

## 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	ZIRCONIUM	Fruit	0.5	1.1	-0.5018207810885003	--
77	ZINC	Fruit	0.9	13.0	-0.5205322406758267	--
0	ZETA-CAROTENE-B	Pericarp				Jim Duke's personal files.
0	ZETA-CAROTENE-A	Pericarp				Jim Duke's personal files.
0	ZETA-CAROTENE	Fruit	0.0	2.0	-1.0	--
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	XYLOSYL-VITEXIN	Leaf				Jim Duke's personal files.
3	XYLOSE	Fruit				--
0	XYLAN	Fruit				--
1	XANTHYLETIN	Root Bark		45000.0		Jim Duke's personal files.
1	XANTHYLETIN	Root				Jim Duke's personal files.
1	XANTHOXYLETIN	Root Bark		24000.0		Jim Duke's personal files.
1	XANTHOXYLETIN	Root				Jim Duke's personal files.
0	WATER	Fruit	839000.0	898000.0	0.5540526248175224	--
0	VITEXIN-XYLOSIDE	Fruit				Jim Duke's personal files.
0	VIT-B-6	Fruit	1.0	5.0	-0.538913394725687	USDA's Ag Handbook 8 and sequelae)
2	VIOLAXANTHIN	Tissue Culture				Jim Duke's personal files.
2	VIOLAXANTHIN	Fruit				--
2	VIOLAXANTHIN	Pericarp				Jim Duke's personal files.
3	VALINE	Fruit	100.0	3020.0	-0.29566746601618277	--
0	VALENCIC-ACID	Root				Jim Duke's personal files.
0	VALENCIAXANTHIN	Fruit		3.0		--
0	VALENCIACHROME	Plant				--
0	VALENCIACHROME	Fruit		0.0		--
0	VALENCENE	Fruit	3.0	4.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	VALENCENE	Fruit Juice	0.04	15.3	0.9999999999999999	--
0	URONIC-ACID	Fruit				--
2	UNDECANAL	Fruit	0.7	1.0	-0.5758305509285185	--
8	TYROSINE	Fruit	160.0	1208.0	-0.501692988706999	USDA's Ag Handbook 8 and sequelae)
11	TYRAMINE	Fruit	0.0	1.0	0.7071067811865478	--
29	TRYPTOPHAN	Fruit	90.0	680.0	-0.23921305471754814	USDA's Ag Handbook 8 and sequelae)
0	TRANS-SABINENE-HYDRATE	Fruit	0.0	0.1	-0.5231287251565837	--
1	TRANS-2-HEXENOL	Fruit Juice	0.0	0.1		--
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.
0	TITANIUM	Fruit	0.135	3.85	-0.6666260908934968	--
71	THYMOL	Fruit	0.0	0.1	-0.7071067811865474	--
4	THREONINE	Fruit	150.0	1132.0	-0.7838698402029908	USDA's Ag Handbook 8 and sequelae)
31	THIAMIN	Fruit	1.0	7.0	0.21342198396383905	--
0	TETRADECANAL	Fruit	5.0	9.0	1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit				--
9	TERPINOLENE	Fruit	1.0	2.0	-0.7498060467737104	--
23	TERPINEN-4-OL	Fruit		0.1	-0.358333842321623	--
0	TAU-CAROTENE	Pericarp				--
15	TANGERETIN	Pericarp				Jim Duke's personal files.
15	TANGERETIN	Fruit Juice				Jim Duke's personal files.
15	TANGERETIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	SYNEPHRINE	Pericarp				Jim Duke's personal files.
5	SYNEPHRINE	Fruit	15.0	43.0		--
14	SULFUR	Fruit	46.0	1000.0	-0.28853428975640755	--
0	SUGARS	Fruit	39600.0	119800.0	-0.38969414389870244	--
14	SUCROSE	Fruit		47000.0	-0.41357367622327157	--
7	SUCCINIC-ACID	Fruit				--
0	SUBEROSIN	Root				Jim Duke's personal files.
0	SUBERENOL	Root Bark		700.0		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.
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	STRONTIUM	Fruit	0.054	110.0	0.7328812786702326	--
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.)
6	STACHYDRINE	Fruit				--
1	SODIUM	Fruit	0.0	29.0	-0.1812007490262155	--
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.
0	SINENSIAXANTHIN	Fruit				--
2	SINENSETIN	Fruit				--

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.
2	SINENSETIN	Pericarp				Jim Duke's personal files.
2	SINENSETIN	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	--
9	SINAPIC-ACID	Fruit Juice				Jim Duke's personal files.
3	SILVER	Fruit	0.027	0.055	-0.5875909007853288	--
4	SILICON	Fruit		2.0	-0.6019449725946585	ACTA AGRIC SCAND SUPPL 22: 1980
0	SESLIN	Root				Jim Duke's personal files.
3	SESELIN	Root				Jim Duke's personal files.
1	SERINE	Fruit	40.0	2410.0	-0.43531280247846904	--
60	SELENIUM	Fruit	0.0	0.002	-0.38569128420884563	--
7	SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
7	SCUTELLAREIN	Fruit				--
22	SCOPARONE	Bark		162.5		Jim Duke's personal files.
7	SALICYLATES	Fruit	0.0	200.0	0.236750790358027	--
5	SABINENE	Fruit	11.0	13.0	-0.5315196015036519	--
5	SABINENE	Fruit Juice	0.0	0.15		--
87	RUTIN	Pericarp		6100.0		Jim Duke's personal files.
87	RUTIN	Leaf		9000.0	-0.44580487824979076	Jim Duke's personal files.
0	RUBIDIUM	Fruit	0.1	7.7	-0.8530025130786637	ACTA AGRIC SCAND SUPPL 22: 1980
15	RIBOFLAVIN	Fruit	0.0	3.0	-0.4303249009534089	--
1	QUINIC-ACID	Fruit				--
176	QUERCETIN	Fruit		3.4	-0.7856446697799095	Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	QUERCETAGETIN	Fruit Juice				Jim Duke's personal files.
0	PROTEIN	Fruit	9260.0	78000.0	-0.4222516255728621	--
6	PROPIONIC-ACID	Plant				--
0	PROLINE	Fruit	60.0	3473.0	-0.14668369100889192	--
14	POTASSIUM	Fruit	1400.0	13772.0	-0.3666795712783593	--
0	PONCITRIN	Root				Jim Duke's personal files.
0	POLYGALACTURONIC-ACID	Fruit				--
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	PHYTOFLUENE-B	Pericarp				Jim Duke's personal files.
0	PHYTOFLUENE-A	Pericarp				Jim Duke's personal files.
0	PHYTOFLUENE	Fruit	0.0	4.0	-1.0	--
0	PHYTOENE	Fruit	0.0	2.0		--
5	PHYLLOQUINONE	Fruit		0.001	-0.23285139490462353	--
4	PHOSPHORUS	Fruit	136.0	1980.0	-0.3754207541761312	--
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.
7	PHENYLALANINE	Fruit	310.0	2340.0	-0.34187787905261324	USDA's Ag Handbook 8 and sequelae)
11	PERILLALDEHYDE	Fruit		2.0	-0.7326583054413682	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	PECTINESTERASE	Fruit				Jim Duke's personal files.
24	PECTIN	Pericarp				Jim Duke's personal files.
24	PECTIN	Fruit	1300.0	5900.0	-0.5601993872457034	--
11	PANTOTHENIC-ACID	Fruit	2.0	19.0	0.05712424299404392	USDA's Ag Handbook 8 and sequelae)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PALMITOLEIC-ACID	Fruit	30.0	226.0	-0.30412481168854	USDA's Ag Handbook 8 and sequelae)
13	PALMITIC-ACID	Fruit	130.0	982.0	-0.35024794688904615	USDA's Ag Handbook 8 and sequelae)
0	P-HYDROQUINONE	Root Bark		80.0		Jim Duke's personal files.
16	P-CYMENE	Fruit	3590.0	4070.0	-0.04098189676522262	--
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.
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.
4	OSTHOLE	Root				--
15	OSTHOL	Root				Jim Duke's personal files.
18	OLEIC-ACID	Fruit	20.0	1510.0	-0.4691070855395464	USDA's Ag Handbook 8 and sequelae)
0	OCTYL-ACETATE	Fruit		10.0	-0.7063104401414774	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	OCTOPAMINE	Fruit	0.0	1.0	-1.0	--
0	OCTANOL	Fruit	0.0	0.1	-0.7071067811865478	--
0	OCTANAL	Fruit	12.0	14.0	-0.6131393394849658	--
0	OCTANAL	Fruit Juice	0.0	0.28	-1.0	--
0	OCTAN-1-AL	Fruit				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	OBACUNONE-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	OBACUNONE-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
3	OBACUNONE	Seed				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	NORDENTATIN	Root Bark		300.0		Jim Duke's personal files.
3	NOOTKATONE	Fruit		1.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
3	NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
2	NOOTKATOL	Fruit				Jim Duke's personal files.
0	NONANOL	Fruit		10.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	NONANAL	Fruit	3.0	4.0	-0.8226919978166914	--
0	NOMILINIC-ACID-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	NOMILINIC-ACID-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	NOMILIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
2	NOMILIN	Seed				Jim Duke's personal files.
2	NOMILIN	Fruit Juice				Jim Duke's personal files.
8	NOBILETIN	Fruit				--
8	NOBILETIN	Pericarp				Jim Duke's personal files.
8	NOBILETIN	Fruit Juice				Jim Duke's personal files.
0	NOBELITIN	Fruit				--
0	NITROGEN	Fruit	500.0	13845.0	-0.054501610611493154	--
0	NICOTINIC-ACID-ETHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
3	NICKEL	Fruit	0.01	0.55	-0.6121948588601274	--
39	NIACIN	Fruit	2.0	31.0	-0.39701223426716226	--
0	NEUROSPORIN	Pericarp				Jim Duke's personal files.
2	NERYL-FORMATE	Fruit		10.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	NERYL-ACETATE	Fruit	0.7	1.0	-0.724098948454428	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.
10	NEROL	Fruit	0.7	1.0	-0.5477997473775594	--
4	NERAL	Fruit	4.0	5.0	-0.8791176720401793	--
0	NEOXANTHIN-B	Pericarp				Jim Duke's personal files.
0	NEOXANTHIN-A	Pericarp				Jim Duke's personal files.
0	NEOPONCIRIN	Pericarp				Jim Duke's personal files.
1	NEOHESPERIDIN-DIHYDROCHALCONE	Pericarp				Jim Duke's personal files.
6	NEOHESPERIDIN	Fruit Juice				Jim Duke's personal files.
6	NEOHESPERIDIN	Pericarp		28000.0		Jim Duke's personal files.
0	NEOERIOCITRIN	Flower				Jim Duke's personal files.
0	NEOCHROME-B	Pericarp				Jim Duke's personal files.
0	NEOCHROME-A	Pericarp				Jim Duke's personal files.
0	NEO-BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	NARIRUTIN-GLUCOSIDE	Pericarp				Jim Duke's personal files.
0	NARIRUTIN-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	NARINGIN-GLUCOSIDE	Flower				Jim Duke's personal files.
0	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
12	NARINGIN	Fruit Juice				Jim Duke's personal files.
12	NARINGIN	Fruit				--
12	NARINGIN	Flower				Jim Duke's personal files.
12	NARINGIN	Pericarp				Jim Duke's personal files.



Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NARINGENIN-RUTINOSIDE-4-BETA-D-GLUCOSIDE	Fruit				--
0	NARINGENIN-RUTINOSIDE	Fruit				--
0	NARINGENIN-4-BETA-D-GLUCOSIDE	Plant				--
56	NARINGENIN	Pericarp	35000.0	45800.0		Jim Duke's personal files.
0	N-N-DIMETHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	N-N-DIMETHYL-3-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	N-METHYL-TYRAMINE	Pericarp				Jim Duke's personal files.
1	N-METHYL-TYRAMINE	Fruit	0.0	2.0	-1.0	--
0	N-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	Jim Duke's personal files.
22	MYRCENE	Fruit	130.0	140.0	-0.36272097374914564	--
0	MUTATOXANTHIN	Fruit		2.0	-1.0	--
0	MUTATOXANTHIN	Pericarp				Jim Duke's personal files.
0	MUTATOXANTHIN	Fruit Juice				Jim Duke's personal files.
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.
2	MOLYBDENUM	Fruit	0.1	0.385	-0.4080774738511709	--
0	MEVALONIC-ACID	Pericarp		6.0		Jim Duke's personal files.
0	MEVALONIC-ACID	Fruit		0.5	-0.6071834425016228	Jim Duke's personal files.
0	METHYL-N-METHYL-ANTHRANILATE	Fruit	0.0	0.1		--
2	METHYL-BUTYRATE	Fruit Juice	0.01	0.1		--
15	METHIONINE	Fruit	200.0	1510.0	0.6791094324753408	USDA's Ag Handbook 8 and sequelae)
2	METHANOL	Fruit Juice	0.8	80.0	1.0	--
1	MERCURY	Fruit	0.0	0.001	-0.7865389313824043	--
0	MERANZINE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	MANNOSE	Fruit				--
14	MANGANESE	Fruit	0.0	8.0	-0.3507865335531638	--
1	MALONIC-ACID	Plant				--
1	MALONIC-ACID	Fruit				--
15	MALIC-ACID	Fruit	600.0	2000.0	-0.8215787018847368	--
65	MAGNESIUM	Fruit	98.0	1075.0	-0.4884044378711737	--
4	LYSINE	Fruit	470.0	3548.0	-0.1467119613903352	USDA's Ag Handbook 8 and sequelae)
16	LYCOPENE	Pericarp				Jim Duke's personal files.
0	LUTEOXANTHINS	Fruit	0.0	6.0		--
0	LUTEOLIN-7-O-BETA-D-RUTINOSIDE	Leaf				Jim Duke's personal files.
0	LUTEOLIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				Jim Duke's personal files.
15	LUTEIN	Pericarp				Jim Duke's personal files.
15	LUTEIN	Fruit	0.0	3.0	-0.575590894746515	--
0	LOCHNOCARPOL-A	Root				Jim Duke's personal files.
11	LITHIUM	Fruit	0.108	1.54	0.890343380696948	--
0	LINOMIN	Leaf				Jim Duke's personal files.
27	LINOLEIC-ACID	Fruit	180.0	1359.0	-0.33622644162700344	USDA's Ag Handbook 8 and sequelae)
53	LINALOOL	Fruit	30.0	530.0	-0.43753461385311765	--
53	LINALOOL	Fruit Juice	0.15	4.69	1.0000000000000004	--
0	LINALOL	Fruit	30.0	530.0	-0.5486782133862986	--
0	LINALOL	Fruit Juice	0.15	4.69	1.0000000000000002	--
0	LIMONOATE-A-RING-LACTONE	Fruit				Jim Duke's personal files.
0	LIMONIN-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
0	LIMONIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
5	LIMONIN	Fruit Juice				Jim Duke's personal files.
5	LIMONIN	Twig				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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				--
5	LIMONIN	Seed				Jim Duke's personal files.
0	LIMONEXIC-ACID	Fruit				--
60	LIMONENE	Fruit	8300.0	9700.0	0.6409395320453212	--
60	LIMONENE	Fruit Juice	1.0	278.0		--
2	LEUCINE	Fruit	230.0	1136.0	-0.8429441489050677	USDA's Ag Handbook 8 and sequelae)
0	LEAD	Fruit	0.02	1.1	-0.42525727293888926	--
0	JASMONIC-ACID	Fruit				Jim Duke's personal files.
0	ISOSINENSETIN	Pericarp				Jim Duke's personal files.
0	ISOSAKURANETIN	Fruit				--
0	ISORHOIFOLIN	Flower				Jim Duke's personal files.
0	ISORHOIFOLIN	Pericarp				--
0	ISOPRENE	Essential Oil				Jim Duke's personal files.
0	ISOPENTENYL-PSORALENS	Fruit				--
0	ISOLUTEIN	Pericarp				Jim Duke's personal files.
3	ISOLEUCINE	Fruit	250.0	1888.0	-0.5255451749979052	USDA's Ag Handbook 8 and sequelae)
0	ISOCAPROIC-ACID	Fruit				--
6	IRON	Fruit	1.0	8.0	-0.49575433892938076	--
0	ICHANGIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
1	HYDROXYPROLINE	Leaf				Jim Duke's personal files.
8	HORDENINE	Fruit		0.0		--
7	HISTIDINE	Fruit	180.0	1359.0	-0.24792284510655177	USDA's Ag Handbook 8 and sequelae)
3	HEXANOL	Fruit Juice	0.02	0.22		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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		--
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				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.
31	HESPERIDIN	Flower				Jim Duke's personal files.
31	HESPERIDIN	Fruit				Jim Duke's personal files.
0	HEPTULOSE	Fruit				--
0	HEPTANAL	Fruit	3.0	5.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	HEPTAMETHOXY-FLAVONE	Fruit Juice				Jim Duke's personal files.
12	GLYCINE	Fruit	50.0	7097.0	1.3509995174874219	--
5	GLUTAMINE	Fruit	30.0	630.0	0.1767951575504613	--
8	GLUTAMIC-ACID	Fruit	60.0	7097.0	-0.4778760905604569	--
7	GLUCOSE	Fruit		23600.0	-0.644631124988246	--
0	GLUCOSAN	Fruit				--
0	GIBBERELLIC-ACID	Fruit				Jim Duke's personal files.
0	GERANYL-OXY-PYRANOCOUMARIN	Root				Jim Duke's personal files.
5	GERANYL-ACETATE	Fruit	0.0	0.1	-0.9446827484165164	--
35	GERANIOL	Fruit	0.7	1.0	-0.6057972802749785	--
13	GERANIAL	Fruit	6.0	7.0	-0.9983227361677096	--
11	GAMMA-TERPINENE	Fruit	1.0	2.0	-0.6509562680883627	--
11	GAMMA-TERPINENE	Fruit Juice	0.04	0.46	-1.0	--
0	GAMMA-CADINENE	Fruit	1.0	2.0	-0.9084313290424243	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
22	GAMMA-AMINOBUTYRIC-ACID	Fruit	40.0	730.0	-0.27868808492512787	--
0	GALACTURONIC-ACID	Fruit				--
1	GALACTOSE	Fruit				--
0	GALACTAN	Fruit				--
8	FRUCTOSE	Fruit		23800.0	-0.555436040816387	--
0	FR	Juice				--
15	FOLACIN	Fruit	0.0	2.0	-0.019192793995839758	USDA's Ag Handbook 8 and sequelae)
0	FLUORINE	Fruit	0.04	0.76	-0.5863462540268758	ACTA AGRIC SCAND SUPPL 22: 1980
0	FLAVOXANTHIN	Pericarp				Jim Duke's personal files.
15	FIBER	Fruit	3740.0	47000.0	-0.8934118438004772	--
0	FERULOYL-PUTRESCINE	Fruit	0.0	5.0	1.0	--
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	FAT	Fruit	1100.0	16000.0	-0.5190453767939366	--
2	FARNESENE	Fruit	0.0	0.1	-1.0	--
0	ETROGOL	Root				Jim Duke's personal files.
0	ETHYL-SUBERENOL	Root Bark		700.0		Jim Duke's personal files.
1	ETHYL-BUTYRATE	Fruit Juice	0.08	1.02		--
6	ETHYL-ACETATE	Fruit Juice	0.01	0.58		--
24	ETHANOL	Fruit Juice	64.0	900.0	1.0	--
0	ETA-CAROTENE	Pericarp				--
0	ERIOCITRIN	Flower				Jim Duke's personal files.
0	ERIOCITRIN	Pericarp				Jim Duke's personal files.
0	EPOXY-VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	EPOXY-VALENCENE	Fruit				--
0	EPOXY-NOOTKATONE	Pericarp				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	EPOXY-NOOTKATONE	Pericarp Essent. Oil				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	--
2	ELEMOL	Root Bark		28200.0		Jim Duke's personal files.
2	DODECANAL	Fruit	5.0	20.0	0.9948320067476139	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
34	DIOSMIN	Flower				Jim Duke's personal files.
34	DIOSMIN	Pericarp				--
0	DIOSMETIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				Jim Duke's personal files.
0	DIHYDROKAEMPFEROL-4'-METHYL-ETHER-7-O-RHAMNOSIDE	Fruit				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp Essent. Oil				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp				--
8	DELTA-3-CARENE	Fruit	7.0	9.0	-0.5981394247478974	--
1	DELPHINIDIN-3-GLUCOSIDE	Fruit				--
0	DECANAL	Fruit Juice	0.0	0.15	-1.0000000000000002	--
0	DECANAL	Fruit	18.0	21.0	-0.6027493593021571	--
0	DEACETYL-NOMILIN	Seed				Jim Duke's personal files.
19	D-LIMONENE	Fruit Juice				Jim Duke's personal files.
2	CYSTINE	Fruit	100.0	755.0	-0.2882040289158333	USDA's Ag Handbook 8 and sequelae)
0	CYANIDIN-3-GLUCOSIDE	Fruit				--
0	CRYPTOXANTHIN-5,5',6,8'-DIEPOXIDE	Pericarp				Jim Duke's personal files.
0	CRYPTOXANTHIN-5,5',6,6'-DIEPOXIDE	Pericarp				Jim Duke's personal files.
2	CRYPTOXANTHIN	Fruit				--
0	CRYPTOFLAVIN-B	Pericarp				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CRYPTOFLAVIN-A	Pericarp				Jim Duke's personal files.
0	CRYPTOFLAVIN	Pericarp				--
0	CRENULATIN	Root Bark		60.0		Jim Duke's personal files.
0	COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
12	COPPER	Fruit	0.44	5.5	-0.569630082366932	--
2	CONIFERIN	Pericarp				Jim Duke's personal files.
2	COBALT	Fruit	0.001	0.055	-0.5284569584957359	--
0	CITRUSINS	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	CITRUSININE-II	Root Bark		40.0		--
0	CITRUSININE-I	Root Bark		80.0		--
0	CITRUSIN-IV	Fruit		6.0		Jim Duke's personal files.
0	CITRUSIN-III	Fruit		13.0		Jim Duke's personal files.
0	CITRUSIN-II	Fruit		40.0		Jim Duke's personal files.
0	CITRUNOBIN	Root Bark				--
2	CITRONELLYL-ACETATE	Fruit	0.0	0.1	-0.9999999999999998	--
15	CITRONELLOL	Fruit	0.7	1.0	-0.5060981097957616	--
20	CITRONELLAL	Fruit	4.0	5.0	-0.9952774234291415	--
23	CITRIC-ACID	Fruit	5600.0	9800.0	-0.4912433942967182	--
0	CITRACRIDONE-I	Root Bark		400.0		--
0	CITRABASINE	Root Bark		14.0		--
0	CITFLAVANONE	Root				Jim Duke's personal files.
0	CITFLAVANONE	Root Bark				--
0	CIS-SABINENE-HYDRATE	Fruit		0.1	-0.7071067811865477	--
24	CHROMIUM	Fruit	0.005	0.385	-0.45355683651553846	--
20	CHOLINE	Fruit	70.0	160.0	-0.5734302834278399	--
1	CHOLESTEROL	Fruit				--
7	CHLORINE	Fruit	12.0	32.0	-0.6800304631000254	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CASTASTERONE	Pollen Or Spore				Jim Duke's personal files.
31	CARYOPHYLLENE	Pericarp Essent. Oil				Jim Duke's personal files.
31	CARYOPHYLLENE	Pericarp				--
19	CARVONE	Fruit	2.0	10.0	-0.49999993853473	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	CAROTENOIDS	Fruit	12.0	35.0	-0.5036534891621087	--
0	CAROTENOIDS	Pericarp	12.0	35.0		--
0	CARBOHYDRATES	Fruit	99000.0	887125.0	0.557442615155032	--
5	CAPRYLIC-ACID	Fruit				--
1	CAPROIC-ACID	Fruit				--
3	CAPRIC-ACID	Fruit				--
9	CAMPHENE	Fruit		0.1	-0.35176349319281713	--
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	CALCIUM	Fruit	210.0	5615.0	0.4058414049804431	--
62	CAFFEINE	Flower		62.0	1.0998533626601497	Jim Duke's personal files.
62	CAFFEINE	Bud		0.3		Jim Duke's personal files.
62	CAFFEINE	Leaf		6.0	-0.9423311788449318	Jim Duke's personal files.
102	CAFFEIC-ACID	Fruit Juice				Jim Duke's personal files.
102	CAFFEIC-ACID	Fruit	2.0	50.0	-0.3296566072538586	--
3	CADMIUM	Fruit	0.001	0.138	-0.23805307615553817	--
6	BUTYRIC-ACID	Fruit				--
0	BROMINE	Fruit		1.0	-0.42563543443835	ACTA AGRIC SCAND SUPPL 22: 1980
0	BRAYLIN	Root				Jim Duke's personal files.
3	BRASSINOLIDE	Pollen Or Spore				Jim Duke's personal files.
4	BORON	Fruit	1.89	27.5	-0.25022637010687165	--



Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	BETAINE	Fruit	390.0	630.0	-1.0398613033298902	--
0	BETA-ZEACAROTENE	Pericarp				Jim Duke's personal files.
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-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.
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.
13	BETA-PINENE	Fruit	11.0	13.0	-0.29742687330503664	--
2	BETA-MYRCENE	Fruit				Jim Duke's personal files.
5	BETA-ELEMENE	Pericarp Essent. Oil				Jim Duke's personal files.
5	BETA-ELEMENE	Fruit	0.7	1.0	-0.565275335737646	--
0	BETA-CUBEBENE	Fruit		10.0	-0.7068656261481132	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
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.
2	BETA-CRYPTOXANTHIN	Fruit				--
2	BETA-CRYPTOXANTHIN	Pericarp				Jim Duke's personal files.
0	BETA-CITRAURIN	Fruit Juice				Jim Duke's personal files.
0	BETA-CITRAURIN	Pericarp				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-CARYOPHYLLENE	Fruit	1.0	2.0	-0.5058677869700708	--
53	BETA-CAROTENE	Fruit	1.0	28.0	-0.0966771336129336	--
53	BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	BETA-APO-CAROTEN-8-AL	Pericarp				--
0	BETA-APO-8'-CAROTINAL	Pericarp				Jim Duke's personal files.
0	BERGAPTOL	Fruit				--
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	BARIUM	Fruit	0.54	16.5	-0.456265269747712	USDA's Ag Handbook 8 and sequelae)
0	AURAXANTHIN	Fruit	0.0	4.0		--
0	AURAPTENOL	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
8	AURAPTENE	Fruit				--
3	ASPARTIC-ACID	Fruit	70.0	8607.0	-0.2038383572771155	--
2	ASPARAGINE	Fruit	200.0	1800.0	0.3373215168393527	--
0	ASH	Fruit	4100.0	36920.0	-0.5112715299819987	--
112	ASCORBIC-ACID	Fruit	500.0	4071.0	-0.03136646807240172	--
2	ARSENIC	Fruit	0.001	0.154	-0.33956845146287234	--
14	ARGININE	Fruit	230.0	4908.0	0.15957250579145005	--
0	ARABAN	Fruit				--
0	APOVIOLAXANTH-10'-AL	Pericarp				--
0	APIGENIN-TRIMETHYL-ETHER	Pericarp				Jim Duke's personal files.
0	APIGENIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				--
0	ANTHRANILIC-ACID-METHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
1	ANTHERAXANTHIN	Tissue Culture				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	ANTHERAXANTHIN	Fruit				--
5	ALUMINUM	Fruit	1.0	165.0	-0.17551933701223474	--
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.
32	ALPHA-TOCOPHEROL	Fruit	4.0	29.0	-0.6752411923996696	--
0	ALPHA-THUJENE	Fruit	0.7	1.0	-0.5955809256752451	--
23	ALPHA-TERPINEOL	Fruit	2.0	3.0	-0.40604181620664676	--
23	ALPHA-TERPINEOL	Fruit Juice	0.09	1.1	-0.6501250791550391	--
13	ALPHA-TERPINENE	Fruit	1.0	2.0	-0.44934612100297294	--
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.
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	--
28	ALPHA-PINENE	Plant				--
28	ALPHA-PINENE	Fruit	35.0	40.0	-0.7083402631126611	--
28	ALPHA-PINENE	Fruit Juice		0.22	-0.9999999999999999	--
11	ALPHA-PHELLANDRENE	Fruit	12.0	14.0	-0.5695870460921888	--
15	ALPHA-LINOLENIC-ACID	Fruit	70.0	528.0	-0.913356590105175	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-HYDROXY-CAROTENE	Pericarp				Jim Duke's personal files.
2	ALPHA-HUMULENE	Fruit	0.0	0.1	-0.5986253681056065	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-CUBEBENE	Fruit	0.7	1.0	-0.6220320233548484	--
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				--
7	ALPHA-CAROTENE	Fruit	0.19	1.9	-0.26808750426637384	--
7	ALPHA-CAROTENE	Pericarp				Jim Duke's personal files.
0	ALPHA-BERGAMOTENE	Fruit		6.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
3	ALANINE	Fruit	30.0	3775.0	0.02652939797970876	--
16	ACETIC-ACID	Plant				--
6	ACETALDEHYDE	Fruit Juice	3.0	15.0	1.0	--
0	ABSCISIC-ACID	Tissue Culture				Jim Duke's personal files.
1	6,7-DIMETHOXYCOUMARIN	Bark		162.0		Jim Duke's personal files.
0	5-HEXYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	5-ACETYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-3,10-DIOL	Fruit Juice				--
0	5,8-EPOXY-5,8-DIHYDRO-10'-APO-BETA-CAROTEN-3,10'-DIOL	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-5,5',8'-TETRAHYDRO-BETA-BETA-CAROTENE-3,3',5',6'-TETROL	Fruit Juice				Jim Duke's personal files.
0	5,6-DIHYDRO-BETA-BETA-CAROTENE-3,3',5,6-TETROL	Fruit Juice				Jim Duke's personal files.
0	5,6-DIHYDRO-BETA-BETA-CAROTEN-3,3',5,6-TETROL	Fruit Juice				--
4	4-VINYL-GUAIACOL	Fruit Juice				Jim Duke's personal files.
0	4-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	4-(3-METHYL-2-BUTENOXY)-ISO-NITROSO-ACETOPHENONE	Pericarp		48.0		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	4,7-DIMETHYL-BICYCLO(3.2.1)-OCT-CIS-3-EN-6-ONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PROPYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-PENTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-OCTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-METHYL-PYRIDINE	Pericarp Essent. 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-BUT-1-ENE	Essential Oil				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-HYDROXY-5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-8'-AL	Fruit Juice				Jim Duke's personal files.
0	3-HEPTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-BUTYL-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-(4-METHYL-PHENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-(4-METHYL-HEXYL)-PYRIDINE	Pericarp Essent. Oil				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	2-TRANS-O-FERULOYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.

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