

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	GALACTAN	Fruit				--
0	NEOPONCIRIN	Pericarp				Jim Duke's personal files.
2	CRYPTOXANTHIN	Fruit				--
0	CITRUSIN-IV	Fruit		6.0		Jim Duke's personal files.
0	LUTEOLIN-7-O-BETA-D-RUTINOSIDE	Leaf				Jim Duke's personal files.
0	3-OCTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
12	NARINGIN	Pericarp				Jim Duke's personal files.
0	ERIOCITRIN	Pericarp				Jim Duke's personal files.
9	SINAPIC-ACID	Fruit Juice				Jim Duke's personal files.
0	PHYTOFLUENE-B	Pericarp				Jim Duke's personal files.
31	CARYOPHYLLENE	Pericarp Essent. Oil				Jim Duke's personal files.
5	LIMONIN	Seed				Jim Duke's personal files.
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.
3	CAPRIC-ACID	Fruit				--
0	ETROGOL	Root				Jim Duke's personal files.
0	NARINGENIN-4-BETA-D-GLUCOSIDE	Plant				--
0	2-METHYL-1-PROPANOL	Fruit Juice	0.0	0.07		--
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	ZETA-CAROTENE-A	Pericarp				Jim Duke's personal files.
0	DIOSMETIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				Jim Duke's personal files.
22	SCOPARONE	Bark		162.5		Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	N-N-DIMETHYL-3-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
8	HORDENINE	Fruit		0.0		--
2	NOMILIN	Fruit Juice				Jim Duke's personal files.
31	HESPERIDIN	Fruit				Jim Duke's personal files.
2	VIOLAXANTHIN	Tissue Culture				Jim Duke's personal files.
0	BETA-APO-CAROTEN-8-AL	Pericarp				--
1	NEOHESPERIDIN-DIHYDROCHALCONE	Pericarp				Jim Duke's personal files.
1	6,7-DIMETHOXYCOUMARIN	Bark		162.0		Jim Duke's personal files.
0	CRYPTOFLAVIN	Pericarp				--
0	CITRUSIN-III	Fruit		13.0		Jim Duke's personal files.
0	LUTEOLIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				Jim Duke's personal files.
0	3-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	MALONIC-ACID	Fruit				--
12	NARINGIN	Fruit Juice				Jim Duke's personal files.
0	ERIOCITRIN	Flower				Jim Duke's personal files.
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
5	LIMONIN	Fruit Juice				Jim Duke's personal files.
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.
3	HEXANOL	Fruit Juice	0.02	0.22		--
0	ETHYL-SUBERENOL	Root Bark		700.0		Jim Duke's personal files.
56	NARINGENIN	Pericarp	35000.0	45800.0		Jim Duke's personal files.
0	2,4-TRANS,TRANS-O-FERULOYL-GLUCARIC-ACID	Pericarp				--
0	SINENSIAXANTHIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CITRACRIDONE-I	Root Bark		400.0		--
0	3-HYDROXY-5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-8'-AL	Fruit Juice				Jim Duke's personal files.
0	PHYTOFLUENE-A	Pericarp				Jim Duke's personal files.
0	GLUCOSAN	Fruit				--
28	ALPHA-PINENE	Plant				--
0	DIHYDROKAEMPFEROL-4'-METHYL-ETHER-7-O-RHAMNOSIDE	Fruit				Jim Duke's personal files.
0	N-METHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
8	NOBILETIN	Pericarp				Jim Duke's personal files.
0	VALENCIC-ACID	Root				Jim Duke's personal files.
31	HESPERIDIN	Fruit Juice		110.0		Jim Duke's personal files.
0	EPOXY-VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	FR	Juice				--
6	NEOHESPERIDIN	Pericarp		28000.0		Jim Duke's personal files.
0	5,8-EPOXY-5,8-DIHYDRO-8'-APO-BETA-CAROTEN-3,10-DIOL	Fruit Juice				--
7	SUCCINIC-ACID	Fruit				--
0	CRENULATIN	Root Bark		60.0		Jim Duke's personal files.
0	CITRUSIN-II	Fruit		40.0		Jim Duke's personal files.
0	3-HEPTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	PONCITRIN	Root				Jim Duke's personal files.
5	BETA-ELEMENE	Pericarp Essent. Oil				Jim Duke's personal files.
7	SCUTELLAREIN	Fruit Juice				Jim Duke's personal files.
0	BETA-APO-8'-CAROTINAL	Pericarp				Jim Duke's personal files.
0	XYLOSYL-VITEXIN	Leaf				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
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.
5	HEXANAL	Fruit	1.0	2.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ARABAN	Fruit				--
1	ETHYL-BUTYRATE	Fruit Juice	0.08	1.02		--
0	2'-TRANS-O-P-COUMAROYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
2	SINENSETIN	Fruit				--
0	CITRABASINE	Root Bark		14.0		--
0	5,8-EPOXY-5,8-DIHYDRO-10'-APO-BETA-CAROTEN-3,10'-DIOL	Fruit Juice				Jim Duke's personal files.
0	ISOSAKURANETIN	Fruit				--
24	PECTIN	Pericarp				Jim Duke's personal files.
0	BETA-ZEACAROTENE	Pericarp				Jim Duke's personal files.
0	GERANYL-OXY-PYRANOCOUMARIN	Root				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp				--
0	CRYPTOXANTHIN-5,5',6,8'-DIEPOXIDE	Pericarp				Jim Duke's personal files.
0	MERANZINE	Fruit				--
5	SABINENE	Fruit Juice	0.0	0.15		--
0	APIGENIN-TRIMETHYL-ETHER	Pericarp				Jim Duke's personal files.
8	NOBILETIN	Fruit Juice				Jim Duke's personal files.
0	VALENCIAXANTHIN	Fruit		3.0		--
4	4-VINYL-GUAIACOL	Fruit Juice				Jim Duke's personal files.
0	VALENCENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	NEOCHROME-B	Pericarp				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	5,8-EPOXY-5,5',8-TETRAHYDRO-BETA,BETA-CAROTEN-3,3',5',6'-TETROL	Plant				--
0	SUBEROSIN	Root				Jim Duke's personal files.
0	BETA-CITRAURIN	Fruit Juice				Jim Duke's personal files.
0	LOCHNOCARPOL-A	Root				Jim Duke's personal files.
0	3-BUTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	POLYGALACTURONIC-ACID	Fruit				--
2	BETA-MYRCENE	Fruit				Jim Duke's personal files.
34	DIOSMIN	Flower				Jim Duke's personal files.
0	ISORHOIFOLIN	Flower				Jim Duke's personal files.
0	BERGAPTOL	Fruit				--
3	XYLOSE	Fruit				--
5	LIMONIN	Branches				Jim Duke's personal files.
5	HEXANAL	Fruit Juice	0.02	0.65		--
0	APOVIOLAXANTH-10'-AL	Pericarp				--
6	ETHYL-ACETATE	Fruit Juice	0.01	0.58		--
0	2'-TRANS-O-P-COUMAROYL-GALACTARIC-ACID	Pericarp				Jim Duke's personal files.
0	CITFLAVANONE	Root Bark				--
102	CAFFEIC-ACID	Fruit Juice				Jim Duke's personal files.
0	ISORHOIFOLIN	Pericarp				--
15	OSTHOL	Root				Jim Duke's personal files.
0	NEUROSPORIN	Pericarp				Jim Duke's personal files.
0	TETRA-O-METHYL-SCUTELLAREIN	Fruit				--
1	DELPHINIDIN-3-GLUCOSIDE	Fruit				--
2	BETA-CRYPTOXANTHIN	Fruit				--
3	MANNOSE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
87	RUTIN	Pericarp		6100.0		Jim Duke's personal files.
0	ANTHRANILIC-ACID-METHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
0	NICOTINIC-ACID-ETHYL-ESTER	Pericarp Essent. Oil				Jim Duke's personal files.
0	OCTAN-1-AL	Fruit				Jim Duke's personal files.
0	VALENCIACHROME	Plant				--
0	2,4-TRANS-TRANS-O-DIFERULOYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
1	N-METHYL-TYRAMINE	Pericarp				Jim Duke's personal files.
0	NEOCHROME-A	Pericarp				Jim Duke's personal files.
0	5,6-DIHYDRO-BETA-BETA-CAROTEN-3,3',5,6-TETROL	Fruit Juice				--
0	SUBERENOL	Root Bark		700.0		Jim Duke's personal files.
2	CONIFERIN	Pericarp				Jim Duke's personal files.
0	CITFLAVANONE	Root				Jim Duke's personal files.
0	3-(BUT-TRANS-1-ENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
60	LIMONENE	Fruit Juice	1.0	278.0		--
0	MUTATOXANTHIN	Pericarp				Jim Duke's personal files.
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	LIMONIN	Bark				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.
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	APIGENIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Leaf				--
0	2'-TRANS-O-FERULOYL-GALACTARIC-ACID	Pericarp				Jim Duke's personal files.
9	DELTA-CADINENE	Pericarp Essent. Oil				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOPRENE	Essential Oil				Jim Duke's personal files.
0	OBACUNONE-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
0	P-HYDROQUINONE	Root Bark		80.0		Jim Duke's personal files.
0	XYLAN	Fruit				--
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	ALPHA-HYDROXY-CAROTENE	Pericarp				Jim Duke's personal files.
2	BETA-CRYPTOXANTHIN	Pericarp				Jim Duke's personal files.
1	ANTHERAXANTHIN	Tissue Culture				Jim Duke's personal files.
0	NARIRUTIN-GLUCOSIDE	Pericarp				Jim Duke's personal files.
3	OBACUNONE	Seed				Jim Duke's personal files.
0	METHYL-N-METHYL-ANTHRANILATE	Fruit	0.0	0.1		--
0	GIBBERELIC-ACID	Fruit				Jim Duke's personal files.
15	TANGERETIN	Pericarp				Jim Duke's personal files.
0	NEO-BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	4-(3-METHYL-2-BUTENOXY)-ISO-NITROSO-ACETOPHENONE	Pericarp		48.0		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.
0	CASTASTERONE	Pollen Or Spore				Jim Duke's personal files.
0	3-(4-METHYL-PHENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	PHYTOENE	Fruit	0.0	2.0		--
0	JASMONIC-ACID	Fruit				Jim Duke's personal files.
0	MUTATOXANTHIN	Fruit Juice				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	AURAXANTHIN	Fruit	0.0	4.0		--
0	FLAVOXANTHIN	Pericarp				Jim Duke's personal files.
5	LIMONIN	Root				Jim Duke's personal files.
0	AURAPTENOL	Pericarp				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
62	CAFFEINE	Bud		0.3		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	ANTHERAXANTHIN	Fruit				--
0	ETA-CAROTENE	Pericarp				--
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	3-METHYL-BUTAN-1-OL	Fruit Juice				Jim Duke's personal files.
0	ISOPENTENYL-PSORALENS	Fruit				--
0	OBACUNONE-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
1	XANTHYLETIN	Root Bark		45000.0		Jim Duke's personal files.
0	BETA-SINESAL	Fruit		6.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	ALPHA-COPAENE	Pericarp				--
0	CRYPTOFLAVIN-B	Pericarp				Jim Duke's personal files.
1	MALONIC-ACID	Plant				--
0	ABSCISIC-ACID	Tissue Culture				Jim Duke's personal files.
0	NARIRUTIN-GLUCOSIDE	Flower				Jim Duke's personal files.
1	NORDENTATIN	Root Bark		300.0		Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEPTAMETHOXY-FLAVONE	Fruit Juice				Jim Duke's personal files.
15	TANGERETIN	Fruit Juice				Jim Duke's personal files.
0	3-METHYL-BUTAN-1-OL	Fruit				--
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	CITRUSINS	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	5,6-DIHYDRO-BETA-BETA-CAROTENE-3,3',5,6-TETROL	Fruit Juice				Jim Duke's personal files.
0	3-(4-METHYL-HEXYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
2	ELEMOL	Root Bark		28200.0		Jim Duke's personal files.
16	LYCOPENE	Pericarp				Jim Duke's personal files.
0	5-HEXYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
8	AURAPTENE	Fruit				--
1	NARIRUTIN	Pericarp				Jim Duke's personal files.
5	ZEAXANTHIN	Pericarp				Jim Duke's personal files.
0	HEPTULOSE	Fruit				--
2	NOOTKATOL	Fruit				Jim Duke's personal files.
0	EPOXY-VALENCENE	Fruit				--
0	SESLIN	Root				Jim Duke's personal files.
1	CHOLESTEROL	Fruit				--
3	BRASSINOLIDE	Pollen Or Spore				Jim Duke's personal files.
0	ISOLUTEIN	Pericarp				Jim Duke's personal files.
0	EPOXY-NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
1	XANTHOXYLETIN	Root Bark		24000.0		Jim Duke's personal files.
19	D-LIMONENE	Fruit Juice				Jim Duke's personal files.

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.
0	TAU-CAROTENE	Pericarp				--
0	DEACETYL-NOMILIN	Seed				Jim Duke's personal files.
0	CRYPTOFLAVIN-A	Pericarp				Jim Duke's personal files.
0	4-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	3-HYDROXY-ETHYL-HEXANOATE	Fruit Juice				Jim Duke's personal files.
1	NARIRUTIN	Fruit Juice				Jim Duke's personal files.
0	URONIC-ACID	Fruit				--
0	3,3',4,5,6,7,8-HEPTAMETHOXY-FLAVONE	Fruit Juice				Jim Duke's personal files.
5	SYNEPHRINE	Pericarp				Jim Duke's personal files.
0	CITRUSININE-II	Root Bark		40.0		--
0	5,8-EPOXY-5,5',8'-TETRAHYDRO-BETA-BETA-CAROTENE-3,3',5',6'-TETROL	Fruit Juice				Jim Duke's personal files.
0	2-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
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.
31	CARYOPHYLLENE	Pericarp				--
15	LUTEIN	Pericarp				Jim Duke's personal files.
0	5-ACETYL-2-METHYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit				--
0	3-METHYL-BUT-1-ENE	Essential Oil				Jim Duke's personal files.
5	ZEAXANTHIN	Tissue Culture				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEPTANAL	Fruit	3.0	5.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	NONANOL	Fruit		10.0		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	EPOXY-NOOTKATONE	Pericarp				--
0	MEVALONIC-ACID	Pericarp		6.0		Jim Duke's personal files.
3	SESELIN	Root				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.
3	NOOTKATONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	ICHANGIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
15	TANGERETIN	Fruit				--
25	P-COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
0	3-PROPYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	QUINIC-ACID	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	NARINGIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
61	FERULIC-ACID	Fruit Juice				Jim Duke's personal files.
0	ISOSINENSETIN	Pericarp				Jim Duke's personal files.
0	CITRUSININE-I	Root Bark		80.0		--
53	BETA-CAROTENE	Pericarp				Jim Duke's personal files.
0	LIMONOATE-A-RING-LACTONE	Fruit				Jim Duke's personal files.
0	2-PENTYLPYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	LINOMIN	Leaf				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
12	NARINGIN	Fruit				--
0	3-HYDROXY-ETHYL-HEXANOATE	Fruit				Jim Duke's personal files.
6	BUTYRIC-ACID	Fruit				--
0	4,7-DIMETHYL-BICYCLO(3.2.1)-OCT-CIS-3-EN-6-ONE	Pericarp Essent. Oil				Jim Duke's personal files.
0	ISOCAPROIC-ACID	Fruit				--
0	NOMILINIC-ACID-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
4	OSTHOLE	Root				--
0	VITEXIN-XYLOSIDE	Fruit				Jim Duke's personal files.
0	HESPERIDIN-7-O-ALPHA-L-RHAMNO-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
1	XANTHYLETIN	Root				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.
0	GALACTURONIC-ACID	Fruit				--
0	NEOXANTHIN-B	Pericarp				Jim Duke's personal files.
5	SYNEPHRINE	Fruit	15.0	43.0		--
0	CYANIDIN-3-GLUCOSIDE	Fruit				--
0	COUMARIC-ACID	Fruit Juice				Jim Duke's personal files.
0	3-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	CAROTENOIDS	Pericarp	12.0	35.0		--
0	NARINGIN-GLUCOSIDE	Flower				Jim Duke's personal files.
2	SINENSETIN	Pericarp				Jim Duke's personal files.
0	ZETA-CAROTENE-B	Pericarp				Jim Duke's personal files.
5	LIMONIN	Fruit				--
0	2-METHYL-5-PHENYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LIMONIN-17-O-BETA-D-GLUCOSIDE	Seed				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.
5	CAPRYLIC-ACID	Fruit				--
0	NARINGENIN-RUTINOSIDE-4-BETA-D-GLUCOSIDE	Fruit				--
0	3,3',4,5,6,7,8-HEPTAMETHOXY-FLAVONE	Fruit				Jim Duke's personal files.
6	STACHYDRINE	Fruit				--
0	CITRUNOBIN	Root Bark				--
2	NOMILIN	Seed				Jim Duke's personal files.
1	TRANS-2-HEXENOL	Fruit Juice	0.0	0.1		--
2	METHYL-BUTYRATE	Fruit Juice	0.01	0.1		--
0	2-(METHYL-AMINO)-BENZYL-ALCOHOL	Pericarp Essent. Oil				Jim Duke's personal files.
0	NOMILINIC-ACID-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
6	NEOHESPERIDIN	Fruit Juice				Jim Duke's personal files.
1	XANTHOXYLETIN	Root				Jim Duke's personal files.
0	BETA-CITRAURIN	Pericarp				Jim Duke's personal files.
1	GALACTOSE	Fruit				--
0	NEOXANTHIN-A	Pericarp				Jim Duke's personal files.
16	ACETIC-ACID	Plant				--
0	CRYPTOXANTHIN-5,5',6,6'-DIEPOXIDE	Pericarp				Jim Duke's personal files.
0	ALPHA-COPAENE	Pericarp Essent. Oil				Jim Duke's personal files.
0	LUTEOXANTHINS	Fruit	0.0	6.0		--
0	3-PENTYL-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
6	PROPIONIC-ACID	Plant				--
0	VALENCIACHROME	Fruit		0.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
12	NARINGIN	Flower				Jim Duke's personal files.
0	NEOERIOCITRIN	Flower				Jim Duke's personal files.
2	SINENSETIN	Fruit Juice				Jim Duke's personal files.
0	LIMONEXIC-ACID	Fruit				--
0	2-METHYL-5-(1-METHYL-ETHENYL)-PYRIDINE	Pericarp Essent. Oil				Jim Duke's personal files.
0	PECTINESTERASE	Fruit				Jim Duke's personal files.
0	LIMONIN-GLUCOSIDE	Fruit Juice				Jim Duke's personal files.
8	NOBILETIN	Fruit				--
1	CAPROIC-ACID	Fruit				--
0	NARINGENIN-RUTINOSIDE	Fruit				--
0	2-TRANS-O-FERULOYL-GLUCARIC-ACID	Pericarp				Jim Duke's personal files.
7	ALPHA-CAROTENE	Pericarp				Jim Duke's personal files.
0	BRAYLIN	Root				Jim Duke's personal files.
0	NOBELITIN	Fruit				--
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.
34	DIOSMIN	Pericarp				--
7	SCUTELLAREIN	Fruit				--
0	N-N-DIMETHYL-ANILINE	Pericarp Essent. Oil				Jim Duke's personal files.
1	HYDROXYPROLINE	Leaf				Jim Duke's personal files.
0	NOMILIN-17-O-BETA-D-GLUCOSIDE	Seed				Jim Duke's personal files.
2	VIOLAXANTHIN	Fruit				--
31	HESPERIDIN	Flower				Jim Duke's personal files.
2	VIOLAXANTHIN	Pericarp				Jim Duke's personal files.
14	BETAINE	Fruit	390.0	630.0	-1.0398613033298902	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	DECANAL	Fruit Juice	0.0	0.15	-1.0000000000000002	--
0	ZETA-CAROTENE	Fruit	0.0	2.0	-1.0	--
0	ALPHA-SINESAL	Fruit		3.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	OCTOPAMINE	Fruit	0.0	1.0	-1.0	--
5	ZEAXANTHIN	Fruit		2.0	-1.0	--
1	N-METHYL-TYRAMINE	Fruit	0.0	2.0	-1.0	--
0	OCTANAL	Fruit Juice	0.0	0.28	-1.0	--
0	PHYTOFLUENE	Fruit	0.0	4.0	-1.0	--
0	MUTATOXANTHIN	Fruit		2.0	-1.0	--
2	NERYL-FORMATE	Fruit		10.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	VALENCENE	Fruit	3.0	4.0	-1.0	--
0	ALPHA-SINENSAL	Fruit	1.0	2.0	-1.0	--
11	GAMMA-TERPINENE	Fruit Juice	0.04	0.46	-1.0	--
0	ALPHA-BERGAMOTENE	Fruit		6.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	FARNESENE	Fruit	0.0	0.1	-1.0	--
28	ALPHA-PINENE	Fruit Juice		0.22	-0.9999999999999999	--
2	CITRONELLYL-ACETATE	Fruit	0.0	0.1	-0.9999999999999998	--
13	GERANIAL	Fruit	6.0	7.0	-0.9983227361677096	--
20	CITRONELLAL	Fruit	4.0	5.0	-0.9952774234291415	--
5	GERANYL-ACETATE	Fruit	0.0	0.1	-0.9446827484165164	--
62	CAFFEINE	Leaf		6.0	-0.9423311788449318	Jim Duke's personal files.
15	ALPHA-LINOLENIC-ACID	Fruit	70.0	528.0	-0.913356590105175	USDA's Ag Handbook 8 and sequelae)

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.)
0	GAMMA-CADINENE	Fruit	1.0	2.0	-0.9084313290424243	--
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.)
15	FIBER	Fruit	3740.0	47000.0	-0.8934118438004772	--
4	NERAL	Fruit	4.0	5.0	-0.8791176720401793	--
0	RUBIDIUM	Fruit	0.1	7.7	-0.8530025130786637	ACTA AGRIC SCAND SUPPL 22: 1980
2	LEUCINE	Fruit	230.0	1136.0	-0.8429441489050677	USDA's Ag Handbook 8 and sequelae)
0	NONANAL	Fruit	3.0	4.0	-0.8226919978166914	--
15	MALIC-ACID	Fruit	600.0	2000.0	-0.8215787018847368	--
0	(E)-BETA-OCIMENE	Fruit	0.7	1.0	-0.795218715224166	--
1	MERCURY	Fruit	0.0	0.001	-0.7865389313824043	--
176	QUERCETIN	Fruit		3.4	-0.7856446697799095	Jim Duke's personal files.
4	THREONINE	Fruit	150.0	1132.0	-0.7838698402029908	USDA's Ag Handbook 8 and sequelae)
61	FERULIC-ACID	Fruit	10.0	30.0	-0.7627700713964738	--
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	Jim Duke's personal files.
9	TERPINOLENE	Fruit	1.0	2.0	-0.7498060467737104	--
11	PERILLALDEHYDE	Fruit		2.0	-0.7326583054413682	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
5	NERYL-ACETATE	Fruit	0.7	1.0	-0.724098948454428	--
28	ALPHA-PINENE	Fruit	35.0	40.0	-0.7083402631126611	--
0	OCTANOL	Fruit	0.0	0.1	-0.7071067811865478	--
0	CIS-SABINENE-HYDRATE	Fruit		0.1	-0.7071067811865477	--
71	THYMOL	Fruit	0.0	0.1	-0.7071067811865474	--

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.
0	OCTYL-ACETATE	Fruit		10.0	-0.7063104401414774	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
25	P-COUMARIC-ACID	Fruit	5.0	17.0	-0.6943231755501756	--
0	ALPHA-COPAENE	Fruit	0.7	1.0	-0.6881248888845418	--
7	CHLORINE	Fruit	12.0	32.0	-0.6800304631000254	--
32	ALPHA-TOCOPHEROL	Fruit	4.0	29.0	-0.6752411923996696	--
0	TITANIUM	Fruit	0.135	3.85	-0.6666260908934968	--
0	(Z)-BETA-OCIMENE	Fruit	2.0	3.0	-0.6648405774204937	--
11	GAMMA-TERPINENE	Fruit	1.0	2.0	-0.6509562680883627	--
23	ALPHA-TERPINEOL	Fruit Juice	0.09	1.1	-0.6501250791550391	--
7	GLUCOSE	Fruit		23600.0	-0.644631124988246	--
0	EO	Fruit	7500.0	10000.0	-0.625591783140096	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
0	ALPHA-CUBEBENE	Fruit	0.7	1.0	-0.6220320233548484	--
0	OCTANAL	Fruit	12.0	14.0	-0.6131393394849658	--
3	NICKEL	Fruit	0.01	0.55	-0.6121948588601274	--
0	MEVALONIC-ACID	Fruit		0.5	-0.6071834425016228	Jim Duke's personal files.
35	GERANIOL	Fruit	0.7	1.0	-0.6057972802749785	--
0	DECANAL	Fruit	18.0	21.0	-0.6027493593021571	--
4	SILICON	Fruit		2.0	-0.6019449725946585	ACTA AGRIC SCAND SUPPL 22: 1980
2	ALPHA-HUMULENE	Fruit	0.0	0.1	-0.5986253681056065	--
8	DELTA-3-CARENE	Fruit	7.0	9.0	-0.5981394247478974	--
0	ALPHA-THUJENE	Fruit	0.7	1.0	-0.5955809256752451	--
3	SILVER	Fruit	0.027	0.055	-0.5875909007853288	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	FLUORINE	Fruit	0.04	0.76	-0.5863462540268758	ACTA AGRIC SCAND SUPPL 22: 1980
2	UNDECANAL	Fruit	0.7	1.0	-0.5758305509285185	--
15	LUTEIN	Fruit	0.0	3.0	-0.575590894746515	--
20	CHOLINE	Fruit	70.0	160.0	-0.5734302834278399	--
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.)
12	COPPER	Fruit	0.44	5.5	-0.569630082366932	--
11	ALPHA-PHELLANDRENE	Fruit	12.0	14.0	-0.5695870460921888	--
5	BETA-ELEMENE	Fruit	0.7	1.0	-0.565275335737646	--
24	PECTIN	Fruit	1300.0	5900.0	-0.5601993872457034	--
8	FRUCTOSE	Fruit		23800.0	-0.555436040816387	--
0	LINALOL	Fruit	30.0	530.0	-0.5486782133862986	--
10	NEROL	Fruit	0.7	1.0	-0.5477997473775594	--
0	VIT-B-6	Fruit	1.0	5.0	-0.538913394725687	USDA's Ag Handbook 8 and sequelae)
5	SABINENE	Fruit	11.0	13.0	-0.5315196015036519	--
2	COBALT	Fruit	0.001	0.055	-0.5284569584957359	--
3	ISOLEUCINE	Fruit	250.0	1888.0	-0.5255451749979052	USDA's Ag Handbook 8 and sequelae)
0	TRANS-SABINENE-HYDRATE	Fruit	0.0	0.1	-0.5231287251565837	--
77	ZINC	Fruit	0.9	13.0	-0.5205322406758267	--
0	FAT	Fruit	1100.0	16000.0	-0.5190453767939366	--
0	ASH	Fruit	4100.0	36920.0	-0.5112715299819987	--
15	CITRONELLOL	Fruit	0.7	1.0	-0.5060981097957616	--
0	BETA-CARYOPHYLLENE	Fruit	1.0	2.0	-0.5058677869700708	--
0	CAROTENOIDS	Fruit	12.0	35.0	-0.5036534891621087	--
0	ZIRCONIUM	Fruit	0.5	1.1	-0.5018207810885003	--
8	TYROSINE	Fruit	160.0	1208.0	-0.501692988706999	USDA's Ag Handbook 8 and sequelae)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
19	CARVONE	Fruit	2.0	10.0	-0.49999993853473	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
6	IRON	Fruit	1.0	8.0	-0.49575433892938076	--
23	CITRIC-ACID	Fruit	5600.0	9800.0	-0.4912433942967182	--
65	MAGNESIUM	Fruit	98.0	1075.0	-0.4884044378711737	--
8	GLUTAMIC-ACID	Fruit	60.0	7097.0	-0.4778760905604569	--
18	OLEIC-ACID	Fruit	20.0	1510.0	-0.4691070855395464	USDA's Ag Handbook 8 and sequelae)
0	BARIUM	Fruit	0.54	16.5	-0.456265269747712	USDA's Ag Handbook 8 and sequelae)
24	CHROMIUM	Fruit	0.005	0.385	-0.45355683651553846	--
13	ALPHA-TERPINENE	Fruit	1.0	2.0	-0.44934612100297294	--
87	RUTIN	Leaf		9000.0	-0.44580487824979076	Jim Duke's personal files.
53	LINALOOL	Fruit	30.0	530.0	-0.43753461385311765	--
1	SERINE	Fruit	40.0	2410.0	-0.43531280247846904	--
15	RIBOFLAVIN	Fruit	0.0	3.0	-0.4303249009534089	--
0	BROMINE	Fruit		1.0	-0.42563543443835	ACTA AGRIC SCAND SUPPL 22: 1980
0	LEAD	Fruit	0.02	1.1	-0.42525727293888926	--
0	PROTEIN	Fruit	9260.0	78000.0	-0.4222516255728621	--
14	SUCROSE	Fruit		47000.0	-0.41357367622327157	--
2	MOLYBDENUM	Fruit	0.1	0.385	-0.4080774738511709	--
23	ALPHA-TERPINEOL	Fruit	2.0	3.0	-0.40604181620664676	--
39	NIACIN	Fruit	2.0	31.0	-0.39701223426716226	--
0	SUGARS	Fruit	39600.0	119800.0	-0.38969414389870244	--
60	SELENIUM	Fruit	0.0	0.002	-0.38569128420884563	--
4	PHOSPHORUS	Fruit	136.0	1980.0	-0.3754207541761312	--
14	POTASSIUM	Fruit	1400.0	13772.0	-0.3666795712783593	--
22	MYRCENE	Fruit	130.0	140.0	-0.36272097374914564	--
23	TERPINEN-4-OL	Fruit		0.1	-0.358333842321623	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	CAMPHENE	Fruit		0.1	-0.35176349319281713	--
14	MANGANESE	Fruit	0.0	8.0	-0.3507865335531638	--
13	PALMITIC-ACID	Fruit	130.0	982.0	-0.35024794688904615	USDA's Ag Handbook 8 and sequelae)
7	PHENYLALANINE	Fruit	310.0	2340.0	-0.34187787905261324	USDA's Ag Handbook 8 and sequelae)
2	ARSENIC	Fruit	0.001	0.154	-0.33956845146287234	--
27	LINOLEIC-ACID	Fruit	180.0	1359.0	-0.33622644162700344	USDA's Ag Handbook 8 and sequelae)
102	CAFFEIC-ACID	Fruit	2.0	50.0	-0.3296566072538586	--
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.)
2	PALMITOLEIC-ACID	Fruit	30.0	226.0	-0.30412481168854	USDA's Ag Handbook 8 and sequelae)
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.
13	BETA-PINENE	Fruit	11.0	13.0	-0.29742687330503664	--
3	VALINE	Fruit	100.0	3020.0	-0.29566746601618277	--
14	SULFUR	Fruit	46.0	1000.0	-0.28853428975640755	--
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	--
7	ALPHA-CAROTENE	Fruit	0.19	1.9	-0.26808750426637384	--
4	BORON	Fruit	1.89	27.5	-0.25022637010687165	--
7	HISTIDINE	Fruit	180.0	1359.0	-0.24792284510655177	USDA's Ag Handbook 8 and sequelae)
29	TRYPTOPHAN	Fruit	90.0	680.0	-0.23921305471754814	USDA's Ag Handbook 8 and sequelae)
3	CADMIUM	Fruit	0.001	0.138	-0.23805307615553817	--
5	PHYLLOQUINONE	Fruit		0.001	-0.23285139490462353	--
3	ASPARTIC-ACID	Fruit	70.0	8607.0	-0.2038383572771155	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	SODIUM	Fruit	0.0	29.0	-0.1812007490262155	--
5	ALUMINUM	Fruit	1.0	165.0	-0.17551933701223474	--
4	LYSINE	Fruit	470.0	3548.0	-0.1467119613903352	USDA's Ag Handbook 8 and sequelae)
0	PROLINE	Fruit	60.0	3473.0	-0.14668369100889192	--
53	BETA-CAROTENE	Fruit	1.0	28.0	-0.0966771336129336	--
0	NITROGEN	Fruit	500.0	13845.0	-0.054501610611493154	--
16	P-CYMENE	Fruit	3590.0	4070.0	-0.04098189676522262	--
112	ASCORBIC-ACID	Fruit	500.0	4071.0	-0.03136646807240172	--
15	FOLACIN	Fruit	0.0	2.0	-0.019192793995839758	USDA's Ag Handbook 8 and sequelae)
3	ALANINE	Fruit	30.0	3775.0	0.02652939797970876	--
11	PANTOTHENIC-ACID	Fruit	2.0	19.0	0.05712424299404392	USDA's Ag Handbook 8 and sequelae)
14	ARGININE	Fruit	230.0	4908.0	0.15957250579145005	--
5	GLUTAMINE	Fruit	30.0	630.0	0.1767951575504613	--
31	THIAMIN	Fruit	1.0	7.0	0.21342198396383905	--
7	SALICYLATES	Fruit	0.0	200.0	0.236750790358027	--
2	ASPARAGINE	Fruit	200.0	1800.0	0.3373215168393527	--
31	HESPERIDIN	Pericarp		63500.0	0.38878029269733505	Jim Duke's personal files.
28	CALCIUM	Fruit	210.0	5615.0	0.4058414049804431	--
0	WATER	Fruit	839000.0	898000.0	0.5540526248175224	--
0	CARBOHYDRATES	Fruit	99000.0	887125.0	0.557442615155032	--
60	LIMONENE	Fruit	8300.0	9700.0	0.6409395320453212	--
15	METHIONINE	Fruit	200.0	1510.0	0.6791094324753408	USDA's Ag Handbook 8 and sequelae)
11	TYRAMINE	Fruit	0.0	1.0	0.7071067811865478	--
0	STRONTIUM	Fruit	0.054	110.0	0.7328812786702326	--
9	SINAPIC-ACID	Fruit	7.0	19.0	0.784062560233975	--
11	LITHIUM	Fruit	0.108	1.54	0.890343380696948	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	DODECANAL	Fruit	5.0	20.0	0.9948320067476139	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	VALENCENE	Fruit Juice	0.04	15.3	0.9999999999999999	--
6	ACETALDEHYDE	Fruit Juice	3.0	15.0	1.0	--
2	METHANOL	Fruit Juice	0.8	80.0	1.0	--
25	P-COUMARIC-ACID	Pericarp	5.0	75.0	1.0	--
0	TETRADECANAL	Fruit	5.0	9.0	1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
61	FERULIC-ACID	Pericarp	20.0	180.0	1.0	--
24	ETHANOL	Fruit Juice	64.0	900.0	1.0	--
9	SINAPIC-ACID	Pericarp	45.0	100.0	1.0	--
0	FERULOYL-PUTRESCINE	Fruit	0.0	5.0	1.0	--
0	LINALOL	Fruit Juice	0.15	4.69	1.0000000000000002	--
53	LINALOOL	Fruit Juice	0.15	4.69	1.0000000000000004	--
62	CAFFEINE	Flower		62.0	1.0998533626601497	Jim Duke's personal files.
0	EO	Pericarp	15000.0	20000.0	1.2809893558000476	--
12	GLYCINE	Fruit	50.0	7097.0	1.3509995174874219	--