

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Citrus sinensis

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
31	HESPERIDIN	Pericarp		63500.0	0.38878029269733505	Jim Duke's personal files.
15	FIBER	Fruit	3740.0	47000.0	-0.8934118438004772	--
14	SUCROSE	Fruit		47000.0	-0.41357367622327157	--
56	NARINGENIN	Pericarp	35000.0	45800.0		Jim Duke's personal files.
1	XANTHYLETIN	Root Bark		45000.0		Jim Duke's personal files.
2	ELEMOL	Root Bark		28200.0		Jim Duke's personal files.
6	NEOHESPERIDIN	Pericarp		28000.0		Jim Duke's personal files.
1	XANTHOXYLETIN	Root Bark		24000.0		Jim Duke's personal files.
8	FRUCTOSE	Fruit		23800.0	-0.555436040816387	--
7	GLUCOSE	Fruit		23600.0	-0.644631124988246	--
14	POTASSIUM	Fruit	1400.0	13772.0	-0.3666795712783593	--
23	CITRIC-ACID	Fruit	5600.0	9800.0	-0.4912433942967182	--
60	LIMONENE	Fruit	8300.0	9700.0	0.6409395320453212	--
87	RUTIN	Leaf		9000.0	-0.44580487824979076	Jim Duke's personal files.
3	ASPARTIC-ACID	Fruit	70.0	8607.0	-0.2038383572771155	--
8	GLUTAMIC-ACID	Fruit	60.0	7097.0	-0.4778760905604569	--
12	GLYCINE	Fruit	50.0	7097.0	1.3509995174874219	--
87	RUTIN	Pericarp		6100.0		Jim Duke's personal files.
24	PECTIN	Fruit	1300.0	5900.0	-0.5601993872457034	--
28	CALCIUM	Fruit	210.0	5615.0	0.4058414049804431	--
14	ARGININE	Fruit	230.0	4908.0	0.15957250579145005	--
112	ASCORBIC-ACID	Fruit	500.0	4071.0	-0.03136646807240172	--
16	P-CYMENE	Fruit	3590.0	4070.0	-0.04098189676522262	--
3	ALANINE	Fruit	30.0	3775.0	0.02652939797970876	--
4	LYSINE	Fruit	470.0	3548.0	-0.1467119613903352	USDA's Ag Handbook 8 and sequelae)
3	VALINE	Fruit	100.0	3020.0	-0.29566746601618277	--
1	SERINE	Fruit	40.0	2410.0	-0.43531280247846904	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	PHENYLALANINE	Fruit	310.0	2340.0	-0.34187787905261324	USDA's Ag Handbook 8 and sequelae)
15	MALIC-ACID	Fruit	600.0	2000.0	-0.8215787018847368	--
4	PHOSPHORUS	Fruit	136.0	1980.0	-0.3754207541761312	--
3	ISOLEUCINE	Fruit	250.0	1888.0	-0.5255451749979052	USDA's Ag Handbook 8 and sequelae)
2	ASPARAGINE	Fruit	200.0	1800.0	0.3373215168393527	--
15	METHIONINE	Fruit	200.0	1510.0	0.6791094324753408	USDA's Ag Handbook 8 and sequelae)
18	OLEIC-ACID	Fruit	20.0	1510.0	-0.4691070855395464	USDA's Ag Handbook 8 and sequelae)
7	HISTIDINE	Fruit	180.0	1359.0	-0.24792284510655177	USDA's Ag Handbook 8 and sequelae)
27	LINOLEIC-ACID	Fruit	180.0	1359.0	-0.33622644162700344	USDA's Ag Handbook 8 and sequelae)
8	TYROSINE	Fruit	160.0	1208.0	-0.501692988706999	USDA's Ag Handbook 8 and sequelae)
2	LEUCINE	Fruit	230.0	1136.0	-0.8429441489050677	USDA's Ag Handbook 8 and sequelae)
4	THREONINE	Fruit	150.0	1132.0	-0.7838698402029908	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Fruit	98.0	1075.0	-0.4884044378711737	--
14	SULFUR	Fruit	46.0	1000.0	-0.28853428975640755	--
13	PALMITIC-ACID	Fruit	130.0	982.0	-0.35024794688904615	USDA's Ag Handbook 8 and sequelae)
24	ETHANOL	Fruit Juice	64.0	900.0	1.0	--
2	CYSTINE	Fruit	100.0	755.0	-0.2882040289158333	USDA's Ag Handbook 8 and sequelae)
22	GAMMA-AMINOBUTYRIC-ACID	Fruit	40.0	730.0	-0.27868808492512787	--
29	TRYPTOPHAN	Fruit	90.0	680.0	-0.23921305471754814	USDA's Ag Handbook 8 and sequelae)
5	GLUTAMINE	Fruit	30.0	630.0	0.1767951575504613	--
14	BETAINE	Fruit	390.0	630.0	-1.0398613033298902	--
53	LINALOOL	Fruit	30.0	530.0	-0.43753461385311765	--
15	ALPHA-LINOLENIC-ACID	Fruit	70.0	528.0	-0.913356590105175	USDA's Ag Handbook 8 and sequelae)
1	NORDENTATIN	Root Bark		300.0		Jim Duke's personal files.
60	LIMONENE	Fruit Juice	1.0	278.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PHYTOSTEROLS	Fruit		240.0	-0.9087217260357541	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
2	PALMITOLEIC-ACID	Fruit	30.0	226.0	-0.30412481168854	USDA's Ag Handbook 8 and sequelae)
7	SALICYLATES	Fruit	0.0	200.0	0.236750790358027	--
61	FERULIC-ACID	Pericarp	20.0	180.0	1.0	--
47	BETA-SITOSTEROL	Fruit		170.0	-0.570881270243894	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
5	ALUMINUM	Fruit	1.0	165.0	-0.17551933701223474	--
22	SCOPARONE	Bark		162.5		Jim Duke's personal files.
1	6,7-DIMETHOXYCOUMARIN	Bark		162.0		Jim Duke's personal files.
20	CHOLINE	Fruit	70.0	160.0	-0.5734302834278399	--
22	MYRCENE	Fruit	130.0	140.0	-0.36272097374914564	--
31	HESPERIDIN	Fruit Juice		110.0		Jim Duke's personal files.
9	SINAPIC-ACID	Pericarp	45.0	100.0	1.0	--
9	OXALIC-ACID	Fruit		87.0	-0.3015516499208378	Watt, J.M. and Breyer-Brandwijk, M.G. 1962. The Medicinal and Poisonous Plants of Southern and Eastern Africa. E. & S. Livingstone, Ltd. Edinburg & London. 1457 pp.
2	METHANOL	Fruit Juice	0.8	80.0	1.0	--
25	P-COUMARIC-ACID	Pericarp	5.0	75.0	1.0	--
62	CAFFEINE	Flower		62.0	1.0998533626601497	Jim Duke's personal files.
102	CAFFEIC-ACID	Fruit	2.0	50.0	-0.3296566072538586	--
5	SYNEPHRINE	Fruit	15.0	43.0		--
2	CAMPESTEROL	Fruit		40.0	-0.31972036696488193	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
28	ALPHA-PINENE	Fruit	35.0	40.0	-0.7083402631126611	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	CHLORINE	Fruit	12.0	32.0	-0.6800304631000254	--
39	NIACIN	Fruit	2.0	31.0	-0.39701223426716226	--
61	FERULIC-ACID	Fruit	10.0	30.0	-0.7627700713964738	--
32	ALPHA-TOCOPHEROL	Fruit	4.0	29.0	-0.6752411923996696	--
1	SODIUM	Fruit	0.0	29.0	-0.1812007490262155	--
53	BETA-CAROTENE	Fruit	1.0	28.0	-0.0966771336129336	--
4	BORON	Fruit	1.89	27.5	-0.25022637010687165	--
12	STIGMASTEROL	Fruit		20.0	-0.8951703667819086	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
2	DODECANAL	Fruit	5.0	20.0	0.9948320067476139	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
11	PANTOTHENIC-ACID	Fruit	2.0	19.0	0.05712424299404392	USDA's Ag Handbook 8 and sequelae)
9	SINAPIC-ACID	Fruit	7.0	19.0	0.784062560233975	--
25	P-COUMARIC-ACID	Fruit	5.0	17.0	-0.6943231755501756	--
6	ACETALDEHYDE	Fruit Juice	3.0	15.0	1.0	--
11	ALPHA-PHELLANDRENE	Fruit	12.0	14.0	-0.5695870460921888	--
13	BETA-PINENE	Fruit	11.0	13.0	-0.29742687330503664	--
77	ZINC	Fruit	0.9	13.0	-0.5205322406758267	--
5	SABINENE	Fruit	11.0	13.0	-0.5315196015036519	--
2	NERYL-FORMATE	Fruit		10.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
19	CARVONE	Fruit	2.0	10.0	-0.49999993853473	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
8	DELTA-3-CARENE	Fruit	7.0	9.0	-0.5981394247478974	--
14	MANGANESE	Fruit	0.0	8.0	-0.3507865335531638	--
6	IRON	Fruit	1.0	8.0	-0.49575433892938076	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	GERANIAL	Fruit	6.0	7.0	-0.9983227361677096	--
31	THIAMIN	Fruit	1.0	7.0	0.21342198396383905	--
62	CAFFEINE	Leaf		6.0	-0.9423311788449318	Jim Duke's personal files.
12	COPPER	Fruit	0.44	5.5	-0.569630082366932	--
4	NERAL	Fruit	4.0	5.0	-0.8791176720401793	--
20	CITRONELLAL	Fruit	4.0	5.0	-0.9952774234291415	--
53	LINALOOL	Fruit Juice	0.15	4.69	1.0000000000000004	--
176	QUERCETIN	Fruit		3.4	-0.7856446697799095	Jim Duke's personal files.
15	RIBOFLAVIN	Fruit	0.0	3.0	-0.4303249009534089	--
15	LUTEIN	Fruit	0.0	3.0	-0.575590894746515	--
23	ALPHA-TERPINEOL	Fruit	2.0	3.0	-0.40604181620664676	--
1	N-METHYL-TYRAMINE	Fruit	0.0	2.0	-1.0	--
13	ALPHA-TERPINENE	Fruit	1.0	2.0	-0.44934612100297294	--
4	SILICON	Fruit		2.0	-0.6019449725946585	ACTA AGRIC SCAND SUPPL 22: 1980
11	GAMMA-TERPINENE	Fruit	1.0	2.0	-0.6509562680883627	--
11	PERILLALDEHYDE	Fruit		2.0	-0.7326583054413682	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	ZEAXANTHIN	Fruit		2.0	-1.0	--
5	HEXANAL	Fruit	1.0	2.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
9	TERPINOLENE	Fruit	1.0	2.0	-0.7498060467737104	--
15	FOLACIN	Fruit	0.0	2.0	-0.019192793995839758	USDA's Ag Handbook 8 and sequelae)
7	ALPHA-CAROTENE	Fruit	0.19	1.9	-0.26808750426637384	--
11	LITHIUM	Fruit	0.108	1.54	0.890343380696948	--
23	ALPHA-TERPINEOL	Fruit Juice	0.09	1.1	-0.6501250791550391	--
1	ETHYL-BUTYRATE	Fruit Juice	0.08	1.02		--
5	NERYL-ACETATE	Fruit	0.7	1.0	-0.724098948454428	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	TYRAMINE	Fruit	0.0	1.0	0.7071067811865478	--
35	GERANIOL	Fruit	0.7	1.0	-0.6057972802749785	--
5	BETA-ELEMENE	Fruit	0.7	1.0	-0.565275335737646	--
10	NEROL	Fruit	0.7	1.0	-0.5477997473775594	--
3	NOOTKATONE	Fruit		1.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
15	CITRONELLOL	Fruit	0.7	1.0	-0.5060981097957616	--
2	UNDECANAL	Fruit	0.7	1.0	-0.5758305509285185	--
5	HEXANAL	Fruit Juice	0.02	0.65		--
6	ETHYL-ACETATE	Fruit Juice	0.01	0.58		--
3	NICKEL	Fruit	0.01	0.55	-0.6121948588601274	--
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	Jim Duke's personal files.
11	GAMMA-TERPINENE	Fruit Juice	0.04	0.46	-1.0	--
2	MOLYBDENUM	Fruit	0.1	0.385	-0.4080774738511709	--
24	CHROMIUM	Fruit	0.005	0.385	-0.45355683651553846	--
62	CAFFEINE	Bud		0.3		Jim Duke's personal files.
3	HEXANOL	Fruit Juice	0.02	0.22		--
28	ALPHA-PINENE	Fruit Juice		0.22	-0.9999999999999999	--
2	ARSENIC	Fruit	0.001	0.154	-0.33956845146287234	--
5	SABINENE	Fruit Juice	0.0	0.15		--
3	CADMIUM	Fruit	0.001	0.138	-0.23805307615553817	--
71	THYMOL	Fruit	0.0	0.1	-0.7071067811865474	--
2	FARNESENE	Fruit	0.0	0.1	-1.0	--
2	METHYL-BUTYRATE	Fruit Juice	0.01	0.1		--
2	ALPHA-HUMULENE	Fruit	0.0	0.1	-0.5986253681056065	--
1	TRANS-2-HEXENOL	Fruit Juice	0.0	0.1		--
5	GERANYL-ACETATE	Fruit	0.0	0.1	-0.9446827484165164	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	CITRONELLYL-ACETATE	Fruit	0.0	0.1	-0.999999999999998	--
9	CAMPHENE	Fruit		0.1	-0.35176349319281713	--
23	TERPINEN-4-OL	Fruit		0.1	-0.358333842321623	--
3	SILVER	Fruit	0.027	0.055	-0.5875909007853288	--
2	COBALT	Fruit	0.001	0.055	-0.5284569584957359	--
60	SELENIUM	Fruit	0.0	0.002	-0.38569128420884563	--
5	PHYLLOQUINONE	Fruit		0.001	-0.23285139490462353	--
1	MERCURY	Fruit	0.0	0.001	-0.7865389313824043	--
8	HORDENINE	Fruit		0.0		--
19	D-LIMONENE	Fruit Juice				Jim Duke's personal files.
2	VIOLAXANTHIN	Fruit				--
8	QUERCETAGETIN	Fruit Juice				Jim Duke's personal files.
25	P-COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
5	CAPRYLIC-ACID	Fruit				--
16	ACETIC-ACID	Plant				--
2	VIOLAXANTHIN	Pericarp				Jim Duke's personal files.
6	NEOHESPERIDIN	Fruit Juice				Jim Duke's personal files.
2	CRYPTOXANTHIN	Fruit				--
1	ANTHERAXANTHIN	Fruit				--
24	PECTIN	Pericarp				Jim Duke's personal files.
53	BETA-CAROTENE	Pericarp				Jim Duke's personal files.
1	CAPROIC-ACID	Fruit				--
1	QUINIC-ACID	Fruit				--
2	VIOLAXANTHIN	Tissue Culture				Jim Duke's personal files.
2	BETA-MYRCENE	Fruit				Jim Duke's personal files.
3	SESELIN	Root				Jim Duke's personal files.
31	HESPERIDIN	Flower				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
15	OSTHOL	Root				Jim Duke's personal files.
7	ALPHA-CAROTENE	Pericarp				Jim Duke's personal files.
3	CAPRIC-ACID	Fruit				--
6	PROPIONIC-ACID	Plant				--
1	N-METHYL-TYRAMINE	Pericarp				Jim Duke's personal files.
16	LYCOPENE	Pericarp				Jim Duke's personal files.
31	HESPERIDIN	Fruit				Jim Duke's personal files.
2	CONIFERIN	Pericarp				Jim Duke's personal files.
3	NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
102	CAFFEIC-ACID	Fruit Juice				Jim Duke's personal files.
7	SUCCINIC-ACID	Fruit				--
8	NOBILETIN	Fruit				--
31	CARYOPHYLLENE	Pericarp				--
15	TANGERETIN	Pericarp				Jim Duke's personal files.
4	OSTHOLE	Root				--
15	LUTEIN	Pericarp				Jim Duke's personal files.
11	NEROLIDOL	Flower				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
2	NOMILIN	Fruit Juice				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp Essent. Oil				Jim Duke's personal files.
3	SUBAPHYLLIN	Leaf				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
4	TRANS-2-HEXENAL	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	SUBAPHYLLIN	Fruit				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
15	TANGERETIN	Fruit Juice				Jim Duke's personal files.
5	LIMONIN	Seed				Jim Duke's personal files.
7	SCUTELLAREIN	Fruit				--
4	4-VINYL-GUAIACOL	Fruit Juice				Jim Duke's personal files.
8	NOBILETIN	Pericarp				Jim Duke's personal files.
3	BRASSINOLIDE	Pollen Or Spore				Jim Duke's personal files.
8	AURAPTENE	Fruit				--
5	SYNEPHRINE	Pericarp				Jim Duke's personal files.
3	OBACUNONE	Seed				Jim Duke's personal files.
5	LIMONIN	Fruit				--
5	LIMONIN	Fruit Juice				Jim Duke's personal files.
1	NEOHESPERIDIN-DIHYDROCHALCONE	Pericarp				Jim Duke's personal files.
61	FERULIC-ACID	Fruit Juice				Jim Duke's personal files.
28	ALPHA-PINENE	Plant				--
8	NOBILETIN	Fruit Juice				Jim Duke's personal files.
1	ANTHERAXANTHIN	Tissue Culture				Jim Duke's personal files.
26	BERGAPTEN	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
6	STACHYDRINE	Fruit				--
2	SINENSETIN	Pericarp				Jim Duke's personal files.
5	LIMONIN	Twig				Jim Duke's personal files.
5	BETA-ELEMENE	Pericarp Essent. Oil				Jim Duke's personal files.
1	NARIRUTIN	Fruit Juice				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	SINENSETIN	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
5	ZEAXANTHIN	Pericarp				Jim Duke's personal files.
3	MANNOSE	Fruit				--
31	CARYOPHYLLENE	Pericarp Essent. Oil				Jim Duke's personal files.
2	SINENSETIN	Fruit Juice				Jim Duke's personal files.
5	LIMONIN	Branches				Jim Duke's personal files.
3	XYLOSE	Fruit				--
34	DIOSMIN	Pericarp				--
1	NARIRUTIN	Pericarp				Jim Duke's personal files.
9	SINAPIC-ACID	Fruit Juice				Jim Duke's personal files.
34	DIOSMIN	Flower				Jim Duke's personal files.
12	NARINGIN	Flower				Jim Duke's personal files.
1	GALACTOSE	Fruit				--
5	ZEAXANTHIN	Tissue Culture				Jim Duke's personal files.
2	SINENSETIN	Fruit				--
2	NOOTKATOL	Fruit				Jim Duke's personal files.
5	LIMONIN	Bark				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp				--
12	NARINGIN	Fruit				--
7	SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
2	BETA-CRYPTOXANTHIN	Fruit				--
1	CHOLESTEROL	Fruit				--
12	NARINGIN	Pericarp				Jim Duke's personal files.
1	MALONIC-ACID	Fruit				--
1	XANTHYLETIN	Root				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
1	MALONIC-ACID	Plant				--
2	NOMILIN	Seed				Jim Duke's personal files.
1	HYDROXYPROLINE	Leaf				Jim Duke's personal files.
5	LIMONIN	Root				Jim Duke's personal files.
1	DELPHINIDIN-3- GLUCOSIDE	Fruit				--
2	BETA-CRYPTOXANTHIN	Pericarp				Jim Duke's personal files.
15	TANGERETIN	Fruit				--
12	NARINGIN	Fruit Juice				Jim Duke's personal files.
6	BUTYRIC-ACID	Fruit				--
1	XANTHOXYLETIN	Root				Jim Duke's personal files.