

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Piper nigrum

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
67	1,8-CINEOLE	Fruit				--
4	2-UNDECANONE	Fruit				--
6	ACETOPHENONE	Fruit Essent. Oil		5000.0		--
19	ACETYL-CHOLINE	Seed		23.0	-1.1887435300844578	--
2	ALPHA-HUMULENE	Fruit Essent. Oil	2100.0	19500.0	-1.0	--
2	ALPHA-HUMULENE	Leaf Essent. Oil				--
2	ALPHA-HUMULENE	Fruit				--
15	ALPHA-LINOLENIC-ACID	Fruit	2200.0	2458.0	-0.03933424045785113	USDA's Ag Handbook 8 and sequelae)
11	ALPHA-PHELLANDRENE	Seed Essent. Oil				--
11	ALPHA-PHELLANDRENE	Fruit Essent. Oil	6800.0	36000.0	-0.5597624933275978	--
28	ALPHA-PINENE	Seed Essent. Oil				--
28	ALPHA-PINENE	Fruit Essent. Oil	45000.0	94000.0	0.39522346445492856	--
28	ALPHA-PINENE	Essential Oil				--
28	ALPHA-PINENE	Fruit		3810.0	0.2759330241103953	--
3	ALPHA-SELINENE	Fruit Essent. Oil		700.0		--
3	ALPHA-SELINENE	Fruit				--
13	ALPHA-TERPINENE	Fruit Essent. Oil		3000.0	-0.5711872077128709	--
13	ALPHA-TERPINENE	Fruit				--
13	ALPHA-TERPINENE	Seed Essent. Oil				--
23	ALPHA-TERPINEOL	Fruit				--
23	ALPHA-TERPINEOL	Fruit Essent. Oil		1000.0	-0.910301229242406	--
32	ALPHA-TOCOPHEROL	Fruit		0.054	-1.1207877074947452	Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp.
32	ALPHA-TOCOPHEROL	Resin, Exudate, Sap		1000.0		--
1	ALPHA-ZINGIBERENE	Fruit Essent. Oil		50100.0		--
3	AR-CURCUMENE	Fruit Essent. Oil		2600.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	AR-CURCUMENE	Fruit				--
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.
7	ASTRAGALIN	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
20	BENZOIC-ACID	Fruit				--
6	BETA-BISABOLENE	Fruit Essent. Oil	21200.0	111600.0	1.0	--
6	BETA-BISABOLENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
53	BETA-CAROTENE	Fruit	0.114	0.128	-0.1505532074368425	--
5	BETA-ELEMENE	Fruit Essent. Oil		900.0	-0.8343192281159078	--
5	BETA-ELEMENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	BETA-PHELLANDRENE	Fruit Essent. Oil		41000.0	-0.47230877878271366	--
3	BETA-PHELLANDRENE	Seed Essent. Oil				--
13	BETA-PINENE	Seed Essent. Oil				--
13	BETA-PINENE	Fruit Essent. Oil	85000.0	138000.0	0.9556217102868814	--
13	BETA-PINENE	Essential Oil				--
13	BETA-PINENE	Fruit		2355.0	-0.2223943577434541	--
3	BETA-SELINENE	Fruit Essent. Oil		6400.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	BETA-SELINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
47	BETA-SITOSTEROL	Stem		160.0	-1.327402794862025	--
47	BETA-SITOSTEROL	Leaf				--
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.)
35	BORNEOL	Fruit				--
35	BORNEOL	Fruit Essent. Oil				--
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).
6	BUTYRIC-ACID	Fruit				--
102	CAFFEIC-ACID	Fruit		6.0	-0.33780275264769194	--
28	CALCIUM	Fruit	2700.0	4989.0	0.26138541132704457	--
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.)
9	CAMPHENE	Fruit		120.0	-0.3020426178192843	--
9	CAMPHENE	Seed Essent. Oil				--
9	CAMPHENE	Fruit Essent. Oil	1000.0	1400.0	-1.0221892865520528	--
41	CAMPHOR	Fruit				--
37	CARVACROL	Fruit				--
19	CARVONE	Fruit				--
19	CARVONE	Fruit Essent. Oil		50.0	-0.7219111602348719	--
31	CARYOPHYLLENE	Seed Essent. Oil				--
31	CARYOPHYLLENE	Fruit	1000.0	6000.0	-0.21726348790373295	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	CARYOPHYLLENE-ALCOHOL	Fruit Essent. Oil		700.0		--
8	CARYOPHYLLENE-OXIDE	Fruit				Chemical Constituents of Oriental Herbs (3 diff. books)
8	CARYOPHYLLENE-OXIDE	Fruit Essent. Oil		9000.0	1.0	--
3	CEDROL	Fruit Essent. Oil		700.0		--
1	CHAVICINE	Fruit				--
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.
20	CHOLINE	Seed		1642.0	-0.028583716787024864	--
24	CHROMIUM	Fruit	3.0	3.5	-0.01602978329031414	--
18	CINNAMIC-ACID	Fruit				--
3	CIS-OCIMENE	Fruit				--
53	CITRAL	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.
15	CITRONELLOL	Essential Oil				--
15	CITRONELLOL	Fruit Essent. Oil		200.0	-1.0	--
2	CITRONELLYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	COBALT	Fruit	0.3	0.4	-0.48669151400918487	--
12	COPPER	Fruit	9.0	20.0	0.5588968590110831	--
1	CUPARENE	Fruit Essent. Oil		13800.0		--
19	D-LIMONENE	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
8	DELTA-3-CARENE	Fruit	500.0	2000.0	2.7325194789368674	--
9	DELTA-CADINENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
9	DELTA-CADINENE	Fruit Essent. Oil		1200.0		--
9	DELTA-CADINENE	Leaf Essent. Oil				--
2	DIHYDROCARVEOL	Essential Oil				--
2	DIHYDROCARVEOL	Fruit Essent. Oil		100.0	-1.0	--
2	DIHYDROCARVEOL	Fruit				--
3	ELEMENE	Fruit		225.0		--
2	ELEMOL	Fruit Essent. Oil		1100.0		--
76	EUGENOL	Leaf Essent. Oil				--
76	EUGENOL	Fruit				--
5	EUGENOL-METHYL-ETHER	Fruit Essent. Oil				--
5	EUGENOL-METHYL-ETHER	Leaf Essent. Oil				--
15	FIBER	Fruit	130056.0	148449.0	0.06390968642828075	USDA's Ag Handbook 8 and sequelae)
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
22	GABA	Fruit				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
11	GAMMA-TERPINENE	Fruit				--
11	GAMMA-TERPINENE	Fruit Essent. Oil	100.0	11000.0	-0.34330658093433575	--
11	GAMMA-TERPINENE	Seed Essent. Oil				--

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.
2	GERMACRENE-D	Fruit Essent. Oil	400.0	49300.0		--
2	HEXANOIC-ACID	Fruit				--
30	HYPEROSIDE	Fruit				--
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.
6	IRON	Fruit	24.0	407.0	1.0869711226719216	--
1	ISOCARYOPHYLLENE	Fruit				--
1	ISOCARYOPHYLLENE	Fruit 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.
22	ISOQUERCITRIN	Fruit				--
75	KAEMPFEROL	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	L-LIMONENE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
7	LAURIC-ACID	Fruit	400.0	447.0	-0.44001415319735687	USDA's Ag Handbook 8 and sequelae)
60	LIMONENE	Seed Essent. Oil				--
60	LIMONENE	Fruit	1500.0	8000.0	0.397130905101767	--
60	LIMONENE	Fruit Essent. Oil	130500.0	210600.0	-0.6891296619826244	--
53	LINALOOL	Fruit		90.0	-0.5606025868093102	--
53	LINALOOL	Fruit Essent. Oil		2200.0	-0.6866142547714452	--

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.
27	LINOLEIC-ACID	Fruit	13200.0	14750.0	-0.1472997456034458	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Fruit	1809.0	2319.0	0.08763983825273146	USDA's Ag Handbook 8 and sequelae)
14	MANGANESE	Fruit	19.0	56.0	-0.03428079513973251	--
5	METHYL-CINNAMATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	METHYL-EUGENOL	Fruit				--
22	MYRCENE	Seed Essent. Oil				--
22	MYRCENE	Fruit Essent. Oil	22300.0	64000.0	1.0393197116265955	--
22	MYRCENE	Fruit				--
6	MYRISTIC-ACID	Fruit	700.0	782.0	-0.23225222845607665	USDA's Ag Handbook 8 and sequelae)
31	MYRISTICIN	Fruit Essent. Oil				--
31	MYRISTICIN	Fruit				--
5	MYRTENAL	Fruit				--
2	MYRTENOL	Fruit Essent. Oil		2000.0		--
2	MYRTENOL	Fruit				--
3	N-HENTRIACONTANE	Stem		110.0		--
3	N-HENTRIACONTANE	Leaf				--
2	N-ISOBUTYL-OCTADECAN-2-TRANS-4-DIENAMIDE	Fruit				--
11	NEROLIDOL	Fruit Essent. Oil				--
11	NEROLIDOL	Fruit				--
39	NIACIN	Fruit	2.0	14.5	-0.6175885994937399	--
3	NICKEL	Fruit	0.7	2.4	-0.04957166517347313	--
2	OCIMENE	Fruit Essent. Oil		1000.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	OCIMENE	Seed Essent. Oil				--
18	OLEIC-ACID	Fruit	13700.0	15309.0	-0.3627535701002104	USDA's Ag Handbook 8 and sequelae)
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.
25	P-COUMARIC-ACID	Fruit				--
16	P-CYMENE	Fruit Essent. Oil				--
16	P-CYMENE	Seed Essent. Oil				--
16	P-CYMENE	Fruit		150.0	-0.5599100466638004	--
2	P-METHYL-ACETOPHENONE	Fruit				--
13	PALMITIC-ACID	Fruit	12200.0	13633.0	-0.1532986318862056	USDA's Ag Handbook 8 and sequelae)
2	PELLITORINE	Fruit				--
11	PERILLALDEHYDE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	PHENYLACETIC-ACID	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	PHENYLACETIC-ACID	Essential Oil				--
4	PHOSPHORUS	Fruit	700.0	2040.0	-0.3571963668725839	--
2	PHYTOSTEROLS	Fruit	550.0	1028.0	0.10644427802757993	--
10	PIPERIDINE	Fruit	606.0	2700.0	0.7468101297426346	--
10	PIPERIDINE	Essential Oil				--
10	PIPERIDINE	Seed				--
61	PIPERINE	Seed Oil				--
61	PIPERINE	Leaf				--
61	PIPERINE	Leaf Essent. Oil				--
61	PIPERINE	Fruit	5000.0	150000.0	1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
61	PIPERINE	Root				--
61	PIPERINE	Seed Essent. Oil				--
61	PIPERINE	Seed				--
61	PIPERINE	Stem		1100.0		--
61	PIPERINE	Shoot				--
7	PIPERITONE	Fruit Essent. Oil		400.0	-1.0	--
2	PIPERONAL	Fruit				--
2	PIPERONAL	Essential Oil				--
14	POTASSIUM	Fruit	11718.0	15077.0	-0.251221490492334	USDA's Ag Handbook 8 and sequelae)
1	PYRROLIDINE	Seed				--
176	QUERCETIN	Fruit				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
44	QUERCITRIN	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.
15	RIBOFLAVIN	Fruit	0.4	2.8	-0.4731582297112136	--
87	RUTIN	Fruit				--
5	SABINENE	Seed Essent. Oil				--
5	SABINENE	Fruit Essent. Oil	85000.0	204000.0	0.47619676977008224	--
5	SABINENE	Fruit	1500.0	10000.0	2.605271050216115	--
29	SAFROLE	Fruit Essent. Oil				--
29	SAFROLE	Fruit				--
7	SALICYLATES	Fruit	10.0	65.0	-0.1503568703758442	--
1	SODIUM	Fruit	320.0	627.0	-0.1244930806267503	USDA's Ag Handbook 8 and sequelae)

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.
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
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.)
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.
23	TERPINEN-4-OL	Fruit Essent. Oil		1900.0	-0.669433558721516	--
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	TERPINOLENE	Fruit				--
9	TERPINOLENE	Fruit Essent. Oil		1000.0	-0.7286391135831505	--
9	TERPINOLENE	Seed Essent. Oil				--
5	TERPINYL-ACETATE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
31	THIAMIN	Fruit	0.5	1.6	-0.4778065908058602	--
1	TRANS-CARVEOL	Fruit				--
1	TRANS-CARVEOL	Fruit Essent. Oil		100.0	-1.0	--
2	TRANS-PINOCARVEOL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	TRANS-PINOCARVEOL	Seed Essent. Oil				--
8	UBIQUINONE	Fruit				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
77	ZINC	Fruit	11.2	35.7	0.16241717653889182	--