

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Citrus sinensis

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	(E)-BETA-OCIMENE	Fruit	0.7	1.0	-0.795218715224166	--
0	(Z)-BETA-OCIMENE	Fruit	2.0	3.0	-0.6648405774204937	--
0	2'-TRANS-O-FERULOYL-GALACTARIC-ACID	Pericarp				Jim Duke's personal files.
0	2'-TRANS-O-P-COUMAROYL-GALACTARIC-ACID	Pericarp				Jim Duke's personal files.
0	2'-TRANS-O-P-COUMAROYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
0	2,4-TRANS,TRANS-O-FERULOYL-GLUCARIC-ACID	Pericarp				--
0	2,4-TRANS-TRANS-O-DIFERULOYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
0	2-(METHYL-AMINO)-BENZYL-ALCOHOL	Pericarp Essent. Oil				Jim Duke's personal files.
0	2-METHYL-1-PROPANOL	Fruit Juice	0.0	0.07		--
0	2-METHYL-5-(1-METHYL-ETHENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	2-METHYL-5-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	2-PENTYLPYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	2-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	2-TRANS-O-FERULOYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
0	3,3',4,5,6,7,8-HEPTAMETHOXY-FLAVONE	Fruit				Jim Duke's personal files.
0	3,3',4,5,6,7,8-HEPTAMETHOXY-FLAVONE	Fruit Juice				Jim Duke's personal files.
0	3-(4-METHYL-HEXYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-(4-METHYL-PHENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-(BUT-TRANS-1-ENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-BUTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-HEPTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3-HYDROXY-5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-8'-AL	Fruit Juice				Jim Duke's personal files.
0	3-HYDROXY-ETHYL-HEXANOATE	Fruit				Jim Duke's personal files.
0	3-HYDROXY-ETHYL-HEXANOATE	Fruit Juice				Jim Duke's personal files.
0	3-METHYL-BUT-1-ENE	Essential Oil				Jim Duke's personal files.
0	3-METHYL-BUTAN-1-OL	Fruit				--
0	3-METHYL-BUTAN-1-OL	Fruit Juice				Jim Duke's personal files.
0	3-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-OCTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PENTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PROPYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	4,7-DIMETHYL-BICYCLO(3.2.1)-OCT-CIS-3-EN-6-ONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	4,7-DIMETHYL-BICYCLO(3.2.1)-OCT-TRANS-3-EN-6-ONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	4-(3-METHYL-2-BUTENOXY)-ISO-NITROSO-ACETOPHENONE	Pericarp		48.0		Jim Duke's personal files.
0	4-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
4	4-VINYL-GUAIACOL	Fruit Juice				Jim Duke's personal files.
0	5,6-DIHYDRO-BETA-BETA-CAROTEN-3,3',5,6-TETROL	Fruit Juice				--
0	5,6-DIHYDRO-BETA-BETA-CAROTENE-3,3',5,6-TETROL	Fruit Juice				Jim Duke's personal files.
0	5,8-EPOXY-5,5',8'-TETRAHYDRO-BETA-BETA-CAROTENE-3,3',5',6'-TETROL	Fruit Juice				Jim Duke's personal files.
0	5,8-EPOXY-5,5',8'-TETRAHYDRO-BETA,BETA-CAROTEN-3,3',5',6'-TETROL	Plant				--
0	5,8-EPOXY-5,8-DIHYDRO-10'-APO-BETA-CAROTEN-3,10'-DIOL	Fruit Juice				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-3,10-DIOL	Fruit Juice				--
0	5-ACETYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	5-HEXYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	6,7-DIMETHOXYCOUMARIN	Bark		162.0		Jim Duke's personal files.
0	ABSCISIC-ACID	Tissue Culture				Jim Duke's personal files.
6	ACETALDEHYDE	Fruit Juice	3.0	15.0	1.0	--
16	ACETIC-ACID	Plant				--
3	ALANINE	Fruit	30.0	3775.0	0.02652939797970876	--
0	ALPHA-BERGAMOTENE	Fruit		6.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
7	ALPHA-CAROTENE	Pericarp				Jim Duke's personal files.
7	ALPHA-CAROTENE	Fruit	0.19	1.9	-0.26808750426637384	--
0	ALPHA-COPAENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	ALPHA-COPAENE	Fruit	0.7	1.0	-0.6881248888845418	--
0	ALPHA-COPAENE	Pericarp				--
0	ALPHA-CUBEBENE	Fruit	0.7	1.0	-0.6220320233548484	--
2	ALPHA-HUMULENE	Fruit	0.0	0.1	-0.5986253681056065	--
0	ALPHA-HYDROXY-CAROTENE	Pericarp				Jim Duke's personal files.
15	ALPHA-LINOLENIC-ACID	Fruit	70.0	528.0	-0.913356590105175	USDA's Ag Handbook 8 and sequelae)
11	ALPHA-PHELLANDRENE	Fruit	12.0	14.0	-0.5695870460921888	--
28	ALPHA-PINENE	Fruit Juice		0.22	-0.9999999999999999	--
28	ALPHA-PINENE	Plant				--
28	ALPHA-PINENE	Fruit	35.0	40.0	-0.7083402631126611	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-SINENSAL	Pericarp				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	ALPHA-SINENSAL	Fruit	1.0	2.0	-1.0	--
0	ALPHA-SINESAL	Pericarp				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	ALPHA-SINESAL	Fruit		3.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
13	ALPHA-TERPINENE	Fruit	1.0	2.0	-0.44934612100297294	--
23	ALPHA-TERPINEOL	Fruit	2.0	3.0	-0.40604181620664676	--
23	ALPHA-TERPINEOL	Fruit Juice	0.09	1.1	-0.6501250791550391	--
0	ALPHA-THUJENE	Fruit	0.7	1.0	-0.5955809256752451	--
32	ALPHA-TOCOPHEROL	Fruit	4.0	29.0	-0.6752411923996696	--
0	ALPHA-YLANGENE	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
5	ALUMINUM	Fruit	1.0	165.0	-0.17551933701223474	--
1	ANTHERAXANTHIN	Fruit				--
1	ANTHERAXANTHIN	Tissue Culture				Jim Duke's personal files.
0	ANTHRANILIC-ACID-METHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
0	APIGENIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				--
0	APIGENIN-TRIMETHYL-ETHER	Pericarp				Jim Duke's personal files.
0	APOVIOLAXANTH-10'-AL	Pericarp				--
0	ARABAN	Fruit				--
14	ARGININE	Fruit	230.0	4908.0	0.15957250579145005	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	ARSENIC	Fruit	0.001	0.154	-0.33956845146287234	--
112	ASCORBIC-ACID	Fruit	500.0	4071.0	-0.03136646807240172	--
0	ASH	Fruit	4100.0	36920.0	-0.5112715299819987	--
2	ASPARAGINE	Fruit	200.0	1800.0	0.3373215168393527	--
3	ASPARTIC-ACID	Fruit	70.0	8607.0	-0.2038383572771155	--
8	AURAPTENE	Fruit				--
0	AURAPTENOL	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	AURAXANTHIN	Fruit	0.0	4.0		--
0	BARIUM	Fruit	0.54	16.5	-0.456265269747712	USDA's Ag Handbook 8 and sequelae)
26	BERGAPTEN	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	BERGAPTOL	Fruit				--
0	BETA-APO-8'-CAROTINAL	Pericarp				Jim Duke's personal files.
0	BETA-APO-CAROTEN-8-AL	Pericarp				--
53	BETA-CAROTENE	Fruit	1.0	28.0	-0.0966771336129336	--
53	BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	BETA-CARYOPHYLLENE	Fruit	1.0	2.0	-0.5058677869700708	--
0	BETA-CITRAURIN	Fruit Juice				Jim Duke's personal files.
0	BETA-CITRAURIN	Pericarp				Jim Duke's personal files.
2	BETA-CRYPTOXANTHIN	Fruit				--
2	BETA-CRYPTOXANTHIN	Pericarp				Jim Duke's personal files.
0	BETA-CRYTOXANTHIN	Fruit				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-CUBEBENE	Fruit		10.0	-0.7068656261481132	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	BETA-ELEMENE	Pericarp Essent. Oil				Jim Duke's personal files.
5	BETA-ELEMENE	Fruit	0.7	1.0	-0.565275335737646	--
2	BETA-MYRCENE	Fruit				Jim Duke's personal files.
13	BETA-PINENE	Fruit	11.0	13.0	-0.29742687330503664	--
0	BETA-SINENSAL	Pericarp				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	BETA-SINESAL	Pericarp				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	BETA-SINESAL	Fruit		6.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
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.)
0	BETA-ZEACAROTENE	Pericarp				Jim Duke's personal files.
14	BETAINE	Fruit	390.0	630.0	-1.0398613033298902	--
4	BORON	Fruit	1.89	27.5	-0.25022637010687165	--
3	BRASSINOLIDE	Pollen Or Spore				Jim Duke's personal files.
0	BRAYLIN	Root				Jim Duke's personal files.
0	BROMINE	Fruit		1.0	-0.42563543443835	ACTA AGRIC SCAND SUPPL 22: 1980
6	BUTYRIC-ACID	Fruit				--
3	CADMIUM	Fruit	0.001	0.138	-0.23805307615553817	--
102	CAFFEIC-ACID	Fruit	2.0	50.0	-0.3296566072538586	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
102	CAFFEIC-ACID	Fruit Juice				Jim Duke's personal files.
62	CAFFEINE	Leaf		6.0	-0.9423311788449318	Jim Duke's personal files.
62	CAFFEINE	Flower		62.0	1.0998533626601497	Jim Duke's personal files.
62	CAFFEINE	Bud		0.3		Jim Duke's personal files.
28	CALCIUM	Fruit	210.0	5615.0	0.4058414049804431	--
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.)
9	CAMPHENE	Fruit		0.1	-0.35176349319281713	--
3	CAPRIC-ACID	Fruit				--
1	CAPROIC-ACID	Fruit				--
5	CAPRYLIC-ACID	Fruit				--
0	CARBOHYDRATES	Fruit	99000.0	887125.0	0.557442615155032	--
0	CAROTENOIDS	Fruit	12.0	35.0	-0.5036534891621087	--
0	CAROTENOIDS	Pericarp	12.0	35.0		--
19	CARVONE	Fruit	2.0	10.0	-0.49999993853473	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	CARYOPHYLLENE	Pericarp Essent. Oil				Jim Duke's personal files.
31	CARYOPHYLLENE	Pericarp				--
0	CASTASTERONE	Pollen Or Spore				Jim Duke's personal files.
7	CHLORINE	Fruit	12.0	32.0	-0.6800304631000254	--
1	CHOLESTEROL	Fruit				--
20	CHOLINE	Fruit	70.0	160.0	-0.5734302834278399	--
24	CHROMIUM	Fruit	0.005	0.385	-0.45355683651553846	--
0	CIS-SABINENE-HYDRATE	Fruit		0.1	-0.7071067811865477	--
0	CITFLAVANONE	Root Bark				--
0	CITFLAVANONE	Root				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CITRABASINE	Root Bark		14.0		--
0	CITRACRIDONE-I	Root Bark		400.0		--
23	CITRIC-ACID	Fruit	5600.0	9800.0	-0.4912433942967182	--
20	CITRONELLAL	Fruit	4.0	5.0	-0.9952774234291415	--
15	CITRONELLOL	Fruit	0.7	1.0	-0.5060981097957616	--
2	CITRONELLYL-ACETATE	Fruit	0.0	0.1	-0.9999999999999998	--
0	CITRUNOBIN	Root Bark				--
0	CITRUSIN-II	Fruit		40.0		Jim Duke's personal files.
0	CITRUSIN-III	Fruit		13.0		Jim Duke's personal files.
0	CITRUSIN-IV	Fruit		6.0		Jim Duke's personal files.
0	CITRUSININE-I	Root Bark		80.0		--
0	CITRUSININE-II	Root Bark		40.0		--
0	CITRUSINS	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
2	COBALT	Fruit	0.001	0.055	-0.5284569584957359	--
2	CONIFERIN	Pericarp				Jim Duke's personal files.
12	COPPER	Fruit	0.44	5.5	-0.569630082366932	--
0	COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
0	CRENULATIN	Root Bark		60.0		Jim Duke's personal files.
0	CRYPTOFLAVIN	Pericarp				--
0	CRYPTOFLAVIN-A	Pericarp				Jim Duke's personal files.
0	CRYPTOFLAVIN-B	Pericarp				Jim Duke's personal files.
2	CRYPTOXANTHIN	Fruit				--
0	CRYPTOXANTHIN-5,5',6,6'- DIEPOXIDE	Pericarp				Jim Duke's personal files.
0	CRYPTOXANTHIN-5,5',6,8'- DIEPOXIDE	Pericarp				Jim Duke's personal files.
0	CYANIDIN-3-GLUCOSIDE	Fruit				--
2	CYSTINE	Fruit	100.0	755.0	-0.2882040289158333	USDA's Ag Handbook 8 and sequelae)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
19	D-LIMONENE	Fruit Juice				Jim Duke's personal files.
0	DEACETYL-NOMILIN	Seed				Jim Duke's personal files.
0	DECANAL	Fruit	18.0	21.0	-0.6027493593021571	--
0	DECANAL	Fruit Juice	0.0	0.15	-1.0000000000000002	--
1	DELPHINIDIN-3-GLUCOSIDE	Fruit				--
8	DELTA-3-CARENE	Fruit	7.0	9.0	-0.5981394247478974	--
9	DELTA-CADINENE	Pericarp Essent. Oil				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp				--
0	DIHYDROKAEMPFEROL-4'-METHYL-ETHER-7-O-RHAMNOSIDE	Fruit				Jim Duke's personal files.
0	DIOSMETIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				Jim Duke's personal files.
34	DIOSMIN	Flower				Jim Duke's personal files.
34	DIOSMIN	Pericarp				--
2	DODECANAL	Fruit	5.0	20.0	0.9948320067476139	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	ELEMOL	Root Bark		28200.0		Jim Duke's personal files.
0	EO	Fruit	7500.0	10000.0	-0.625591783140096	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	EO	Pericarp	15000.0	20000.0	1.2809893558000476	--
0	EPOXY-NOOTKATONE	Pericarp				--
0	EPOXY-NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	EPOXY-VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	EPOXY-VALENCENE	Fruit				--
0	ERIOCITRIN	Pericarp				Jim Duke's personal files.
0	ERIOCITRIN	Flower				Jim Duke's personal files.
0	ETA-CAROTENE	Pericarp				--
24	ETHANOL	Fruit Juice	64.0	900.0	1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	ETHYL-ACETATE	Fruit Juice	0.01	0.58		--
1	ETHYL-BUTYRATE	Fruit Juice	0.08	1.02		--
0	ETHYL-SUBERENOL	Root Bark		700.0		Jim Duke's personal files.
0	ETROGOL	Root				Jim Duke's personal files.
2	FARNESENE	Fruit	0.0	0.1	-1.0	--
0	FAT	Fruit	1100.0	16000.0	-0.5190453767939366	--
61	FERULIC-ACID	Pericarp	20.0	180.0	1.0	--
61	FERULIC-ACID	Fruit	10.0	30.0	-0.7627700713964738	--
61	FERULIC-ACID	Fruit Juice				Jim Duke's personal files.
0	FERULOYL-PUTRESCINE	Fruit	0.0	5.0	1.0	--
15	FIBER	Fruit	3740.0	47000.0	-0.8934118438004772	--
0	FLAVOXANTHIN	Pericarp				Jim Duke's personal files.
0	FLUORINE	Fruit	0.04	0.76	-0.5863462540268758	ACTA AGRIC SCAND SUPPL 22: 1980
15	FOLACIN	Fruit	0.0	2.0	-0.019192793995839758	USDA's Ag Handbook 8 and sequelae)
0	FR	Juice				--
8	FRUCTOSE	Fruit		23800.0	-0.555436040816387	--
0	GALACTAN	Fruit				--
1	GALACTOSE	Fruit				--
0	GALACTURONIC-ACID	Fruit				--
22	GAMMA-AMINOBUTYRIC- ACID	Fruit	40.0	730.0	-0.27868808492512787	--
0	GAMMA-CADINENE	Fruit	1.0	2.0	-0.9084313290424243	--
11	GAMMA-TERPINENE	Fruit	1.0	2.0	-0.6509562680883627	--
11	GAMMA-TERPINENE	Fruit Juice	0.04	0.46	-1.0	--
13	GERANIAL	Fruit	6.0	7.0	-0.9983227361677096	--
35	GERANIOL	Fruit	0.7	1.0	-0.6057972802749785	--
5	GERANYL-ACETATE	Fruit	0.0	0.1	-0.9446827484165164	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GERANYL-OXY-PYRANOCOUMARIN	Root				Jim Duke's personal files.
0	GIBBERELLIC-ACID	Fruit				Jim Duke's personal files.
0	GLUCOSAN	Fruit				--
7	GLUCOSE	Fruit		23600.0	-0.644631124988246	--
8	GLUTAMIC-ACID	Fruit	60.0	7097.0	-0.4778760905604569	--
5	GLUTAMINE	Fruit	30.0	630.0	0.1767951575504613	--
12	GLYCINE	Fruit	50.0	7097.0	1.3509995174874219	--
0	HEPTAMETHOXY-FLAVONE	Fruit Juice				Jim Duke's personal files.
0	HEPTANAL	Fruit	3.0	5.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	HEPTULOSE	Fruit				--
31	HESPERIDIN	Flower				Jim Duke's personal files.
31	HESPERIDIN	Fruit				Jim Duke's personal files.
31	HESPERIDIN	Fruit Juice		110.0		Jim Duke's personal files.
31	HESPERIDIN	Pericarp		63500.0	0.38878029269733505	Jim Duke's personal files.
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
5	HEXANAL	Fruit	1.0	2.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	HEXANAL	Fruit Juice	0.02	0.65		--
3	HEXANOL	Fruit Juice	0.02	0.22		--
7	HISTIDINE	Fruit	180.0	1359.0	-0.24792284510655177	USDA's Ag Handbook 8 and sequelae)
8	HORDENINE	Fruit		0.0		--
1	HYDROXYPROLINE	Leaf				Jim Duke's personal files.
0	ICHANGIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
6	IRON	Fruit	1.0	8.0	-0.49575433892938076	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOCAPROIC-ACID	Fruit				--
3	ISOLEUCINE	Fruit	250.0	1888.0	-0.5255451749979052	USDA's Ag Handbook 8 and sequelae)
0	ISOLUTEIN	Pericarp				Jim Duke's personal files.
0	ISOPENTENYL-PSORALENS	Fruit				--
0	ISOPRENE	Essential Oil				Jim Duke's personal files.
0	ISORHOIFOLIN	Pericarp				--
0	ISORHOIFOLIN	Flower				Jim Duke's personal files.
0	ISOSAKURANETIN	Fruit				--
0	ISOSINENSETIN	Pericarp				Jim Duke's personal files.
0	JASMONIC-ACID	Fruit				Jim Duke's personal files.
0	LEAD	Fruit	0.02	1.1	-0.42525727293888926	--
2	LEUCINE	Fruit	230.0	1136.0	-0.8429441489050677	USDA's Ag Handbook 8 and sequelae)
60	LIMONENE	Fruit	8300.0	9700.0	0.6409395320453212	--
60	LIMONENE	Fruit Juice	1.0	278.0		--
0	LIMONEXIC-ACID	Fruit				--
5	LIMONIN	Seed				Jim Duke's personal files.
5	LIMONIN	Fruit Juice				Jim Duke's personal files.
5	LIMONIN	Twig				Jim Duke's personal files.
5	LIMONIN	Branches				Jim Duke's personal files.
5	LIMONIN	Bark				Jim Duke's personal files.
5	LIMONIN	Root				Jim Duke's personal files.
5	LIMONIN	Fruit				--
0	LIMONIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	LIMONIN-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	LIMONOATE-A-RING-LACTONE	Fruit				Jim Duke's personal files.
0	LINALOL	Fruit	30.0	530.0	-0.5486782133862986	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LINALOL	Fruit Juice	0.15	4.69	1.0000000000000002	--
53	LINALOOL	Fruit Juice	0.15	4.69	1.0000000000000004	--
53	LINALOOL	Fruit	30.0	530.0	-0.43753461385311765	--
27	LINOLEIC-ACID	Fruit	180.0	1359.0	-0.33622644162700344	USDA's Ag Handbook 8 and sequelae)
0	LINOMIN	Leaf				Jim Duke's personal files.
11	LITHIUM	Fruit	0.108	1.54	0.890343380696948	--
0	LOCHNOCARPOL-A	Root				Jim Duke's personal files.
15	LUTEIN	Fruit	0.0	3.0	-0.575590894746515	--
15	LUTEIN	Pericarp				Jim Duke's personal files.
0	LUTEOLIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				Jim Duke's personal files.
0	LUTEOLIN-7-O-BETA-D-RUTINOSIDE	Leaf				Jim Duke's personal files.
0	LUTEOXANTHINS	Fruit	0.0	6.0		--
16	LYCOPENE	Pericarp				Jim Duke's personal files.
4	LYSINE	Fruit	470.0	3548.0	-0.1467119613903352	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Fruit	98.0	1075.0	-0.4884044378711737	--
15	MALIC-ACID	Fruit	600.0	2000.0	-0.8215787018847368	--
1	MALONIC-ACID	Fruit				--
1	MALONIC-ACID	Plant				--
14	MANGANESE	Fruit	0.0	8.0	-0.3507865335531638	--
3	MANNOSE	Fruit				--
0	MERANZINE	Fruit				--
1	MERCURY	Fruit	0.0	0.001	-0.7865389313824043	--
2	METHANOL	Fruit Juice	0.8	80.0	1.0	--
15	METHIONINE	Fruit	200.0	1510.0	0.6791094324753408	USDA's Ag Handbook 8 and sequelae)
2	METHYL-BUTYRATE	Fruit Juice	0.01	0.1		--
0	METHYL-N-METHYL-ANTHRANILATE	Fruit	0.0	0.1		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	MEVALONIC-ACID	Pericarp		6.0		Jim Duke's personal files.
0	MEVALONIC-ACID	Fruit		0.5	-0.6071834425016228	Jim Duke's personal files.
2	MOLYBDENUM	Fruit	0.1	0.385	-0.4080774738511709	--
0	MUTATOCHROME	Fruit				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	MUTATOXANTHIN	Fruit		2.0	-1.0	--
0	MUTATOXANTHIN	Pericarp				Jim Duke's personal files.
0	MUTATOXANTHIN	Fruit Juice				Jim Duke's personal files.
22	MYRCENE	Fruit	130.0	140.0	-0.36272097374914564	--
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	Jim Duke's personal files.
0	N-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	N-METHYL-TYRAMINE	Fruit	0.0	2.0	-1.0	--
1	N-METHYL-TYRAMINE	Pericarp				Jim Duke's personal files.
0	N-N-DIMETHYL-3-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	N-N-DIMETHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
56	NARINGENIN	Pericarp	35000.0	45800.0		Jim Duke's personal files.
0	NARINGENIN-4-BETA-D-GLUCOSIDE	Plant				--
0	NARINGENIN-RUTINOSIDE	Fruit				--
0	NARINGENIN-RUTINOSIDE-4-BETA-D-GLUCOSIDE	Fruit				--
12	NARINGIN	Flower				Jim Duke's personal files.
12	NARINGIN	Pericarp				Jim Duke's personal files.
12	NARINGIN	Fruit Juice				Jim Duke's personal files.
12	NARINGIN	Fruit				--
0	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NARINGIN-GLUCOSIDE	Flower				Jim Duke's personal files.
1	NARIRUTIN	Pericarp				Jim Duke's personal files.
1	NARIRUTIN	Fruit Juice				Jim Duke's personal files.
0	NARIRUTIN-GLUCOSIDE	Pericarp				Jim Duke's personal files.
0	NARIRUTIN-GLUCOSIDE	Flower				Jim Duke's personal files.
0	NEO-BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	NEOCHROME-A	Pericarp				Jim Duke's personal files.
0	NEOCHROME-B	Pericarp				Jim Duke's personal files.
0	NEOERICITRIN	Flower				Jim Duke's personal files.
6	NEOHESPERIDIN	Fruit Juice				Jim Duke's personal files.
6	NEOHESPERIDIN	Pericarp		28000.0		Jim Duke's personal files.
1	NEOHESPERIDIN-DIHYDROCHALCONE	Pericarp				Jim Duke's personal files.
0	NEOPONCIRIN	Pericarp				Jim Duke's personal files.
0	NEOXANTHIN-A	Pericarp				Jim Duke's personal files.
0	NEOXANTHIN-B	Pericarp				Jim Duke's personal files.
4	NERAL	Fruit	4.0	5.0	-0.8791176720401793	--
10	NEROL	Fruit	0.7	1.0	-0.5477997473775594	--
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.
5	NERYL-ACETATE	Fruit	0.7	1.0	-0.724098948454428	--
2	NERYL-FORMATE	Fruit		10.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	NEUROSPORIN	Pericarp				Jim Duke's personal files.
39	NIACIN	Fruit	2.0	31.0	-0.39701223426716226	--
3	NICKEL	Fruit	0.01	0.55	-0.6121948588601274	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NICOTINIC-ACID-ETHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
0	NITROGEN	Fruit	500.0	13845.0	-0.054501610611493154	--
0	NOBELITIN	Fruit				--
8	NOBILETIN	Fruit				--
8	NOBILETIN	Pericarp				Jim Duke's personal files.
8	NOBILETIN	Fruit Juice				Jim Duke's personal files.
2	NOMILIN	Fruit Juice				Jim Duke's personal files.
2	NOMILIN	Seed				Jim Duke's personal files.
0	NOMILIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	NOMILINIC-ACID-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	NOMILINIC-ACID-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	NONANAL	Fruit	3.0	4.0	-0.8226919978166914	--
0	NONANOL	Fruit		10.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	NOOTKATOL	Fruit				Jim Duke's personal files.
3	NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
3	NOOTKATONE	Fruit		1.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
1	NORDENTATIN	Root Bark		300.0		Jim Duke's personal files.
3	OBACUNONE	Seed				Jim Duke's personal files.
0	OBACUNONE-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	OBACUNONE-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	OCTADECADIENOIC-ACID	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	OCTAN-1-AL	Fruit				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	OCTANAL	Fruit	12.0	14.0	-0.6131393394849658	--
0	OCTANAL	Fruit Juice	0.0	0.28	-1.0	--
0	OCTANOL	Fruit	0.0	0.1	-0.7071067811865478	--
0	OCTOPAMINE	Fruit	0.0	1.0	-1.0	--
0	OCTYL-ACETATE	Fruit		10.0	-0.7063104401414774	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
18	OLEIC-ACID	Fruit	20.0	1510.0	-0.4691070855395464	USDA's Ag Handbook 8 and sequelae)
15	OSTHOL	Root				Jim Duke's personal files.
4	OSTHOLE	Root				--
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.
25	P-COUMARIC-ACID	Pericarp	5.0	75.0	1.0	--
25	P-COUMARIC-ACID	Fruit	5.0	17.0	-0.6943231755501756	--
25	P-COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
16	P-CYMENE	Fruit	3590.0	4070.0	-0.04098189676522262	--
0	P-HYDROQUINONE	Root Bark		80.0		Jim Duke's personal files.
13	PALMITIC-ACID	Fruit	130.0	982.0	-0.35024794688904615	USDA's Ag Handbook 8 and sequelae)
2	PALMITOLEIC-ACID	Fruit	30.0	226.0	-0.30412481168854	USDA's Ag Handbook 8 and sequelae)
11	PANTOTHENIC-ACID	Fruit	2.0	19.0	0.05712424299404392	USDA's Ag Handbook 8 and sequelae)
24	PECTIN	Pericarp				Jim Duke's personal files.
24	PECTIN	Fruit	1300.0	5900.0	-0.5601993872457034	--
0	PECTINESTERASE	Fruit				Jim Duke's personal files.
11	PERILLALDEHYDE	Fruit		2.0	-0.7326583054413682	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
7	PHENYLALANINE	Fruit	310.0	2340.0	-0.34187787905261324	USDA's Ag Handbook 8 and sequelae)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PHLORIN	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
4	PHOSPHORUS	Fruit	136.0	1980.0	-0.3754207541761312	--
5	PHYLLOQUINONE	Fruit		0.001	-0.23285139490462353	--
0	PHYTOENE	Fruit	0.0	2.0		--
0	PHYTOFLUENE	Fruit	0.0	4.0	-1.0	--
0	PHYTOFLUENE-A	Pericarp				Jim Duke's personal files.
0	PHYTOFLUENE-B	Pericarp				Jim Duke's personal files.
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.)
0	POLYGALACTURONIC-ACID	Fruit				--
0	PONCITRIN	Root				Jim Duke's personal files.
14	POTASSIUM	Fruit	1400.0	13772.0	-0.3666795712783593	--
0	PROLINE	Fruit	60.0	3473.0	-0.14668369100889192	--
6	PROPIONIC-ACID	Plant				--
0	PROTEIN	Fruit	9260.0	78000.0	-0.4222516255728621	--
8	QUERCETAGETIN	Fruit Juice				Jim Duke's personal files.
176	QUERCETIN	Fruit		3.4	-0.7856446697799095	Jim Duke's personal files.
1	QUINIC-ACID	Fruit				--
15	RIBOFLAVIN	Fruit	0.0	3.0	-0.4303249009534089	--
0	RUBIDIUM	Fruit	0.1	7.7	-0.8530025130786637	ACTA AGRIC SCAND SUPPL 22: 1980
87	RUTIN	Pericarp		6100.0		Jim Duke's personal files.
87	RUTIN	Leaf		9000.0	-0.44580487824979076	Jim Duke's personal files.
5	SABINENE	Fruit	11.0	13.0	-0.5315196015036519	--
5	SABINENE	Fruit Juice	0.0	0.15		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	SALICYLATES	Fruit	0.0	200.0	0.236750790358027	--
22	SCOPARONE	Bark		162.5		Jim Duke's personal files.
7	SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
7	SCUTELLAREIN	Fruit				--
60	SELENIUM	Fruit	0.0	0.002	-0.38569128420884563	--
1	SERINE	Fruit	40.0	2410.0	-0.43531280247846904	--
3	SESELIN	Root				Jim Duke's personal files.
0	SESLIN	Root				Jim Duke's personal files.
4	SILICON	Fruit		2.0	-0.6019449725946585	ACTA AGRIC SCAND SUPPL 22: 1980
3	SILVER	Fruit	0.027	0.055	-0.5875909007853288	--
9	SINAPIC-ACID	Fruit Juice				Jim Duke's personal files.
9	SINAPIC-ACID	Fruit	7.0	19.0	0.784062560233975	--
9	SINAPIC-ACID	Pericarp	45.0	100.0	1.0	--
2	SINENSETIN	Pericarp				Jim Duke's personal files.
2	SINENSETIN	Fruit Juice				Jim Duke's personal files.
2	SINENSETIN	Fruit				--
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.
0	SINENSIAXANTHIN	Fruit				--
0	SINESETIN	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
1	SODIUM	Fruit	0.0	29.0	-0.1812007490262155	--
6	STACHYDRINE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.)
0	STRONTIUM	Fruit	0.054	110.0	0.7328812786702326	--
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.
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.
0	SUBERENOL	Root Bark		700.0		Jim Duke's personal files.
0	SUBEROSIN	Root				Jim Duke's personal files.
7	SUCCINIC-ACID	Fruit				--
14	SUCROSE	Fruit		47000.0	-0.41357367622327157	--
0	SUGARS	Fruit	39600.0	119800.0	-0.38969414389870244	--
14	SULFUR	Fruit	46.0	1000.0	-0.28853428975640755	--
5	SYNEPHRINE	Pericarp				Jim Duke's personal files.
5	SYNEPHRINE	Fruit	15.0	43.0		--
15	TANGERETIN	Pericarp				Jim Duke's personal files.
15	TANGERETIN	Fruit Juice				Jim Duke's personal files.
15	TANGERETIN	Fruit				--
0	TAU-CAROTENE	Pericarp				--
23	TERPINEN-4-OL	Fruit		0.1	-0.358333842321623	--
9	TERPINOLENE	Fruit	1.0	2.0	-0.7498060467737104	--
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TETRADECANAL	Fruit	5.0	9.0	1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	THIAMIN	Fruit	1.0	7.0	0.21342198396383905	--
4	THREONINE	Fruit	150.0	1132.0	-0.7838698402029908	USDA's Ag Handbook 8 and sequelae)
71	THYMOL	Fruit	0.0	0.1	-0.7071067811865474	--
0	TITANIUM	Fruit	0.135	3.85	-0.6666260908934968	--
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.
1	TRANS-2-HEXENOL	Fruit Juice	0.0	0.1		--
0	TRANS-SABINENE-HYDRATE	Fruit	0.0	0.1	-0.5231287251565837	--
29	TRYPTOPHAN	Fruit	90.0	680.0	-0.23921305471754814	USDA's Ag Handbook 8 and sequelae)
11	TYRAMINE	Fruit	0.0	1.0	0.7071067811865478	--
8	TYROSINE	Fruit	160.0	1208.0	-0.501692988706999	USDA's Ag Handbook 8 and sequelae)
2	UNDECANAL	Fruit	0.7	1.0	-0.5758305509285185	--
0	URONIC-ACID	Fruit				--
0	VALENCENE	Fruit	3.0	4.0	-1.0	--
0	VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	VALENCENE	Fruit Juice	0.04	15.3	0.9999999999999999	--
0	VALENCIACHROME	Fruit		0.0		--
0	VALENCIACHROME	Plant				--
0	VALENCIAXANTHIN	Fruit		3.0		--
0	VALENCIC-ACID	Root				Jim Duke's personal files.
3	VALINE	Fruit	100.0	3020.0	-0.29566746601618277	--
2	VIOLAXANTHIN	Pericarp				Jim Duke's personal files.
2	VIOLAXANTHIN	Tissue Culture				Jim Duke's personal files.
2	VIOLAXANTHIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	VIT-B-6	Fruit	1.0	5.0	-0.538913394725687	USDA's Ag Handbook 8 and sequelae)
0	VITEXIN-XYLOSIDE	Fruit				Jim Duke's personal files.
0	WATER	Fruit	839000.0	898000.0	0.5540526248175224	--
1	XANTHOXYLETIN	Root				Jim Duke's personal files.
1	XANTHOXYLETIN	Root Bark		24000.0		Jim Duke's personal files.
1	XANTHYLETIN	Root Bark		45000.0		Jim Duke's personal files.
1	XANTHYLETIN	Root				Jim Duke's personal files.
0	XYLAN	Fruit				--
3	XYLOSE	Fruit				--
0	XYLOSYL-VITEXIN	Leaf				Jim Duke's personal files.
5	ZEAXANTHIN	Fruit		2.0	-1.0	--
5	ZEAXANTHIN	Pericarp				Jim Duke's personal files.
5	ZEAXANTHIN	Tissue Culture				Jim Duke's personal files.
0	ZETA-CAROTENE	Fruit	0.0	2.0	-1.0	--
0	ZETA-CAROTENE-A	Pericarp				Jim Duke's personal files.
0	ZETA-CAROTENE-B	Pericarp				Jim Duke's personal files.
77	ZINC	Fruit	0.9	13.0	-0.5205322406758267	--
0	ZIRCONIUM	Fruit	0.5	1.1	-0.5018207810885003	--