

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Malus domestica*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
30	(+)-CATECHIN	Bark				--
30	(+)-CATECHIN	Seed				--
30	(+)-CATECHIN	Pt				--
30	(+)-CATECHIN	Pericarp				--
30	(+)-CATECHIN	Fruit				--
30	(+)-CATECHIN	Leaf				--
0	(+)-EPICATECHIN	Fruit				--
38	(-)-EPICATECHIN	Leaf	150.0	900.0	-0.6820874109972213	--
38	(-)-EPICATECHIN	Pericarp				--
38	(-)-EPICATECHIN	Fruit				--
38	(-)-EPICATECHIN	Fruit Juice				--
0	(Z)-HEX-2-ENAL	Fruit				--
0	-D-GLUCITOL	Plant				--
0	1,3,3,-TRIMETHYL-DIOXA-2,7-BICYCLO(2,2,1)HEPTANE	Fruit				--
0	1-BUTANOL	Plant				--
0	1-DECYL-ACETATE	Plant				--
0	1-MONO-LINOLEIN	Seed				--
0	1-MONOOLEIN	Seed				--
0	1-NONYL-ACETATE	Plant				--
0	1-OCTYL-ACETATE	Plant				--
0	19-HYDROXYURSOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	19-HYDROXYURSONIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	2,4-METHYLENE-CHOLESTEROL	Pollen Or Spore				--
0	2-(1,1-DIMETHYLETHYL)-CYCLOHECYLACETATE	Fruit				--
0	2-BUTANOL	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2-HEPTANOL	Plant				--
0	2-HEXENAL	Plant				--
0	2-METHYL-2,3-EPOXY-PENTANE	Fruit				--
0	2-METHYL-BUT-2-EN-1-AL	Fruit				--
0	2-METHYL-BUT-3-EN-1-OL	Fruit				--
0	2-METHYL-BUTAN-2-OL	Plant				--
0	2-METHYL-PENTAN-2-OL	Plant				--
0	2-METHYL-PROPEN-1-AL	Fruit				--
0	2-PENTANOL	Plant				--
0	2-PHENETHYLACETATE	Plant				--
0	2-PROPANOL	Plant				--
0	20-HYDROXYURSOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	3,4-BENZOPYRENE	Fruit				--
0	3-BETA-19-ALPHA-DIHYDROXY-2-OXO-URS-12-EN-28-OIC-ACID	Wood		1000.0		--
0	3-HYDROXY-OCTYL-BETA-D-GLUCOSIDE	Fruit				--
0	3-HYDROXYPHLORIDZIN	Fruit Juice				--
0	3-PENTANOL	Plant				--
0	4-HYDROXYMETHYLPROLINE	Plant				--
0	4-P-COUMAROYLQUINIC-ACID	Fruit				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	5,6-EPOXY-10'-APO-5,6-DIHYDRO-BETA-CAROTENE-3,10'-DIOL	Plant		20000.0		--
0	6-METHYL-HEPTEN-5-EN-2-ONE	Fruit				--
0	7-HEXANOIC-ACID	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ABSCISIC-ACID	Fruit				--
0	ABSCISIC-ACID	Fruit Juice				--
6	ACETALDEHYDE	Fruit				--
6	ACETALDEHYDE	Plant				--
6	ACETALDEHYDE	Fruit Juice				Miyake, T., Shibamoto, T. 1993. Quantitative Analysis of Acetaldehyde in Foods and Beverages. J. Agr. Food Chem, 41(11): 1968-1970.
16	ACETIC-ACID	Plant				--
0	ACETIC-ACID-AMYL-ESTER	Plant				--
3	ACETONE	Plant				--
11	ADENINE	Root				--
3	ALANINE	Fruit	70.0	435.0	-1.2861845168681025	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-ALANINE	Fruit				--
0	ALPHA-AMINO-BUTYRIC-ACID	Plant				--
0	ALPHA-FARNESENE	Fruit Epidermis				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
15	ALPHA-LINOLENIC-ACID	Fruit	180.0	1120.0	-0.6452626880371877	--
0	ALPHA-OXOGLUTARIC-ACID	Plant				--
32	ALPHA-TOCOPHEROL	Fruit	2.0	37.0	-0.5521025162177928	--
5	ALUMINUM	Fruit	0.4	129.0	-0.18599251654737567	--
0	AMMONIA	Pericarp		1029.0		--
0	AMMONIA	Fruit		235.0	-1.0	--
0	AMMONIA(NH3)	Fruit Epidermis	235.0	1029.0		--
8	AMYGDALIN	Seed	6000.0	13800.0	-0.8422024808761887	--
0	AMYL-ACETATE	Plant				--
0	AMYL-ACETATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	AMYL-BUTYRATE	Plant				--
3	AMYL-BUTYRATE	Fruit				--
1	AMYL-FORMATE	Fruit				--
0	AMYL-PROPIONATE	Plant				--
0	ANILINE	Pericarp		1.7		--
0	ANILINE	Fruit Epidermis		1.7		--
0	ANILINE	Fruit		1.5		--
101	APIGENIN	Heart Wood				--
0	ARABINOSE	Plant				--
14	ARGININE	Fruit	60.0	373.0	-1.0500818434124615	USDA's Ag Handbook 8 and sequelae)
0	AROMADENDRIN-3-O-BETA-D-GLUCOSIDE	Heart Wood				--
2	ARSENIC	Fruit	0.001	0.43	0.014133429185321438	--
112	ASCORBIC-ACID	Fruit	20.0	402.0	-0.2594938543964892	--
0	ASCORBIDASE	Plant				--
0	ASH	Fruit	2300.0	43000.0	-0.3538278176314037	--
2	ASPARAGINE	Fruit		171.0	-0.825458790451801	--
3	ASPARTIC-ACID	Fruit	210.0	2115.0	-1.056731649443471	USDA's Ag Handbook 8 and sequelae)
7	AVICULARIN	Leaf	0.0	1425.0		--
7	AVICULARIN	Fruit Juice				--
7	AVICULARIN	Pericarp				--
7	AVICULARIN	Fruit				--
0	BARIUM	Fruit	0.22	8.6	-0.8622422515184034	--
20	BENZOIC-ACID	Leaf	98.0	710.0	1.3479809099758226	--
20	BENZOIC-ACID	Plant				--
9	BENZYL-ACETATE	Plant				--
0	BENZYL-AMINE	Fruit Epidermis		0.6		--
0	BENZYL-AMINE	Fruit	0.3	3.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BENZYL-AMINE	Pericarp		0.6		--
2	BETA-ALANINE	Fruit				--
53	BETA-CAROTENE	Fruit	0.0	76.0	-0.0038939984397263717	--
0	BETA-CAROTENE-5,6-EPOXIDE	Fruit				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
47	BETA-SITOSTEROL	Seed				Fathy, M. M., Abd El Megid, R. M. 1995. A Comparative Study of the Lipid Contents and the Antimicrobial Activity of Certain Rosaceous Seeds. Zagazig J Pharm Sci, 4(2): 121-127.
47	BETA-SITOSTEROL	Heart Wood				--
47	BETA-SITOSTEROL	Fruit	110.0	660.0	0.07292039240169416	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
4	BIOTIN	Plant				--
4	BORON	Fruit	1.0	110.0	1.410811087811246	--
0	BROMINE	Fruit		1.0	-0.42563543443835	ACTA AGRIC SCAND SUPPL 22: 1980
0	BUTAN-2-ONE	Fruit				--
0	BUTANAL	Fruit				--
0	BUTANOL	Plant				--
0	BUTYL-ACETATE	Plant				--
0	BUTYL-ACETATE	Fruit				--
0	BUTYL-BUTYRATE	Plant				--
0	BUTYL-CAPROATE	Plant				--
0	BUTYL-PROPIONATE	Plant				--
0	BUTYL-VALERIANATE	Plant				--
3	CADMIUM	Fruit	0.002	0.026	-0.5672128851607269	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CAFFEETANNIN	Plant				--
102	CAFFEIC-ACID	Fruit Juice				--
102	CAFFEIC-ACID	Fruit	85.0	1270.0	-0.10378621224302456	--
28	CALCIUM	Fruit	43.0	570.0	-0.75834467805693	--
4	CALCIUM-OXALATE	Plant				--
2	CAMPESTEROL	Fruit	10.0	60.0	-0.14986892201478846	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
0	CAPROALDEHYDE	Plant				--
0	CAPROIC-ACID-AMYL-ESTER	Plant				--
0	CAPRYLIC-ESTER	Plant				--
0	CARBOHYDRATES	Fruit	152250.0	948550.0	0.8859136568099041	--
0	CAROTENOIDS	Plant	0.0	126.0		--
1	CATALASE	Plant				--
77	CHLOROGENIC-ACID	Seed				--
77	CHLOROGENIC-ACID	Fruit	5.0	15.0	-1.0935971883111022	--
77	CHLOROGENIC-ACID	Fruit Juice				--
77	CHLOROGENIC-ACID	Pericarp	8.0	18.0		--
77	CHLOROGENIC-ACID	Leaf	100.0	1200.0	-1.3240006985895736	--
77	CHLOROGENIC-ACID	Pt				--
21	CHLOROPHYLL	Fruit	0.0	1.0	-0.9710352631864654	--
24	CHROMIUM	Fruit	0.005	0.3	-0.4654957769727276	--
60	CINNAMALDEHYDE	Fruit				--
0	CIS-2,TRANS-4-ABSCISIC-ACID	Stem Bark				--
0	CIS-2,TRANS-4-ABSCISIC-ACID	Bark				--
0	CIS-N-HEX-3-EN-1-OL	Plant				--
0	CITRAMALIC-ACID	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
23	CITRIC-ACID	Plant				--
2	COBALT	Fruit	0.005	0.043	-0.5299096696083117	--
12	COPPER	Fruit	0.24	4.0	-0.6863742487163819	--
4	COSMOSIIN	Heart Wood				--
0	COUMARIC-ACID	Plant				--
0	CREATINE	Shoot				--
0	CREATINE	Stem				--
0	CUTIN	Fruit Epidermis				--
7	CYANIDIN	Leaf				--
0	CYANIDIN-3,5-DIGLUCOSIDE	Cotyledon				--
0	CYANIDIN-3-ARABINOSIDE	Plant				--
0	CYANIDIN-3-GALACTOSIDE	Plant				--
0	CYANIDIN-7-ARABINOSIDE	Plant				--
2	CYSTINE	Plant	30.0	187.0	-1.078139109591067	--
0	D-2-METHYLBUTAN-1-OL	Plant				--
4	D-CATECHIN	Fruit				--
0	D-GALACTURONIC-ACID	Plant	13.0	54.0		--
0	D-GLUCONIC-ACID	Plant				--
0	D-L-NONACOSANOL	Plant				--
0	DECENOIC-ACID	Plant				--
0	DEHYDROASCORBIC-ACID	Plant				--
0	DIASTASE	Plant				--
2	DIETHYL-AMINE	Fruit		3.0		--
0	DIGALACTOSYL-DIGLYCERIDE	Fruit	49.0	107.0		--
0	DIHYDROXYTRICARBALLYLIC-ACID	Fruit		1.0		--
0	DIPHOSPHATIDYL-GLYCEROL	Fruit	4.0	6.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	EO	Fruit	25.0	35.0	-0.8192816022307305	--
40	EPICATECHIN	Pericarp	20.0	80.0		--
40	EPICATECHIN	Fruit	4.0	11.0		--
1	EPSILON-CAROTENE	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
12	ESTRAGOLE	Essential Oil				--
8	ESTRONE	Seed	0.1	0.13	-1.0000000000000002	--
24	ETHANOL	Plant				--
6	ETHYL-ACETATE	Plant				--
6	ETHYL-ACETATE	Fruit				--
0	ETHYL-AMINE	Fruit		3.0		--
1	ETHYL-BUTYRATE	Plant				--
0	ETHYL-CAPROATE	Plant				--
0	ETHYL-CROTONATE	Plant				--
0	ETHYL-DECENOATE	Plant				--
0	ETHYL-DODECANOATE	Plant				--
1	ETHYL-FORMATE	Fruit				--
0	ETHYL-HEXANOATE	Plant				--
2	ETHYL-ISOBUTYRATE	Plant				--
2	ETHYL-ISOBUTYRATE	Fruit				--
0	ETHYL-METHYLBUTYRATE	Plant				--
1	ETHYL-NONANOATE	Plant				--
0	ETHYL-OCTANOATE	Plant				--
0	ETHYL-PENTANOATE	Plant				--
0	ETHYL-PHENACETATE	Plant				--
1	ETHYL-PROPIONATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	ETHYL-PROPIONATE	Plant				--
1	ETHYL-VALERATE	Fruit				--
0	ETHYL-VALERIANATE	Plant				--
2	FARNESENE	Pericarp				--
2	FARNESENE	Fruit Epidermis				--
0	FAT	Seed	180000.0	230000.0	-0.1863991011784708	--
0	FAT	Fruit	3210.0	34200.0	-0.3800352407430785	--
61	FERULIC-ACID	Fruit	4.0	95.0	1.7162326606420661	--
15	FIBER	Fruit	5200.0	49636.0	-0.8685372806832163	USDA's Ag Handbook 8 and sequelae)
0	FLUORINE	Fruit	0.1	2.1	0.7378739376517985	ACTA AGRIC SCAND SUPPL 22: 1980
15	FOLACIN	Fruit	0.02	0.2	-0.7547576455042277	USDA's Ag Handbook 8 and sequelae)
13	FORMIC-ACID	Plant				--
0	FR	Plant				--
2	FRIEDELIN	Heart Wood				--
8	FRUCTOSE	Fruit	50100.0	60800.0	0.04916971831634761	--
7	FUMARIC-ACID	Plant				--
0	GALACTANASE	Plant				--
0	GALACTARIC-ACID	Plant				--
62	GALLIC-ACID	Pericarp				--
62	GALLIC-ACID	Fruit				--
0	GAMMA-GUANIDINOBUTRAMIDE	Shoot				--
0	GAMMA-GUANIDINOBUTRAMIDE	Stem				--
0	GAMMA-GUANIDINOBUTYRIC-ACID	Shoot				--
0	GAMMA-GUANIDINOBUTYRIC-ACID	Stem				--
0	GAMMA-GUANIDINOPROPIONIC-ACID	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	GAMMA-GUANIDINOPROPIONIC-ACID	Stem				--
0	GAMMA-METHYL-PROLINE	Plant				--
35	GERANIOL	Plant				--
0	GIBBERELLIN-A-62	Seed				--
0	GLUCOCEREBROSIDE	Plant	34.0	49.0		--
7	GLUCOSE	Fruit	17200.0	18200.0	-0.7019443383136035	--
8	GLUTAMIC-ACID	Fruit	156.0	1244.0	-0.9333642189445454	--
5	GLUTAMINE	Plant		20.0		--
3	GLYCERIC-ACID	Plant				--
12	GLYCINE	Plant	80.0	497.0	-0.8208359653564842	--
4	GLYCOLIC-ACID	Plant				--
1	GLYOXYLIC-ACID	Plant				--
6	GUANIDINE	Stem				--
6	GUANIDINE	Shoot				--
0	GUANIDINOACETIC-ACID	Stem				--
0	GUANIDINOACETIC-ACID	Shoot				--
0	GUANIDINOSUCCINIC-ACID	Shoot				--
0	HEMICELLULOSE	Plant				--
0	HEPTACOSANE	Plant				--
0	HEPTENOIC-ACID	Plant				--
0	HEXACOSANOL	Plant				--
5	HEXANAL	Fruit				--
3	HEXANOL	Plant				--
1	HEXYL-ACETATE	Fruit				--
1	HEXYL-ACETATE	Plant				--
1	HEXYL-BUTYRATE	Fruit				--
1	HEXYL-BUTYRATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
1	HEXYL-FORMATE	Plant				--
7	HISTIDINE	Fruit	30.0	187.0	-1.0696353953245137	--
0	HYDROXYCINNAMIC-ACID	Fruit		1340.0		--
14	HYPERIN	Plant				--
30	HYPEROSIDE	Fruit Juice				--
30	HYPEROSIDE	Pericarp				--
30	HYPEROSIDE	Heart Wood				--
30	HYPEROSIDE	Fruit				--
0	I-BUTYL-OCTANOATE	Plant				--
0	I-BUTYL-PROPIOANTE	Plant				--
0	I-DECANOIC-ACID	Plant				--
0	I-HEXANOIC-ACID	Plant				--
0	I-PENTANOIC-ACID	Plant				--
0	I-PENTANOL	Plant				--
0	I-PENTYL-FORMATE	Plant				--
0	I-PENTYL-I-PENTANOATE	Plant				--
0	I-PROPANOL	Plant				--
0	IDAEIN	Plant				--
7	INDOLE-3-ACETIC-ACID	Stem Bark				--
7	INDOLE-3-ACETIC-ACID	Leaf				--
7	INDOLE-3-ACETIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
8	INOSITOL	Plant				--
12	IODINE	Plant				--
6	IRON	Fruit	1.1	123.0	-0.039580333705947705	--
2	ISOAMYL-ACETATE	Fruit				--
0	ISOAMYL-BUTYRATE	Fruit				--
0	ISOAMYL-BUTYRATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOAMYL-PROPIONATE	Plant				--
3	ISOBUTYL-ACETATE	Plant				--
0	ISOBUTYL-BUTYRATE	Plant				--
0	ISOBUTYL-FORMATE	Plant				--
4	ISOCHLOROGENIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
0	ISOCITRIC-ACID	Plant				--
3	ISOLEUCINE	Fruit	50.0	497.0	-0.9433250929721118	--
4	ISOPROPYL-ACETATE	Fruit				--
0	ISOPROPYL-BUTYRATE	Plant				--
3	ISOQUERCETIN	Fruit Juice				--
22	ISOQUERCITRIN	Fruit Juice				--
22	ISOQUERCITRIN	Fruit				--
22	ISOQUERCITRIN	Pericarp				--
1	ISOVALERALDEHYDE	Fruit				--
0	JASMONIC-ACID	Fruit				--
75	KAEMPFEROL	Fruit		2.0	-0.5794291374991353	--
0	KILOCALORIES	Fruit		3419.0	-0.36687576531452953	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
1	L-ARGININE	Stem				--
1	L-ARGININE	Shoot				--
0	L-EPICATECHIN	Fruit				--
0	L-MALIC-ACID	Plant				--
0	L-QUINIC-ACID	Plant				--
8	LACTIC-ACID	Plant				--
7	LAURIC-ACID	Fruit	10.0	63.0	-0.44474745342800637	--
0	LEAD	Fruit	0.002	64.0	3.294104898397132	--
20	LECITHIN	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	LEUCINE	Fruit	120.0	746.0	-0.9258535515942413	--
0	LINOLENIC-ACID	Fruit	870.0	5411.0	-0.1866295815550338	--
11	LITHIUM	Fruit	0.044	0.172	-0.8448748858580687	--
15	LUTEIN	Fruit	0.4	5.0	-0.4027761600563295	--
78	LUTEOLIN	Heart Wood				--
0	LUTEOXANTHIN	Fruit				--
4	LYSINE	Fruit	20.0	746.0	-0.8724121045963826	--
65	MAGNESIUM	Fruit	48.0	478.0	-0.7648501234386748	--
0	MALVIDIN-MONOGLYCOSIDE	Plant				--
14	MANGANESE	Fruit	0.0	29.0	-0.2123152729972876	--
3	MANNOSE	Plant				--
23	MELATONIN	Fruit				Hattori, A., et. al. 1995. Identification of Melatonin in Plants and its Effects on Plasma Melatonin Levels and Binding to Melatonin Receptors in Vertebrates. Biochem. Mol. Biol. Int., 35(3): 627-634.
1	MERCURY	Fruit	0.0	0.02	0.10095423065636192	--
2	METHANOL	Plant				--
15	METHIONINE	Plant	20.0	124.0	-0.9578509469925256	--
2	METHYL-2-METHYL-BUTYRATE	Plant				--
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Pericarp				--
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Fruit Epidermis				--
3	METHYL-ACETATE	Plant				--
1	METHYL-AMINE	Pericarp		4.5		--
1	METHYL-AMINE	Fruit		5.6		--
1	METHYL-AMINE	Fruit Epidermis		4.5		--
4	METHYL-BENZOATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	METHYL-BUTYRATE	Fruit				--
2	METHYL-BUTYRATE	Plant				--
2	METHYL-CAPROATE	Plant				--
0	METHYL-FORMATE	Plant				--
0	METHYL-GUANIDINE	Shoot				--
0	METHYL-GUANIDINE	Stem				--
0	METHYL-HEXANOATE	Plant				--
0	METHYL-I-PENTANOATE	Plant				--
0	METHYL-N-PENTANOATE	Plant				--
0	METHYL-NONAN-3-ONE	Fruit				--
0	METHYL-PROPIONATE	Plant				--
0	METHYL-VALERATE	Fruit				--
0	METHYL-VINYL-KETONE	Fruit				--
0	MEVALONIC-ACID	Fruit	30.0	36.0	1.9898059802462824	--
2	MOLYBDENUM	Fruit	0.077	0.43	-0.3990584824882058	--
0	MONOGALACTOSYL-DIGLYCERIDE	Plant	12.0	42.0		--
13	MUFA	Fruit	150.0	935.0	-0.24039423421132997	USDA's Ag Handbook 8 and sequelae)
0	MYO-INOSITOL	Pollen Or Spore		4500.0		--
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	--
6	MYRISTIC-ACID	Fruit	20.0	124.0	-0.26329389964394695	--
0	N-1-N-5-N-10-TRI-TRANS-4-COUMAROYL-SPERMIDINE	Flower				--
0	N-ALPHA-ACETYL-AGGININE	Shoot				--
0	N-ALPHA-ACETYL-ARGININE	Shoot				--
0	N-ALPHA-ACETYL-L-ARGININE	Stem				--
0	N-ALPHA-ACETYL-L-ARGININE	Shoot				--
0	N-BUTANOL	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	N-BUTYL-DECANOATE	Plant				--
1	N-BUTYL-FORMATE	Plant				--
0	N-BUTYL-N-HEXANOATE	Plant				--
0	N-BUTYL-OCTANOATE	Plant				--
1	N-BUTYL-PROPIONATE	Plant				--
1	N-BUTYL-PROPIONATE	Fruit				--
0	N-COUMARYL-QUINIC-ACID	Plant				--
0	N-DECANOL	Plant				--
0	N-HEHYL-N-HEXANOATE	Plant				--
0	N-HEPTANOIC-ACID	Plant				--
0	N-HEPTANOL	Plant				--
0	N-HEX-1-EN-3-OL	Plant				--
0	N-HEXANOL	Plant				--
0	N-HEXYL-N-HEXANOATE	Plant				--
0	N-HEXYL-OCTANOATE	Plant				--
1	N-HEXYL-PROPIONATE	Fruit				--
1	N-HEXYL-PROPIONATE	Plant				--
0	N-METHYL-BETA-PHENETHYLAMINE	Fruit		1.2		--
0	N-METHYL-PHENETHYLAMINE	Pericarp		1.3		--
0	N-METHYL-PHENETHYLAMINE	Fruit		1.2		--
0	N-METHYL-PHENETHYLAMINE	Exocarp		1.3		--
0	N-NONADECANE	Seed				Fathy, M. M., Abd El Megid, R. M. 1995. A Comparative Study of the Lipid Contents and the Antimicrobial Activity of Certain Rosaceous Seeds. Zagazig J Pharm Sci, 4(2): 121-127.
0	N-NONANOIC-ACID	Plant				--
0	N-NONANOL-2-NONANOL	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	N-OCTACOSANE	Seed				Fathy, M. M., Abd El Megid, R. M. 1995. A Comparative Study of the Lipid Contents and the Antimicrobial Activity of Certain Rosaceous Seeds. Zagazig J Pharm Sci, 4(2): 121-127.
0	N-OCTANOL-2-OCTANOL	Plant				--
0	N-OCTANONE	Plant				--
0	N-PENTANOIC-ACID	Plant				--
0	N-PENTENOIC-ACID	Plant				--
0	N-PENTYL-2-METHYLBUTYRATE	Plant				--
0	N-PENTYL-AMINE	Fruit		0.3	-0.9999999999999999	--
0	N-PENTYL-DECANOATE	Plant				--
0	N-PENTYL-FORMATE	Plant				--
0	N-PENTYL-OCTANOATE	Plant				--
0	N-PROPANOL	Plant				--
0	N-PROPIONIC-ACID	Plant				--
2	NEO-CHLOROGENIC-ACID	Plant				--
2	NEOXANTHIN	Fruit Epidermis				--
39	NIACIN	Fruit	1.0	7.0	-0.7178505836876389	--
3	NICKEL	Fruit	0.004	0.645	-0.5833033975627046	--
0	NITROGEN	Fruit	280.0	4000.0	-0.7448119387296798	ACTA AGRIC SCAND SUPPL 22: 1980
2	NONACOSANE	Plant				--
0	NONENOIC-ACID	Plant				--
0	OCT-CIS-5-ENE-1,3-DIOL	Fruit Juice				--
0	OCT-CIS-5-ENE-1,3-DIOL-GLYCOSIDE	Fruit Juice				--
0	OCTA-CIS-3-CIS-5-DIEN-1-OL	Essential Oil				--
0	OCTA-CIS-3-CIS-5-DIEN-1-OL-ACETATE	Essential Oil				--
0	OCTA-TRANS-3-CIS-5-DIEN-1-OL	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	OCTA-TRANS-3-CIS-5-DIEN-1-OL-ACETATE	Essential Oil				--
6	OCTACOSANOL	Plant				--
0	OCTANE-1,3-DIOL	Fruit Juice				--
0	OCTANE-1,3-DIOL-GLYCOSIDE	Fruit Juice				--
0	OCTENOIC-ACID	Plant				--
18	OLEIC-ACID	Fruit	140.0	871.0	-0.4740320725940964	--
9	OXALIC-ACID	Plant				--
0	OXALOACETIC-ACID	Plant				--
25	P-COUMARIC-ACID	Leaf				--
25	P-COUMARIC-ACID	Fruit	15.0	460.0	1.836295249622603	--
0	P-COUMARIC-ACID-1	Leaf	0.0	320.0		--
0	P-COUMARIC-ACID-2	Leaf	0.0	185.0		--
0	P-COUMARYL-QUINIC-ACID	Fruit				--
13	P-HYDROXY-BENZOIC-ACID	Fruit				--
13	PALMITIC-ACID	Fruit	480.0	2986.0	-0.31904990505316816	--
13	PALMITIC-ACID	Seed				Fathy, M. M., Abd El Megid, R. M. 1995. A Comparative Study of the Lipid Contents and the Antimicrobial Activity of Certain Rosaceous Seeds. Zagazig J Pharm Sci, 4(2): 121-127.
2	PALMITOLEIC-ACID	Fruit	10.0	62.0	-0.3340992517515945	--
11	PANTOTHENIC-ACID	Fruit	1.0	4.0	-0.8996713902808875	USDA's Ag Handbook 8 and sequelae)
0	PECTASE	Plant				--
24	PECTIN	Fruit	1400.0	66585.0	0.16029071562128944	--
0	PECTIN-DEMETHOXYXYLASE	Plant				--
0	PENTAN-2-ONE	Fruit				--
0	PENTANOL	Plant				--
0	PENTYL-BUTYRATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	PENTYL-HEXANOATE	Plant				--
0	PEROXIDASE	Plant				--
0	PHENOLICS	Plant	1100.0	3400.0	-1.0	--
7	PHENYLALANINE	Fruit	50.0	311.0	-1.0455516744717288	--
0	PHENYLBENZOATE	Fruit				--
0	PHLORETAMIDE	Fruit				--
9	PHLORETIN	Leaf	300.0	11000.0		--
0	PHLORETIN-2'-XYLOGLUCOSIDE	Fruit Juice				--
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Fruit		6486.0		--
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Leaf		6486.0		--
1	PHLORETIN-GLUCOSIDE	Pericarp	10.0	15.0		--
1	PHLORETIN-GLUCOSIDE	Fruit		1.0		--
0	PHLORETIN-XYLOGLUCOSIDE	Fruit	1.0	3.0		--
0	PHLORETIN-XYLOGLUCOSIDE	Pericarp	7.0	27.0		--
0	PHLORETIN-XYLOSIDE	Fruit Juice				--
8	PHLORIDZIN	Fruit Juice				--
8	PHLORIDZIN	Leaf	54000.0	140000.0	1.0	--
8	PHLORIZIN	Pericarp				--
8	PHLORIZIN	Plant				--
8	PHLORIZIN	Leaf				--
2	PHOSPHATIDYL-CHOLINE	Fruit	189.0	214.0		--
0	PHOSPHATIDYL-ETHANOLAMINE	Fruit	101.0	124.0		--
0	PHOSPHATIDYL-GLYCEROL	Fruit	8.0	27.0		--
0	PHOSPHATIDYL-INOSITOL	Fruit	53.0	59.0		--
0	PHOSPHATIDYL-SERINE	Fruit		4.0		--
0	PHOSPHATIDYLIC-ACID	Fruit	3.0	6.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	PHOSPHORUS	Fruit	68.0	925.0	-0.6958662309301713	--
5	PHYLLOQUINONE	Fruit		0.06	-0.22359887323159108	--
0	PHYTATE	Fruit	630.0	4040.0	-0.2108482779177121	--
2	PHYTOSTEROLS	Fruit	120.0	745.0	-0.2581394518581099	USDA's Ag Handbook 8 and sequelae)
0	PIPECOLINIC-ACID	Plant				--
0	POLYGALACTOSYL-DIGLYCERIDE	Plant				--
0	POLYGALACTURONASE	Plant				--
0	POLYPHENOLASE	Plant				--
2	POMOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	POMONIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
14	POTASSIUM	Fruit	1110.0	12140.0	-0.5110685274797335	--
17	PROCYANIDIN-A-2	Leaf				--
1	PROCYANIDIN-B-1	Pericarp				--
1	PROCYANIDIN-B-1	Leaf				--
1	PROCYANIDIN-B-1	Fruit Juice				--
1	PROCYANIDIN-B-1	Fruit				--
1	PROCYANIDIN-B-2	Pericarp	15.0	100.0		--
1	PROCYANIDIN-B-2	Fruit	2.0	10.0		--
1	PROCYANIDIN-B-2	Leaf	150.0	900.0	0.9999999999999998	--
1	PROCYANIDIN-B-2	Fruit Juice				--
4	PROCYANIDIN-B-4	Leaf				--
0	PROCYANIDIN-B-5	Leaf				--
0	PROCYANIDIN-C-1	Pericarp				--
0	PROCYANIDIN-C-1	Fruit Juice				--
0	PROCYANIDIN-C-1	Leaf				--
0	PROCYANIDIN-C-1	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PROCYANIDIN-D-1	Leaf				--
0	PROCYANIDIN-E	Leaf				--
0	PROCYANIDIN-G	Leaf				--
0	PROCYANIDIN-OLIGOMERS	Fruit				--
27	PROCYANIDINS	Leaf				--
0	PROLINE	Plant	20.0	435.0	-1.0472597877182985	--
0	PROPANOL	Plant				--
2	PROPIONALDEHYDE	Fruit				--
0	PROPYL-2-METHYLBUTYRATE	Plant				--
0	PROPYL-ACETATE	Plant				--
0	PROPYL-ACETATE	Fruit				--
0	PROPYL-BUTYRATE	Plant				--
0	PROPYL-BUTYRATE	Fruit				--
0	PROPYL-FORMATE	Plant				--
0	PROPYL-N-PENTANOATE	Plant				--
0	PROPYL-PROPIONATE	Plant				--
0	PROTEIN	Fruit	1870.0	12800.0	-1.2962859772396575	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
43	PROTocatechuic-acid	Fruit				--
4	PUFA	Fruit	1050.0	6535.0	-0.3716987814442892	USDA's Ag Handbook 8 and sequelae)
0	PUTRESCINE	Bud				Wang, S. Y., Faust, M. 1994. Changes in Polyamine Content During Dormancy in Flower Buds of 'Anna' Apple. J. Amer. Soc. Hort. Sci., 119(1): 70-73.
0	PYROXIDINE	Plant				--
1	PYRROLIDINE	Fruit Epidermis		1.5		--
1	PYRROLIDINE	Pericarp		1.5		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	PYRUVIC-ACID	Plant				--
176	QUERCETIN	Pericarp	58.0	263.0	1.0	Pizzorno, J.E. and Murray, M.T. 1985. A Textbook of Natural Medicine. John Bastyr College Publications, Seattle, Washington (Looseleaf).
176	QUERCETIN	Fruit	2.5	41.0	-0.582618968173555	--
176	QUERCETIN	Heart Wood				--
0	QUERCETIN-3-O-RUTINOSIDE	Plant				--
0	QUERCETIN-3-O-ALPHA-ARABINOFURANOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	QUERCETIN-3-O-ALPHA-GALACTOSIDE	Fruit Epidermis				--
2	QUERCETIN-3-O-BETA-D-GLUCOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
1	QUERCETIN-3-O-RHAMNOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	QUERCETIN-3-O-RUTINOSIDE	Plant				--
0	QUERCETIN-3-O-XYLOSIDE	Fruit Epidermis				--
4	QUERCETIN-3-RHAMNOGLUCOSIDE	Plant				--
0	QUERCETIN-3-RHAMNOSIDE	Pericarp	19.0	39.0		--
0	QUERCETIN-ARABINOSIDE	Plant				--
0	QUERCETIN-ARABINOSIDE	Pericarp	18.0	37.0		--
0	QUERCETIN-GALACTOSIDE	Pericarp	28.0	60.0		--
0	QUERCETIN-GLUCOSIDE	Pericarp	9.0	20.0		--
0	QUERCETIN-XYLOSIDE	Pericarp	9.0	19.0		--
44	QUERCITRIN	Fruit				--
44	QUERCITRIN	Fruit Juice				--
44	QUERCITRIN	Pericarp				--
44	QUERCITRIN	Leaf	600.0	9015.0	1.7298124819748746	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	REYNOUTRIN	Fruit				--
2	REYNOUTRIN	Pericarp				--
2	REYNOUTRIN	Fruit Juice				--
15	RIBOFLAVIN	Fruit		1.3	-0.7944081953947483	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	ROSEOSIDE	Leaf				Winterhalter, P., Guldner, A., Guldner, A., Jakob, U., Schreier, P. 1994. 3-hydroxy-5,6-epoxy-beta-ionyl-beta-d-glucopyranoside from Malus domestica leaves. Nat. Prod. Lett., 4(1): 57-60.
0	RUBIDIUM	Fruit	0.27	10.0	-0.6798204139542442	ACTA AGRIC SCAND SUPPL 22: 1980
87	RUTIN	Fruit Epidermis				--
87	RUTIN	Fruit				--
87	RUTIN	Fruit Juice				--
87	RUTIN	Pericarp				--
87	RUTIN	Leaf	0.0	8885.0	-0.45294433702030634	--
7	SALICYLATES	Fruit	0.8	60.0	-0.16469419114376535	--
60	SELENIUM	Fruit		0.0	-0.38618723699673646	--
1	SERINE	Fruit	80.0	497.0	-1.1107007920496865	USDA's Ag Handbook 8 and sequelae)
0	SFA	Fruit	580.0	3610.0	-0.29989489934752117	USDA's Ag Handbook 8 and sequelae)
14	SHIKIMIC-ACID	Plant				--
4	SILICON	Fruit	0.0	70.0	-0.3810148443665756	--
3	SILVER	Fruit	0.011	0.086	-0.4995614833070808	--
9	SINAPIC-ACID	Fruit				--
1	SODIUM	Fruit	0.0	133.0	-0.1713385458263085	--
11	SORBITOL	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	SPERMIDINE	Bud				Wang, S. Y., Faust, M. 1994. Changes in Polyamine Content During Dormancy in Flower Buds of 'Anna' Apple. J. Amer. Soc. Hort. Sci., 119(1): 70-73.
1	SPERMINE	Bud				Wang, S. Y., Faust, M. 1994. Changes in Polyamine Content During Dormancy in Flower Buds of 'Anna' Apple. J. Amer. Soc. Hort. Sci., 119(1): 70-73.
8	STEARIC-ACID	Fruit	70.0	435.0	-0.25037310927026857	--
8	STEARIC-ACID	Seed				Fathy, M. M., Abd El Megid, R. M. 1995. A Comparative Study of the Lipid Contents and the Antimicrobial Activity of Certain Rosaceous Seeds. Zagazig J Pharm Sci, 4(2): 121-127.
0	STRONTIUM	Fruit	0.165	8.6	-0.9690625512009637	--
7	SUCCINIC-ACID	Plant				--
14	SUCROSE	Fruit	24000.0	36200.0	-0.49014841841433165	--
0	SUGAR	Fruit	60100.0	166000.0	-0.15008461399428302	--
14	SULFUR	Fruit	1.65	23.0	-0.9685087927350676	--
0	TETRADECENYL-ACETATE	Leaf				--
0	TETRADECYL-ACETATE	Leaf				--
31	THIAMIN	Fruit	1.0	2.0	-0.4266044741562528	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
4	THREONINE	Fruit	30.0	435.0	-1.0736073129874002	--
4	TIN	Fruit		0.0	-0.3771396188984718	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	TITANIUM	Fruit	0.055	3.0	-0.6858409400678522	--
0	TRANS-2-HEXENOIC-ACID	Plant				--
0	TRANS-ABSCISIC-ACID	Fruit				--
0	TRANS-ABSCISIC-ACID	Fruit Juice				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	TRANS-N-HEX-2-EN-1-OL	Plant				--
0	TRANS-N-HEX-3-EN-1-OL	Plant				--
3	TRIACONTANOL	Plant				--
0	TRIGLYCERIDE	Plant	45.0	50.0		--
29	TRYPTOPHAN	Fruit	20.0	124.0	-1.0195295627538696	--
8	TYROSINE	Fruit	40.0	249.0	-0.8990776765345502	--
0	URONIC-ACID	Fruit	7.0	1440.0		--
89	URSOLIC-ACID	Wax				--
89	URSOLIC-ACID	Fruit Epidermis				--
89	URSOLIC-ACID	Pericarp				--
0	VALERALDEHYDE	Fruit				--
3	VALINE	Fruit	40.0	560.0	-0.8032333881374735	--
0	VIT-B-6	Fruit	1.0	3.0	-0.8751338727185397	--
0	VOMIFOLIOL-1-O-BETA-D-XYLOPYRANOSYL-6-O-BETA-D-GLUCOPYRANOSIDE	Plant				--
0	VOMIFOLIOL-1-O-BETA-D-XYLOPYRANOSYL-6-O-BETA-D-GLUCOPYRANOSIDE	Fruit				--
0	WATER	Fruit	809000.0	896000.0	0.5453564376102144	--
3	XYLOSE	Plant				--
77	ZINC	Fruit	0.0	35.0	0.1413570623516533	--
0	ZIRCONIUM	Fruit	0.22	0.86	-0.546541741871023	--