100466638004	--
9	CAMPHENE	Fruit		120.0	-0.3020426178192843	--
3	N-HENTRIACONTANE	Stem		110.0		--
2	DIHYDROCARVEOL	Fruit Essent. Oil		100.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	TRANS-CARVEOL	Fruit Essent. Oil		100.0	-1.0	--
53	LINALOOL	Fruit		90.0	-0.5606025868093102	--
7	SALICYLATES	Fruit	10.0	65.0	-0.1503568703758442	--
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.)
14	MANGANESE	Fruit	19.0	56.0	-0.03428079513973251	--
19	CARVONE	Fruit Essent. Oil		50.0	-0.7219111602348719	--
77	ZINC	Fruit	11.2	35.7	0.16241717653889182	--
19	ACETYL-CHOLINE	Seed		23.0	-1.1887435300844578	--
12	COPPER	Fruit	9.0	20.0	0.5588968590110831	--
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).
39	NIACIN	Fruit	2.0	14.5	-0.6175885994937399	--
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.
102	CAFFEIC-ACID	Fruit		6.0	-0.33780275264769194	--
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
24	CHROMIUM	Fruit	3.0	3.5	-0.01602978329031414	--
15	RIBOFLAVIN	Fruit	0.4	2.8	-0.4731582297112136	--
3	NICKEL	Fruit	0.7	2.4	-0.04957166517347313	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
31	THIAMIN	Fruit	0.5	1.6	-0.4778065908058602	--
2	COBALT	Fruit	0.3	0.4	-0.48669151400918487	--
53	BETA-CAROTENE	Fruit	0.114	0.128	-0.1505532074368425	--
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.
32	ALPHA-TOCOPHEROL	Fruit		0.054	-1.1207877074947452	Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp.
16	P-CYMENE	Fruit Essent. Oil				--
61	PIPERINE	Leaf				--
9	DELTA-CADINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	2-UNDECANONE	Fruit				--
2	OCIMENE	Seed Essent. Oil				--
1	TRANS-CARVEOL	Fruit				--
6	BETA-BISABOLENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
30	HYPEROSIDE	Fruit				--
7	ASTRAGALIN	Fruit				--
29	SAFROLE	Fruit Essent. Oil				--
47	BETA-SITOSTEROL	Leaf				--
1	ISOCARYOPHYLLENE	Fruit				--
16	P-CYMENE	Seed Essent. Oil				--
61	PIPERINE	Leaf Essent. Oil				--
2	P-METHYL-ACETOPHENONE	Fruit				--
67	1,8-CINEOLE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
11	NEROLIDOL	Fruit Essent. Oil				--
22	MYRCENE	Fruit				--
1	CHAVICINE	Fruit				--
20	BENZOIC-ACID	Fruit				--
2	PIPERONAL	Fruit				--
5	SABINENE	Seed Essent. Oil				--
25	P-COUMARIC-ACID	Fruit				--
61	PIPERINE	Root				--
28	ALPHA-PINENE	Seed Essent. Oil				--
19	D-LIMONENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	N-ISOBUTYL-OCTADECATRANS-2-TRANS-4-DIENAMIDE	Fruit				--
20	METHYL-EUGENOL	Fruit				--
8	CARYOPHYLLENE-OXIDE	Fruit				Chemical Constituents of Oriental Herbs (3 diff. books)
5	TERPINYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
5	EUGENOL-METHYL-ETHER	Fruit Essent. Oil				--
13	BETA-PINENE	Seed Essent. Oil				--
1	ISOCARYOPHYLLENE	Fruit Essent. Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
61	PIPERINE	Seed Essent. Oil				--
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
5	METHYL-CINNAMATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
37	CARVACROL	Fruit				--
9	TERPINOLENE	Fruit				--
3	AR-CURCUMENE	Fruit				--
5	EUGENOL-METHYL-ETHER	Leaf Essent. Oil				--
87	RUTIN	Fruit				--
2	HEXANOIC-ACID	Fruit				--
2	TRANS-PINOCARVEOL	Fruit				--
61	PIPERINE	Seed				--
28	ALPHA-PINENE	Essential Oil				--
2	DIHYDROCARVEOL	Essential Oil				--
31	MYRISTICIN	Fruit Essent. Oil				--
31	CARYOPHYLLENE	Seed Essent. Oil				--
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.
23	ALPHA-TERPINEOL	Fruit				--
76	EUGENOL	Leaf Essent. Oil				--
44	QUERCITRIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	BETA-PINENE	Essential Oil				--
5	GERANYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
19	CARVONE	Fruit				--
11	ALPHA-PHELLANDRENE	Seed Essent. Oil				--
2	CITRONELLYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
22	MYRCENE	Seed Essent. Oil				--
6	BUTYRIC-ACID	Fruit				--
1	PYRROLIDINE	Seed				--
11	GAMMA-TERPINENE	Fruit				--
13	ALPHA-TERPINENE	Fruit				--
41	CAMPHOR	Fruit				--
10	PIPERIDINE	Essential Oil				--
20	CITRONELLAL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
9	CAMPHENE	Seed Essent. Oil				--
18	RHAMNETIN	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	PIPERONAL	Essential Oil				--
3	BETA-PHELLANDRENE	Seed Essent. Oil				--
22	GABA	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
3	ALPHA-SELINENE	Fruit				--

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10	PIPERIDINE	Seed				--
11	NEROLIDOL	Fruit				--
53	CITRAL	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				--
22	ISOQUERCITRIN	Fruit				--
7	LINALYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	BETA-SELINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	N-HENTRIACONTANE	Leaf				--
2	TRANS-PINOCARVEOL	Seed Essent. Oil				--
176	QUERCETIN	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
35	BORNEOL	Fruit				--
2	PHENYLACETIC-ACID	Essential Oil				--
2	MYRTENOL	Fruit				--
3	CIS-OCIMENE	Fruit				--
29	SAFROLE	Fruit				--
2	ALPHA-HUMULENE	Leaf Essent. Oil				--
75	KAEMPFEROL	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
61	PIPERINE	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PHENYLACETIC-ACID	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
76	EUGENOL	Fruit				--
2	PELLITORINE	Fruit				--
5	MYRTENAL	Fruit				--
18	CINNAMIC-ACID	Fruit				--
11	GAMMA-TERPINENE	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.
5	BETA-ELEMENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
35	BORNEOL	Fruit Essent. Oil				--
9	TERPINOLENE	Seed Essent. Oil				--
61	PIPERINE	Seed Oil				--
11	PERILLALDEHYDE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
13	ALPHA-TERPINENE	Seed Essent. Oil				--
2	DIHYDROCARVEOL	Fruit				--
2	ALPHA-HUMULENE	Fruit				--
31	MYRISTICIN	Fruit				--
15	CITRONELLOL	Essential Oil				--
8	UBIQUINONE	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
3	ISOPULEGOL	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
60	LIMONENE	Seed Essent. Oil				--