

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Malus domestica*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
176	QUERCETIN	Heart Wood				--
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	--
112	ASCORBIC-ACID	Fruit	20.0	402.0	-0.2594938543964892	--
102	CAFFEIC-ACID	Fruit	85.0	1270.0	-0.10378621224302456	--
102	CAFFEIC-ACID	Fruit Juice				--
101	APIGENIN	Heart Wood				--
89	URSOLIC-ACID	Fruit Epidermis				--
89	URSOLIC-ACID	Pericarp				--
89	URSOLIC-ACID	Wax				--
87	RUTIN	Fruit Epidermis				--
87	RUTIN	Leaf	0.0	8885.0	-0.45294433702030634	--
87	RUTIN	Pericarp				--
87	RUTIN	Fruit				--
87	RUTIN	Fruit Juice				--
78	LUTEOLIN	Heart Wood				--
77	CHLOROGENIC-ACID	Pericarp	8.0	18.0		--
77	CHLOROGENIC-ACID	Fruit	5.0	15.0	-1.0935971883111022	--
77	CHLOROGENIC-ACID	Pt				--
77	CHLOROGENIC-ACID	Leaf	100.0	1200.0	-1.3240006985895736	--
77	ZINC	Fruit	0.0	35.0	0.1413570623516533	--
77	CHLOROGENIC-ACID	Seed				--
77	CHLOROGENIC-ACID	Fruit Juice				--
75	KAEMPFEROL	Fruit		2.0	-0.5794291374991353	--
65	MAGNESIUM	Fruit	48.0	478.0	-0.7648501234386748	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
62	GALLIC-ACID	Pericarp				--
62	GALLIC-ACID	Fruit				--
61	FERULIC-ACID	Fruit	4.0	95.0	1.7162326606420661	--
60	CINNAMALDEHYDE	Fruit				--
60	SELENIUM	Fruit		0.0	-0.38618723699673646	--
53	BETA-CAROTENE	Fruit	0.0	76.0	-0.0038939984397263717	--
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.)
44	QUERCITRIN	Leaf	600.0	9015.0	1.7298124819748746	--
44	QUERCITRIN	Pericarp				--
44	QUERCITRIN	Fruit				--
44	QUERCITRIN	Fruit Juice				--
43	PROTocatechuic-ACID	Fruit				--
40	EPICATECHIN	Pericarp	20.0	80.0		--
40	EPICATECHIN	Fruit	4.0	11.0		--
39	NIACIN	Fruit	1.0	7.0	-0.7178505836876389	--
38	(-)-EPICATECHIN	Pericarp				--
38	(-)-EPICATECHIN	Fruit				--
38	(-)-EPICATECHIN	Fruit Juice				--
38	(-)-EPICATECHIN	Leaf	150.0	900.0	-0.6820874109972213	--
35	GERANIOL	Plant				--
34	MYRICETIN	Fruit		0.5	-0.7536633445071549	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
32	ALPHA-TOCOPHEROL	Fruit	2.0	37.0	-0.5521025162177928	--
31	THIAMIN	Fruit	1.0	2.0	-0.4266044741562528	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
30	(+)-CATECHIN	Pericarp				--
30	HYPEROSIDE	Pericarp				--
30	(+)-CATECHIN	Fruit				--
30	(+)-CATECHIN	Leaf				--
30	HYPEROSIDE	Fruit				--
30	HYPEROSIDE	Heart Wood				--
30	HYPEROSIDE	Fruit Juice				--
30	(+)-CATECHIN	Bark				--
30	(+)-CATECHIN	Seed				--
30	(+)-CATECHIN	Pt				--
29	TRYPTOPHAN	Fruit	20.0	124.0	-1.0195295627538696	--
28	CALCIUM	Fruit	43.0	570.0	-0.75834467805693	--
27	PROCYANIDINS	Leaf				--
25	P-COUMARIC-ACID	Leaf				--
25	P-COUMARIC-ACID	Fruit	15.0	460.0	1.836295249622603	--
24	PECTIN	Fruit	1400.0	66585.0	0.16029071562128944	--
24	CHROMIUM	Fruit	0.005	0.3	-0.4654957769727276	--
24	ETHANOL	Plant				--
23	CITRIC-ACID	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.
22	ISOQUERCITRIN	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
22	ISOQUERCITRIN	Pericarp				--
22	ISOQUERCITRIN	Fruit Juice				--
21	CHLOROPHYLL	Fruit	0.0	1.0	-0.9710352631864654	--
20	LECITHIN	Plant				--
20	BENZOIC-ACID	Plant				--
20	BENZOIC-ACID	Leaf	98.0	710.0	1.3479809099758226	--
18	OLEIC-ACID	Fruit	140.0	871.0	-0.4740320725940964	--
17	PROCYANIDIN-A-2	Leaf				--
16	ACETIC-ACID	Plant				--
15	LUTEIN	Fruit	0.4	5.0	-0.4027761600563295	--
15	RIBOFLAVIN	Fruit		1.3	-0.7944081953947483	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
15	METHIONINE	Plant	20.0	124.0	-0.9578509469925256	--
15	ALPHA-LINOLENIC-ACID	Fruit	180.0	1120.0	-0.6452626880371877	--
15	FOLACIN	Fruit	0.02	0.2	-0.7547576455042277	USDA's Ag Handbook 8 and sequelae)
15	FIBER	Fruit	5200.0	49636.0	-0.8685372806832163	USDA's Ag Handbook 8 and sequelae)
14	ARGININE	Fruit	60.0	373.0	-1.0500818434124615	USDA's Ag Handbook 8 and sequelae)
14	HYPERIN	Plant				--
14	MANGANESE	Fruit	0.0	29.0	-0.2123152729972876	--
14	SHIKIMIC-ACID	Plant				--
14	SULFUR	Fruit	1.65	23.0	-0.9685087927350676	--
14	POTASSIUM	Fruit	1110.0	12140.0	-0.5110685274797335	--
14	SUCROSE	Fruit	24000.0	36200.0	-0.49014841841433165	--
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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	FORMIC-ACID	Plant				--
13	MUFA	Fruit	150.0	935.0	-0.24039423421132997	USDA's Ag Handbook 8 and sequelae)
13	PALMITIC-ACID	Fruit	480.0	2986.0	-0.31904990505316816	--
13	P-HYDROXY-BENZOIC-ACID	Fruit				--
12	IODINE	Plant				--
12	ESTRAGOLE	Essential Oil				--
12	GLYCINE	Plant	80.0	497.0	-0.8208359653564842	--
12	COPPER	Fruit	0.24	4.0	-0.6863742487163819	--
11	LITHIUM	Fruit	0.044	0.172	-0.8448748858580687	--
11	SORBITOL	Leaf				--
11	PANTOTHENIC-ACID	Fruit	1.0	4.0	-0.8996713902808875	USDA's Ag Handbook 8 and sequelae)
11	ADENINE	Root				--
9	OXALIC-ACID	Plant				--
9	BENZYL-ACETATE	Plant				--
9	SINAPIC-ACID	Fruit				--
9	PHLORETIN	Leaf	300.0	11000.0		--
8	PHLORIZIN	Plant				--
8	STEARIC-ACID	Fruit	70.0	435.0	-0.25037310927026857	--
8	PHLORIZIN	Leaf				--
8	GLUTAMIC-ACID	Fruit	156.0	1244.0	-0.9333642189445454	--
8	FRUCTOSE	Fruit	50100.0	60800.0	0.04916971831634761	--
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.
8	PHLORIDZIN	Leaf	54000.0	140000.0	1.0	--
8	TYROSINE	Fruit	40.0	249.0	-0.8990776765345502	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	INOSITOL	Plant				--
8	PHLORIZIN	Pericarp				--
8	ESTRONE	Seed	0.1	0.13	-1.0000000000000002	--
8	LACTIC-ACID	Plant				--
8	PHLORIDZIN	Fruit Juice				--
8	AMYGDALIN	Seed	6000.0	13800.0	-0.8422024808761887	--
7	AVICULARIN	Leaf	0.0	1425.0		--
7	FUMARIC-ACID	Plant				--
7	SALICYLATES	Fruit	0.8	60.0	-0.16469419114376535	--
7	INDOLE-3-ACETIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
7	GLUCOSE	Fruit	17200.0	18200.0	-0.7019443383136035	--
7	AVICULARIN	Pericarp				--
7	INDOLE-3-ACETIC-ACID	Stem Bark				--
7	INDOLE-3-ACETIC-ACID	Leaf				--
7	CYANIDIN	Leaf				--
7	LAURIC-ACID	Fruit	10.0	63.0	-0.44474745342800637	--
7	HISTIDINE	Fruit	30.0	187.0	-1.0696353953245137	--
7	PHENYLALANINE	Fruit	50.0	311.0	-1.0455516744717288	--
7	AVICULARIN	Fruit				--
7	AVICULARIN	Fruit Juice				--
7	SUCCINIC-ACID	Plant				--
6	IRON	Fruit	1.1	123.0	-0.039580333705947705	--
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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	OCTACOSANOL	Plant				--
6	MYRISTIC-ACID	Fruit	20.0	124.0	-0.26329389964394695	--
6	ETHYL-ACETATE	Plant				--
6	ETHYL-ACETATE	Fruit				--
6	GUANIDINE	Shoot				--
6	GUANIDINE	Stem				--
5	GLUTAMINE	Plant		20.0		--
5	ALUMINUM	Fruit	0.4	129.0	-0.18599251654737567	--
5	PHYLLOQUINONE	Fruit		0.06	-0.22359887323159108	--
5	HEXANAL	Fruit				--
4	PROCYANIDIN-B-4	Leaf				--
4	THREONINE	Fruit	30.0	435.0	-1.0736073129874002	--
4	METHYL-BENZOATE	Fruit				--
4	CALCIUM-OXALATE	Plant				--
4	ISOPROPYL-ACETATE	Fruit				--
4	PHOSPHORUS	Fruit	68.0	925.0	-0.6958662309301713	--
4	ISOCHLOROGENIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
4	SILICON	Fruit	0.0	70.0	-0.3810148443665756	--
4	QUERCETIN-3-RHAMNOGLUCOSIDE	Plant				--
4	COSMOSIIN	Heart Wood				--
4	PUFA	Fruit	1050.0	6535.0	-0.3716987814442892	USDA's Ag Handbook 8 and sequelae)
4	TIN	Fruit		0.0	-0.3771396188984718	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
4	BORON	Fruit	1.0	110.0	1.410811087811246	--
4	GLYCOLIC-ACID	Plant				--
4	LYSINE	Fruit	20.0	746.0	-0.8724121045963826	--
4	BIOTIN	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	D-CATECHIN	Fruit				--
3	GLYCERIC-ACID	Plant				--
3	NICKEL	Fruit	0.004	0.645	-0.5833033975627046	--
3	AMYL-BUTYRATE	Fruit				--
3	VALINE	Fruit	40.0	560.0	-0.8032333881374735	--
3	ISOLEUCINE	Fruit	50.0	497.0	-0.9433250929721118	--
3	SILVER	Fruit	0.011	0.086	-0.4995614833070808	--
3	MANNOSE	Plant				--
3	ISOQUERCETIN	Fruit Juice				--
3	ALANINE	Fruit	70.0	435.0	-1.2861845168681025	USDA's Ag Handbook 8 and sequelae)
3	CADMIUM	Fruit	0.002	0.026	-0.5672128851607269	--
3	ASPARTIC-ACID	Fruit	210.0	2115.0	-1.056731649443471	USDA's Ag Handbook 8 and sequelae)
3	TRIACONTANOL	Plant				--
3	AMYL-BUTYRATE	Plant				--
3	ISOBUTYL-ACETATE	Plant				--
3	XYLOSE	Plant				--
3	ACETONE	Plant				--
3	METHYL-ACETATE	Plant				--
3	HEXANOL	Plant				--
2	FARNESENE	Fruit Epidermis				--
2	COBALT	Fruit	0.005	0.043	-0.5299096696083117	--
2	PHOSPHATIDYL-CHOLINE	Fruit	189.0	214.0		--
2	BETA-ALANINE	Fruit				--
2	CYSTINE	Plant	30.0	187.0	-1.078139109591067	--
2	METHYL-2-METHYL-BUTYRATE	Plant				--
2	ARSENIC	Fruit	0.001	0.43	0.014133429185321438	--
2	DIETHYL-AMINE	Fruit		3.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	NEOXANTHIN	Fruit Epidermis				--
2	REYNOUTRIN	Fruit				--
2	LEUCINE	Fruit	120.0	746.0	-0.9258535515942413	--
2	METHANOL	Plant				--
2	NEO-CHLOROGENIC-ACID	Plant				--
2	PHYTOSTEROLS	Fruit	120.0	745.0	-0.2581394518581099	USDA's Ag Handbook 8 and sequelae)
2	FRIEDELIN	Heart Wood				--
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.)
2	ETHYL-ISOBUTYRATE	Fruit				--
2	PALMITOLEIC-ACID	Fruit	10.0	62.0	-0.3340992517515945	--
2	ISOAMYL-ACETATE	Fruit				--
2	REYNOUTRIN	Fruit Juice				--
2	METHYL-CAPROATE	Plant				--
2	METHYL-BUTYRATE	Fruit				--
2	ETHYL-ISOBUTYRATE	Plant				--
2	METHYL-BUTYRATE	Plant				--
2	REYNOUTRIN	Pericarp				--
2	ASPARAGINE	Fruit		171.0	-0.825458790451801	--
2	PROPIONALDEHYDE	Fruit				--
2	MOLYBDENUM	Fruit	0.077	0.43	-0.3990584824882058	--
2	QUERCETIN-3-O-BETA-D-GLUCOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
2	FARNESENE	Pericarp				--
2	NONACOSANE	Plant				--
2	POMOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	PROCYANIDIN-B-2	Fruit	2.0	10.0		--
1	METHYL-AMINE	Fruit		5.6		--
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	PROCYANIDIN-B-2	Fruit Juice				--
1	N-BUTYL-FORMATE	Plant				--
1	PROCYANIDIN-B-2	Leaf	150.0	900.0	0.9999999999999998	--
1	N-HEXYL-PROPIONATE	Fruit				--
1	ETHYL-PROPIONATE	Plant				--
1	PROCYANIDIN-B-1	Pericarp				--
1	HEXYL-BUTYRATE	Fruit				--
1	PROCYANIDIN-B-1	Leaf				--
1	ETHYL-BUTYRATE	Plant				--
1	HEXYL-ACETATE	Fruit				--
1	PYRUVIC-ACID	Plant				--
1	SODIUM	Fruit	0.0	133.0	-0.1713385458263085	--
1	PROCYANIDIN-B-1	Fruit Juice				--
1	ISOVALERALDEHYDE	Fruit				--
1	ETHYL-PROPIONATE	Fruit				--
1	PYRROLIDINE	Fruit Epidermis		1.5		--
1	MERCURY	Fruit	0.0	0.02	0.10095423065636192	--
1	PYRROLIDINE	Pericarp		1.5		--
1	PHLORETIN-GLUCOSIDE	Pericarp	10.0	15.0		--
1	PROCYANIDIN-B-1	Fruit				--
1	ETHYL-NONANOATE	Plant				--
1	PHLORETIN-GLUCOSIDE	Fruit		1.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	L-ARGININE	Stem				--
1	N-BUTYL-PROPIONATE	Fruit				--
1	HEXYL-FORMATE	Plant				--
1	GLYOXYLIC-ACID	Plant				--
1	L-ARGININE	Shoot				--
1	ETHYL-VALERATE	Fruit				--
1	QUERCETIN-3-O-RHAMNOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
1	CATALASE	Plant				--
1	HEXYL-BUTYRATE	Plant				--
1	N-BUTYL-PROPIONATE	Plant				--
1	SERINE	Fruit	80.0	497.0	-1.1107007920496865	USDA's Ag Handbook 8 and sequelae)
1	METHYL-AMINE	Fruit Epidermis		4.5		--
1	ETHYL-FORMATE	Fruit				--
1	METHYL-AMINE	Pericarp		4.5		--
1	HEXYL-ACETATE	Plant				--
1	PROCYANIDIN-B-2	Pericarp	15.0	100.0		--
1	AMYL-FORMATE	Fruit				--
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.
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.
1	N-HEXYL-PROPIONATE	Plant				--
0	PENTYL-BUTYRATE	Plant				--
0	ASCORBIDASE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOAMYL-BUTYRATE	Plant				--
0	3,4-BENZOPYRENE	Fruit				--
0	VOMIFOLIOL-1-O-BETA-D-XYLOPYRANOSYL-6-O-BETA-D-GLUCOPYRANOSIDE	Plant				--
0	NITROGEN	Fruit	280.0	4000.0	-0.7448119387296798	ACTA AGRIC SCAND SUPPL 22: 1980
0	N-BUTYL-N-HEXANOATE	Plant				--
0	D-2-METHYLBUTAN-1-OL	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.
0	PROPYL-N-PENTANOATE	Plant				--
0	BUTYL-CAPROATE	Plant				--
0	GALACTANASE	Plant				--
0	TRANS-ABSCISIC-ACID	Fruit				--
0	N-PENTYL-2-METHYLBUTYRATE	Plant				--
0	AROMADENDRIN-3-O-BETA-D-GLUCOSIDE	Heart Wood				--
0	METHYL-VINYL-KETONE	Fruit				--
0	ETHYL-DECENOATE	Plant				--
0	N-HEXYL-N-HEXANOATE	Plant				--
0	POLYPHENOLASE	Plant				--
0	OCTANE-1,3-DIOL-GLYCOSIDE	Fruit Juice				--
0	OXALOACETIC-ACID	Plant				--
0	AMMONIA(NH3)	Fruit Epidermis	235.0	1029.0		--
0	I-DECANOIC-ACID	Plant				--
0	GAMMA-GUANIDINOBUTYRIC-ACID	Stem				--
0	2-HEXENAL	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Fruit Epidermis				--
0	DIHYDROXYTRICARBALLYLIC-ACID	Fruit		1.0		--
0	QUERCETIN-3-O-ALPHA-ARABINOFURANOSIDE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	CAPRYLIC-ESTER	Plant				--
0	KILOCALORIES	Fruit		3419.0	-0.36687576531452953	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	HEXACOSANOL	Plant				--
0	1,3,3,-TRIMETHYL-DIOXA-2,7-BICYCLO(2,2,1)HEPTANE	Fruit				--
0	ANILINE	Pericarp		1.7		--
0	STRONTIUM	Fruit	0.165	8.6	-0.9690625512009637	--
0	N-HEXYL-OCTANOATE	Plant				--
0	VALERALDEHYDE	Fruit				--
0	PENTANOL	Plant				--
0	20-HYDROXYURSOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	N-ALPHA-ACETYL-ARGININE	Shoot				--
0	VIT-B-6	Fruit	1.0	3.0	-0.8751338727185397	--
0	ETHYL-VALERIANATE	Plant				--
0	PROPYL-FORMATE	Plant				--
0	BUTYL-BUTYRATE	Plant				--
0	TRANS-2-HEXENOIC-ACID	Plant				--
0	N-PENTENOIC-ACID	Plant				--
0	METHYL-PROPIONATE	Plant				--
0	ETHYL-CROTONATE	Plant				--
0	METHYL-VALERATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	RUBIDIUM	Fruit	0.27	10.0	-0.6798204139542442	ACTA AGRIC SCAND SUPPL 22: 1980
0	POLYGALACTURONASE	Plant				--
0	OCTANE-1,3-DIOL	Fruit Juice				--
0	I-BUTYL-PROPIOANTE	Plant				--
0	GAMMA-GUANIDINOBUTRAMIDE	Stem				--
0	2-HEPTANOL	Plant				--
0	DIGALACTOSYL-DIGLYCERIDE	Fruit	49.0	107.0		--
0	QUERCETIN-3-O-RUTINOSIDE	Plant				--
0	CAPROIC-ACID-AMYL-ESTER	Plant				--
0	PROCYANIDIN-OLIGOMERS	Fruit				--
0	BENZYL-AMINE	Fruit Epidermis		0.6		--
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	HEPTENOIC-ACID	Plant				--
0	-D-GLUCITOL	Plant				--
0	N-HEXANOL	Plant				--
0	PECTIN-DEMETHOXYXYLASE	Plant				--
0	2-PROPANOL	Plant				--
0	N-BUTYL-DECANOATE	Plant				--
0	PHYTATE	Fruit	630.0	4040.0	-0.2108482779177121	--
0	CYANIDIN-7-ARABINOSIDE	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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PROPYL-BUTYRATE	Plant				--
0	TITANIUM	Fruit	0.055	3.0	-0.6858409400678522	--
0	N-PENTANOIC-ACID	Plant				--
0	ABSCISIC-ACID	Fruit Juice				--
0	METHYL-N-PENTANOATE	Plant				--
0	ETHYL-CAPROATE	Plant				--
0	METHYL-NONAN-3-ONE	Fruit				--
0	CITRAMALIC-ACID	Plant				--
0	POLYGALACTOSYL-DIGLYCERIDE	Plant				--
0	LINOLENIC-ACID	Fruit	870.0	5411.0	-0.1866295815550338	--
0	OCT-CIS-5-ENE-1,3-DIOL-GLYCOSIDE	Fruit Juice				--
0	1-BUTYL-OCTANOATE	Plant				--
0	2-BUTANOL	Plant				--
0	CAPROALDEHYDE	Plant				--
0	PROCYANIDIN-G	Leaf				--
0	PHLORETIN-XYLOGLUCOSIDE	Fruit	1.0	3.0		--
0	BENZYL-AMINE	Fruit	0.3	3.0		--
0	ISOPROPYL-BUTYRATE	Plant				--
0	ABSCISIC-ACID	Fruit				--
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	HEPTACOSANE	Plant				--
0	AMYL-ACETATE	Fruit				--
0	OCTENOIC-ACID	Plant				--
0	N-HEX-1-EN-3-OL	Plant				--
0	2-PHENETHYLACETATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	N-BUTANOL	Plant				--
0	ETHYL-PHENACETATE	Plant				--
0	CYANIDIN-3-GALACTOSIDE	Plant				--
0	2-(1,1-DIMETHYLETHYL)-CYCLOHECYLACETATE	Fruit				--
0	PROPYL-ACETATE	Plant				--
0	N-OCTANONE	Plant				--
0	METHYL-I-PENTANOATE	Plant				--
0	CIS-N-HEX-3-EN-1-OL	Plant				--
0	PIPECOLINIC-ACID	Plant				--
0	OCT-CIS-5-ENE-1,3-DIOL	Fruit Juice				--
0	ALPHA-OXOGLUTARIC-ACID	Plant				--
0	2,4-METHYLENE-CHOLESTEROL	Pollen Or Spore				--
0	FR	Plant				--
0	DIASTASE	Plant				--
0	PROCYANIDIN-E	Leaf				--
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Fruit		6486.0		--
0	7-HEXANOIC-ACID	Plant				--
0	HEMICELLULOSE	Plant				--
0	N-HEPTANOL	Plant				--
0	IDAEIN	Plant				--
0	METHYL-GUANIDINE	Stem				--
0	2-PENTANOL	Plant				--
0	GLUCOCEREBROSIDE	Plant	34.0	49.0		--
0	URONIC-ACID	Fruit	7.0	1440.0		--
0	TRANS-ABSCISIC-ACID	Fruit Juice				--
0	N-ALPHA-ACETYL-AGGININE	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ETHYL-PENTANOATE	Plant				--
0	PHLORETIN-XYLOGLUCOSIDE	Pericarp	7.0	27.0		--
0	CYANIDIN-3-ARABINOSIDE	Plant				--
0	VOMIFOLIOL-1-O-BETA-D-XYLOPYRANOSYL-6-O-BETA-D-GLUCOPYRANOSIDE	Fruit				--
0	PROPYL-2-METHYLBUTYRATE	Plant				--
0	PECTASE	Plant				--
0	ARABINOSE	Plant				--
0	N-OCTANOL-2-OCTANOL	Plant				--
0	METHYL-HEXANOATE	Plant				--
0	ETHYL-AMINE	Fruit		3.0		--
0	CIS-2,TRANS-4-ABSCISIC-ACID	Bark				--
0	N-1-N-5-N-10-TRI-TRANS-4-COUMAROYL-SPERMIDINE	Flower				--
0	19-HYDROXYURSONIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	DEHYDROASCORBIC-ACID	Plant				--
0	PROCYANIDIN-D-1	Leaf				--
0	ISOCITRIC-ACID	Plant				--
0	6-METHYL-HEPTEN-5-EN-2-ONE	Fruit				--
0	GUANIDINOSUCCINIC-ACID	Shoot				--
0	JASMONIC-ACID	Fruit				--
0	OCTA-TRANS-3-CIS-5-DIEN-1-OL-ACETATE	Essential Oil				--
0	N-HEPTANOIC-ACID	Plant				--
0	QUERCETIN-XYLOSIDE	Pericarp	9.0	19.0		--
0	I-PROPANOL	Plant				--
0	2-METHYL-PROPEN-1-AL	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	N-PROPIONIC-ACID	Plant				--
0	N-ALPHA-ACETYL-L-ARGININE	Stem				--
0	ETHYL-OCTANOATE	Plant				--
0	CYANIDIN-3,5-DIGLUCOSIDE	Cotyledon				--
0	PROPANOL	Plant				--
0	ANILINE	Fruit Epidermis		1.7		--
0	N-NONANOL-2-NONANOL	Plant				--
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	METHYL-GUANIDINE	Shoot				--
0	QUERCETIN-ARABINOSIDE	Plant				--
0	BUTYL-ACETATE	Plant				--
0	LEAD	Fruit	0.002	64.0	3.294104898397132	--
0	ALPHA-AMINO-BUTYRIC-ACID	Plant				--
0	HYDROXYCINNAMIC-ACID	Fruit		1340.0		--
0	CREATINE	Stem				--
0	19-HYDROXYURSOLIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	TETRADECYL-ACETATE	Leaf				--
0	PYROXIDINE	Plant				--
0	PROCYANIDIN-C-1	Pericarp				--
0	PHLORETAMIDE	Fruit				--
0	BARIUM	Fruit	0.22	8.6	-0.8622422515184034	--
0	AMMONIA	Fruit		235.0	-1.0	--
0	5,6-EPOXY-10'-APO-5,6-DIHYDRO-BETA-CAROTENE-3,10'-DIOL	Plant		20000.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Pericarp				--
0	GUANIDINOACETIC-ACID	Shoot				--
0	OCTA-TRANS-3-CIS-5-DIEN-1-OL	Essential Oil				--
0	N-HEHYL-N-HEXANOATE	Plant				--
0	FLUORINE	Fruit	0.1	2.1	0.7378739376517985	ACTA AGRIC SCAND SUPPL 22: 1980
0	QUERCETIN-GLUCOSIDE	Pericarp	9.0	20.0		--
0	DECENOIC-ACID	Plant				--
0	BUTANAL	Fruit				--
0	2-METHYL-PENTAN-2-OL	Plant				--
0	PROPYL-BUTYRATE	Fruit				--
0	GAMMA-METHYL-PROLINE	Plant				--
0	N-PROPANOL	Plant				--
0	N-ALPHA-ACETYL-L-ARGININE	Shoot				--
0	MYO-INOSITOL	Pollen Or Spore		4500.0		--
0	QUERCETIN-ARABINOSIDE	Pericarp	18.0	37.0		--
0	PROLINE	Plant	20.0	435.0	-1.0472597877182985	--
0	ANILINE	Fruit		1.5		--
0	I-PENTYL-I-PENTANOATE	Plant				--
0	N-NONANOIC-ACID	Plant				--
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	METHYL-FORMATE	Plant				--
0	PHOSPHATIDYLIC-ACID	Fruit	3.0	6.0		--
0	BUTANOL	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-ALANINE	Fruit				--
0	1-OCTYL-ACETATE	Plant				--
0	TETRADECENYL-ACETATE	Leaf				--
0	CAFFEETANNIN	Plant				--
0	PROCYANIDIN-C-1	Leaf				--
0	ISOBUTYL-FORMATE	Plant				--
0	(+)-EPICATECHIN	Fruit				--
0	4-HYDROXYMETHYLPROLINE	Plant				--
0	ZIRCONIUM	Fruit	0.22	0.86	-0.546541741871023	--
0	OCTA-CIS-3-CIS-5-DIEN-1-OL-ACETATE	Essential Oil				--
0	N-DECANOL	Plant				--
0	QUERCETIN-GALACTOSIDE	Pericarp	28.0	60.0		--
0	D-L-NONACOSANOL	Plant				--
0	BUTAN-2-ONE	Fruit				--
0	2-METHYL-BUTAN-2-OL	Plant				--
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Leaf		6486.0		--
0	GAMMA-GUANIDINOPROPIONIC-ACID	Shoot				--
0	TRIGLYCERIDE	Plant	45.0	50.0		--
0	N-PENTYL-OCTANOATE	Plant				--
0	ETHYL-METHYLBUTYRATE	Plant				--
0	PHENYLBENZOATE	Fruit				--
0	CUTIN	Fruit Epidermis				--
0	PROPYL-ACETATE	Fruit				--
0	AMYL-PROPIONATE	Plant				--
0	I-PENTYL-FORMATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GUANIDINOACETIC-ACID	Stem				--
0	QUERCETIN-3-O-XYLOSIDE	Fruit Epidermis				--
0	PHOSPHATIDYL-SERINE	Fruit		4.0		--
0	BROMINE	Fruit		1.0	-0.42563543443835	ACTA AGRIC SCAND SUPPL 22: 1980
0	1-NONYL-ACETATE	Plant				--
0	N-METHYL-PHENETHYLAMINE	Fruit		1.2		--
0	PROCYANIDIN-C-1	Fruit Juice				--
0	PHENOLICS	Plant	1100.0	3400.0	-1.0	--
0	ISOBUTYL-BUTYRATE	Plant				--
0	3-PENTANOL	Plant				--
0	QUERCETIN-3-O-RUTINOSIDE	Plant				--
0	OCTA-CIS-3-CIS-5-DIEN-1-OL	Essential Oil				--
0	N-COUMARYL-QUINIC-ACID	Plant				--
0	QUERCETIN-3-RHAMNOSIDE	Pericarp	19.0	39.0		--
0	MALVIDIN-MONOGLYCOSIDE	Plant				--
0	D-GLUCONIC-ACID	Plant				--
0	2-METHYL-BUT-3-EN-1-OL	Fruit				--
0	GAMMA-GUANIDINOBUTYRIC-ACID	Shoot				--
0	N-PENTYL-FORMATE	Plant				--
0	MONOGALACTOSYL-DIGLYCERIDE	Plant	12.0	42.0		--
0	PENTAN-2-ONE	Fruit				--
0	SFA	Fruit	580.0	3610.0	-0.29989489934752117	USDA's Ag Handbook 8 and sequelae)
0	CREATINE	Shoot				--
0	I-PENTANOL	Plant				--
0	PHOSPHATIDYL-INOSITOL	Fruit	53.0	59.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	L-QUINIC-ACID	Plant				--
0	3-HYDROXYPHLORIDZIN	Fruit Juice				--
0	AMMONIA	Pericarp		1029.0		--
0	1-MONO-LINOLEIN	Seed				--
0	BUTYL-ACETATE	Fruit				--
0	SUGAR	Fruit	60100.0	166000.0	-0.15008461399428302	--
0	N-METHYL-PHENETHYLAMINE	Exocarp		1.3		--
0	BUTYL-VALERIANATE	Plant				--
0	PROCYANIDIN-C-1	Fruit				--
0	PEROXIDASE	Plant				--
0	3-HYDROXY-OCTYL-BETA-D-GLUCOSIDE	Fruit				--
0	N-METHYL-PHENETHYLAMINE	Pericarp		1.3		--
0	NONENOIC-ACID	Plant				--
0	FAT	Seed	180000.0	230000.0	-0.1863991011784708	--
0	D-GALACTURONIC-ACID	Plant	13.0	54.0		--
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.
0	PROTEIN	Fruit	1870.0	12800.0	-1.2962859772396575	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	GAMMA-GUANIDINOBUTRAMIDE	Shoot				--
0	TRANS-N-HEX-3-EN-1-OL	Plant				--
0	N-PENTYL-DECANOATE	Plant				--
0	CIS-2,TRANS-4-ABSCISIC-ACID	Stem Bark				--
0	ETHYL-HEXANOATE	Plant				--
0	P-COUMARIC-ACID-2	Leaf	0.0	185.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	COUMARIC-ACID	Plant				--
0	POMONIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	PHLORETIN-XYLOSIDE	Fruit Juice				--
0	P-COUMARYL-QUINIC-ACID	Fruit				--
0	AMYL-ACETATE	Plant				--
0	I-PENTANOIC-ACID	Plant				--
0	GIBBERELLIN-A-62	Seed				--
0	2-METHYL-BUT-2-EN-1-AL	Fruit				--
0	EO	Fruit	25.0	35.0	-0.8192816022307305	--
0	CAROTENOIDS	Plant	0.0	126.0		--
0	PHOSPHATIDYL- GLYCEROL	Fruit	8.0	27.0		--
0	L-MALIC-ACID	Plant				--
0	1-MONOOLEIN	Seed				--
0	1-DECYL-ACETATE	Plant				--
0	BENZYL-AMINE	Pericarp		0.6		--
0	N-METHYL-BETA- PHENETHYLAMINE	Fruit		1.2		--
0	BUTYL-PROPIONATE	Plant				--
0	PROCYANIDIN-B-5	Leaf				--
0	PENTYL-HEXANOATE	Plant				--
0	ASH	Fruit	2300.0	43000.0	-0.3538278176314037	--
0	ISOAMYL-PROPIONATE	Plant				--
0	3-BETA-19-ALPHA- DIHYDROXY-2-OXO-URS- 12-EN-28-OIC-ACID	Wood		1000.0		--
0	WATER	Fruit	809000.0	896000.0	0.5453564376102144	--
0	N-BUTYL-OCTANOATE	Plant				--
0	FAT	Fruit	3210.0	34200.0	-0.3800352407430785	--
0	PROPYL-PROPIONATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GALACTARIC-ACID	Plant				--
0	TRANS-N-HEX-2-EN-1-OL	Plant				--
0	N-PENTYL-AMINE	Fruit		0.3	-0.9999999999999999	--
0	MEVALONIC-ACID	Fruit	30.0	36.0	1.9898059802462824	--
0	ETHYL-DODECANOATE	Plant				--
0	P-COUMARIC-ACID-1	Leaf	0.0	320.0		--
0	LUTEOXANTHIN	Fruit				--
0	PHLORETIN-2'-XYLOGLUCOSIDE	Fruit Juice				--
0	I-HEXANOIC-ACID	Plant				--
0	GAMMA-GUANIDINOPROPIONIC-ACID	Stem				--
0	2-METHYL-2,3-EPOXY-PENTANE	Fruit				--
0	ISOAMYL-BUTYRATE	Fruit				--
0	(Z)-HEX-2-ENAL	Fruit				--
0	DIPHOSPHATIDYL-GLYCEROL	Fruit	4.0	6.0		--
0	QUERCETIN-3-O-ALPHA-GALACTOSIDE	Fruit Epidermis				--
0	CARBOHYDRATES	Fruit	152250.0	948550.0	0.8859136568099041	--
0	PHOSPHATIDYL-ETHANOLAMINE	Fruit	101.0	124.0		--
0	L-EPICATECHIN	Fruit				--
0	ACETIC-ACID-AMYL-ESTER	Plant				--
0	1-BUTANOL	Plant				--