

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Spinacia oleracea

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	PROLINE	Plant	1120.0	13301.0	1.2034784447687357	USDA's Ag Handbook 8 and sequelae)
0	SPINACOSIDE-A	Root				--
0	N-METHYL-ANILINE	Leaf		3.4	1.0000000000000002	--
0	N,N-DIMETHYLHISTAMINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	COLAMINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	POLYPODINE-B	Seed		2.3		--
0	JACEIDIN-4'-GLUCURONIDE	Leaf				--
0	CALSEQUESTRIN	Leaf				--
0	SPINASAPONINS	Plant				--
0	SPINACETIN-3-O-BETA-D-GLUCOPYRANOSYL(1,6)-(BETA-D-APIOFURANOSYL(1,2))-BETA-D-GLUCOPYRANOSIDE	Leaf				--
0	POLYPODINE-B	Leaf				--
0	ISOPENTYL-AMINE	Leaf		3.8	0.9999999999999998	--
0	LEAD	Leaf	0.03	3.0	-0.5904546176203417	ACTA AGRIC SCAND SUPPL 22: 1980
0	7-STIGMASTEROL	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	STIGMAST-7-EN-3-BETA-OL-BETA-D-GLUCOSIDE	Shoot				--
0	DEHYDROASCORBIC-ACID	Leaf				--
0	POLYPHENOL-OXIDASE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	SPINACETIN-3-O-BETA-D-GLUCOPYRANOSYL(1,6)-BETA-D-GLUCOPYRANOSIDE	Leaf				--
0	MONOGALACTOSYLDIACYLGLYCEROL	Plant				--
0	PHYTYLPLASTOQUINOL	Leaf				--
0	KILOCALORIES	Plant	220.0	2613.0	-0.6337239292634677	USDA's Ag Handbook 8 and sequelae)
0	ASH	Plant	16850.0	285700.0	2.9752400785567166	--
0	6-(HYDROXYMETHYL)-LUMAZINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	N-METHYL-PHENETHYLAMINE	Leaf		2.4	-0.4133836909571625	--
0	CYSTATHIONINE	Leaf		0.2		--
0	SPINACETIN-3-O-BETA-D-(2"-P-COUMAROYL-GLUCOPYRANOSYL)-(1,6)-(BETA-D-APIOFURANOSYL(1,2))-BETA-D-GLUCOPYRANOSIDE	Leaf				--
0	ISOCELOSIANIN	Pt				--
0	TRIMETHYLHISTAMINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	FLUORINE	Leaf	0.3	5.7	0.5178738172246513	ACTA AGRIC SCAND SUPPL 22: 1980
0	3-HYDROXYTYRAMINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	SPINATOSIDE	Plant				--
0	AMMONIA	Leaf		18280.0	1.1391940589308933	--
0	SPINACETIN-3-O-BETA-D-(2"-FERULOYL-GLUCOPYRANOSYL)-(1,6)-(BETA-D-APIOFURANOSYL(1,2))-BETA-D-GLUCOPYRANOSIDE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ASCORBATE	Plant	212.0	4450.0	-1.0	--
0	SPINASTEROL	Seed				--
0	24(28)-DEHYDROMAKISTERONE	Seed				--
0	PHOSPHATIDYL-SERINE	Leaf				--
0	SPINACETIN-3-O-BETA-D-(2''-FERULOYL-GLUCOPYRANOSYL)-(1,6)-BETA-D-GLUCOPYRANOSIDE	Leaf				--
0	CHLOROPHYLL-A	Leaf				--
0	SPINACOSIDE-D	Root				--
0	4',5-DIHYDROXY-3,3'-DIMETHOXY-6,7-METHYLENEDIOXYFLAVONE	Leaf				--
0	PHOSPHATIDYL-INOSITOL	Leaf				--
0	SPINACETIN	Leaf				--
0	CARBOHYDRATES	Plant	35000.0	415660.0	-1.6530716464562447	USDA's Ag Handbook 8 and sequelae)
0	PATULETIN-3-O-BETA-D-GLUCOPYRANOSYL-(1,6)-(BETA-D-APIOFURANOSYL-(1,2))-BETA-D-GLUCOPYRANOSIDE	Leaf				--
0	RUBIDIUM	Leaf	0.9	90.0	1.8189036458711207	ACTA AGRIC SCAND SUPPL 22: 1980
0	SPINACOSIDE-D	Shoot		10.0		--
0	3,3',4',5,7-PENTAHYDROXY-6-METHOXYFLAVONE	Leaf				--
0	NITROGEN	Leaf	3200.0	45700.0	0.09626842491686814	ACTA AGRIC SCAND SUPPL 22: 1980
0	FAT	Plant	3070.0	46672.0	-0.07406978675946051	USDA's Ag Handbook 8 and sequelae)
0	PHOSPHATIDYL-GLYCEROL	Leaf				--
0	LINOLENIC-ACID	Leaf				--
0	PATULETIN-3-O-BETA-D-(2''-FERULOYL-GLUCOPYRANOSYL)-(1,6)-(BETA-D-APIOFURANOSYL-(1,2))-BETA-D-GLUCOPYRANOSIDE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PHOSPHATIDYL-ETHANOLAMINE	Plant				--
0	SULFOLIPIDS	Plant				--
0	6-PHYTYLTOLUQUINOL	Leaf				--
0	SPINACOSIDE-C	Shoot		10.0		--
0	2-CARBOXYARABINITOL	Leaf		5.0	-0.8745646032794931	Moore, B. D., Isidoro, E., Seemann, J. R. 1993. Distribution of 2-Carboxyarabinitol Among Plants. Phytochemistry 34 3: 703-707. Dept. Biochem. Univ. Nevada Reno 89557, USA.
0	DIGALACTOSYLDIACYLGLYCEROL	Plant				--
0	HEXADECATRIENOIC-ACID	Leaf				--
0	HEXOSAMINE	Seed		380.0		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	STRONTIUM	Plant	0.06	0.77	-1.006777905093239	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	SPINACOSIDE-C	Root				--
0	BROMINE	Leaf		4.0	-0.9927156521845423	ACTA AGRIC SCAND SUPPL 22: 1980
0	CELOSIANIN	Pt				--
0	WATER	Plant	913120.0	930000.0	0.6809832665754842	--
0	HEXADECA-7,10,13-TRIENOIC-ACID	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	PROTEIN	Plant	27480.0	352954.0	1.4709058523233878	USDA's Ag Handbook 8 and sequelae)
0	SPINACOSIDE-B	Root				--
0	N-PENTYL-AMINE	Leaf		0.3	-0.8053872662568291	--
0	N-ACETYLBHISTAMINE	Leaf				--
0	CARBONIC-ANHYDRASE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	VIT-B-6	Plant	1.9	24.0	1.0	USDA's Ag Handbook 8 and sequelae)
0	ETHYL-AMINE	Leaf		8.4	1.0000000000000002	--
0	BENZYL-AMINE	Leaf		6.1	1.394254707125211	--
0	SPINASTEROL	Leaf				--
0	VIT-K-1	Leaf		5.0		--
0	OLERAGENOSIDE	Plant		0.06		--
1	METHYL-AMINE	Leaf		12.0	-0.9038170440976104	--
1	CALMODULIN	Leaf				--
1	SODIUM	Plant	585.0	10669.0	0.28651825352805566	--
1	CHOLESTEROL	Leaf				--
1	SERINE	Plant	1040.0	12351.0	1.0594826529274783	USDA's Ag Handbook 8 and sequelae)
1	CALMODULIN	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
1	ISOBETANIN	Pt				--
1	AMARANTHIN	Pt				--
1	MERCURY	Leaf	0.003	0.11	1.6807373133361998	ACTA AGRIC SCAND SUPPL 22: 1980
1	CEPHALIN	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
1	ALPHA-LIPOIC-ACID	Plant	315.0	3150.0	1.0	--
1	PYRROLIDINE	Leaf		2.5		--
1	L-HOMOCYSTEINE	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
2	DIETHYL-AMINE	Leaf		15.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	COBALT	Plant	0.001	1.2	-0.4382119966012714	--
2	NEO-CHLOROGENIC-ACID	Shoot				--
2	PALMITOLEIC-ACID	Plant	21.0	475.0	-1.0	--
2	CAMPESTEROL	Sprout Seedling				Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
2	PHYTOSTEROLS	Plant	90.0	1800.0	1.0768787487624356	--
2	MALTOSE	Leaf				--
2	MOLYBDENUM	Plant	0.06	0.8	-0.6403529503457794	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
2	ALPHA-SPINASTEROL	Leaf				--
2	ARSENIC	Leaf	0.02	0.29	0.7318007945426982	ACTA AGRIC SCAND SUPPL 22: 1980
2	BETA-ECDYSONE	Seed		214.5		--
2	BETA-ECDYSONE	Leaf				--
2	PALMITOLEIC-ACID	Leaf				--
2	PHOSPHATIDYL-CHOLINE	Plant				--
2	BETA-CRYPTOXANTHIN	Leaf				--
2	CYSTINE	Plant	350.0	4157.0	0.9786663998162064	USDA's Ag Handbook 8 and sequelae)
2	LEUCINE	Leaf				--
2	LEUCINE	Plant	2230.0	26483.0	1.3907214750103931	USDA's Ag Handbook 8 and sequelae)
2	PATULETIN	Leaf				--
3	ECDYSONE	Seed				--
3	VALINE	Plant	1610.0	19120.0	1.555158000620152	USDA's Ag Handbook 8 and sequelae)
3	ASPARTIC-ACID	Plant	2400.0	28502.0	0.5819483717137405	USDA's Ag Handbook 8 and sequelae)
3	ISOLEUCINE	Leaf				--
3	PHEOPHYTIN-A	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	ISOLEUCINE	Plant	1470.0	17458.0	1.3309580391447728	USDA's Ag Handbook 8 and sequelae)
3	PHENETHYLAMINE	Leaf		1.1	-0.9841987738690897	--
3	NICKEL	Plant	0.05	5.7	-0.37306200253035504	--
3	CADMIUM	Leaf	0.05	5.0	1.0824728791014093	ACTA AGRIC SCAND SUPPL 22: 1980
3	ALANINE	Plant	1420.0	16864.0	0.5700171464175169	USDA's Ag Handbook 8 and sequelae)
4	THREONINE	Leaf				--
4	SILICON	Leaf	1.0	855.0	2.1298618434688388	ACTA AGRIC SCAND SUPPL 22: 1980
4	PHOSPHORUS	Plant	250.0	6232.0	1.2702244799414446	--
4	THREONINE	Plant	1220.0	14489.0	0.9163251148553258	USDA's Ag Handbook 8 and sequelae)
4	LYSINE	Leaf				--
4	LYSINE	Plant	1740.0	20664.0	1.308971519219775	USDA's Ag Handbook 8 and sequelae)
4	BORON	Leaf	2.4	40.0	-0.5790251325011837	ACTA AGRIC SCAND SUPPL 22: 1980
5	BETANIN	Pt				--
5	BETANIN	Tissue Culture				--
5	PHYLLOQUINONE	Tuber		3.8	1.0000000000000002	--
5	ALUMINUM	Leaf	5.0	270.0	-0.49080851056065206	ACTA AGRIC SCAND SUPPL 22: 1980
5	SAPONINS	Leaf		47000.0	-0.23418857166033838	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
5	ZEAXANTHIN	Leaf		4.0		--
6	MYRISTIC-ACID	Plant	1.0	950.0	-0.34172508190823475	--
6	IRON	Leaf				--
6	IRON	Plant	8.0	384.0	-0.28609078404129584	--
7	GLUTATHIONE	Plant	90.0	1065.0		--
7	ASTRAGALIN	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	CHLORINE	Plant	540.0	6835.0	0.09562346322025084	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
7	INDOLE-3-ACETIC-ACID	Sprout Seedling				--
7	ALPHA-CAROTENE	Leaf				--
7	HISTIDINE	Plant	640.0	7601.0	1.1356385926026882	USDA's Ag Handbook 8 and sequelae)
7	SALICYLATES	Leaf	0.3	60.0	-0.4464338695640787	--
7	PHENYLALANINE	Leaf				--
7	PHENYLALANINE	Plant	1290.0	15320.0	1.6518849106475164	USDA's Ag Handbook 8 and sequelae)
8	TYROSINE	Plant	1080.0	12826.0	1.690477622671528	USDA's Ag Handbook 8 and sequelae)
8	GLUTAMIC-ACID	Plant	3430.0	40735.0	1.5707193839545637	USDA's Ag Handbook 8 and sequelae)
8	STEARIC-ACID	Leaf				--
8	STEARIC-ACID	Plant	7.0	356.0	-0.6655276409333674	--
9	PHYTIC-ACID	Leaf		80.0		--
9	OXALIC-ACID	Leaf	5000.0	93900.0	2.2754912851003497	--
10	XYLITOL	Leaf				Counsell, J. N., Robertson, D. J. 1976. Xylitol-A Sweetener Which is Kind to the Teeth. Food Process Ind., 45(54): 24-26.
11	PANTOTHENIC-ACID	Plant	0.57	8.7	-1.2357577104072583	--
12	IODINE	Plant		0.2	-0.4468248895819287	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
12	COPPER	Plant	0.1	24.0	1.1055674700843674	--
12	GLYCINE	Plant	1340.0	15914.0	1.6896690344750718	USDA's Ag Handbook 8 and sequelae)
13	COUMESTROL	Leaf	0.1	100.0	-1.0	--
13	PALMITIC-ACID	Plant	106.0	4869.0	-0.7374530233038146	--
13	PALMITIC-ACID	Leaf				--
14	POTASSIUM	Plant	2060.0	69077.0	3.297249785037831	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	ARGININE	Leaf				--
14	MANGANESE	Plant	3.0	485.0	2.7811803446646057	--
14	ARGININE	Plant	1620.0	19239.0	1.2761740025274024	USDA's Ag Handbook 8 and sequelae)
14	SULFUR	Plant	270.0	5700.0	0.782987997507475	--
15	METHIONINE	Leaf				--
15	FOLACIN	Plant	1.59	27.13	-0.0465638733379045	USDA's Ag Handbook 8 and sequelae)
15	MALIC-ACID	Leaf		4300.0	-0.7530674316188777	Soldatenkov, S. V., Mazurova, T. A., Ranteleev, A. N. 1960. Organic Acids of Onion and Spinach. Trudy Petergof Biol. Inst., Leningrad Gosudarst Univ Im AA Zhdanova, 18: 55-61.
15	METHIONINE	Plant	530.0	6294.0	2.224241040054928	USDA's Ag Handbook 8 and sequelae)
15	FIBER	Plant	6000.0	111634.0	-0.8219381795308445	--
15	ALPHA-LINOLENIC-ACID	Leaf				--
15	LUTEIN	Leaf		42.0		--
15	RIBOFLAVIN	Plant	1.8	23.4	0.8354117066800743	USDA's Ag Handbook 8 and sequelae)
15	ALPHA-LINOLENIC-ACID	Plant	480.0	13657.0	1.4955264890768174	--
18	HISTAMINE	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
18	OLEIC-ACID	Leaf				--
18	OLEIC-ACID	Plant	18.0	475.0	-0.8580334988525617	--
19	ACETYL-CHOLINE	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
20	LECITHIN	Leaf				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
21	CHLOROPHYLL	Fruit Juice		3.0		--
21	CHLOROPHYLL	Leaf				--
23	FOLIC-ACID	Plant	1.2	15.0	-0.4505134514039695	--
23	CITRIC-ACID	Leaf		2300.0	-0.5219939763024926	Soldatenkov, S. V., Mazurova, T. A., Ranteleev, A. N. 1960. Organic Acids of Onion and Spinach. Trudy Petergof Biol. Inst., Leningrad Gosudarst Univ Im AA Zhdanova, 18: 55-61.
24	CHROMIUM	Flower	0.01	0.42	-1.2060967413329013	ACTA AGRIC SCAND SUPPL 22: 1980
25	P-COUMARIC-ACID	Leaf		133.0	-0.31505669620268567	--
27	LINOLEIC-ACID	Leaf				--
27	LINOLEIC-ACID	Plant	104.0	2613.0	-0.541791899786887	--
28	CALCIUM	Plant	730.0	15700.0	0.2257645071195088	--
29	TRYPTOPHAN	Plant	390.0	4632.0	1.4033196129047203	USDA's Ag Handbook 8 and sequelae)
30	HYPEROSIDE	Shoot				--
31	THIAMIN	Plant	0.7	10.2	0.2209949208584362	USDA's Ag Handbook 8 and sequelae)
32	ALPHA-TOCOPHEROL	Leaf	12.0	419.0	0.2913184399571312	--
39	NIACIN	Plant	6.9	89.8	0.18336375742880084	USDA's Ag Handbook 8 and sequelae)
43	PROTocatechuic-ACID	Shoot				--
44	QUERCITRIN	Leaf		500.0	-0.4939476620574426	--
53	BETA-CAROTENE	Plant	4.0	690.0	3.0097842607969785	--
53	BETA-CAROTENE	Leaf		32.5	-0.9964033865662687	--
60	SELENIUM	Leaf		0.057	-0.3781672517204582	ACTA AGRIC SCAND SUPPL 22: 1980
61	FERULIC-ACID	Leaf		16.0	0.37081029570000157	--
61	FERULIC-ACID	Inflorescence				--
65	MAGNESIUM	Plant	420.0	11000.0	2.1524585904189935	--
75	KAEMPFEROL	Plant				--
75	KAEMPFEROL	Leaf		2.0	-0.7448470733619753	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
77	ZINC	Plant	4.0	185.0	1.3103512331616465	--
77	CHLOROGENIC-ACID	Shoot				--
87	RUTIN	Leaf		170.0	-0.993991147325029	--
87	RUTIN	Shoot				--
102	CAFFEIC-ACID	Leaf				--
102	CAFFEIC-ACID	Shoot				--
112	ASCORBIC-ACID	Fruit Juice		55.0	-1.0	--
112	ASCORBIC-ACID	Leaf				--
112	ASCORBIC-ACID	Plant	239.0	7595.0	1.1893099515743446	--
176	QUERCETIN	Leaf	1.0	19.0	-0.35172338839946077	--