

P Malus domestica

Common Name(s)

Apple

How Used

F

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	(+)-CATECHIN	Leaf	--	--	
30	(+)-CATECHIN	Fruit	--	--	
30	(+)-CATECHIN	Pericarp	--	--	
30	(+)-CATECHIN	Pt	--	--	
30	(+)-CATECHIN	Seed	--	--	
30	(+)-CATECHIN	Bark	--	--	
0	(+)-EPICATECHIN	Fruit	--	--	
38	(-)-EPICATECHIN	Leaf	150	900	-0.6820874109972213
38	(-)-EPICATECHIN	Fruit Juice	--	--	
38	(-)-EPICATECHIN	Fruit	--	--	
38	(-)-EPICATECHIN	Pericarp	--	--	
0	(Z)-HEX-2-ENAL	Fruit	--	--	
0	-D-GLUCITOL	Plant	--	--	
0	1,3,3,-TRIMETHYL-DIOXA-2,7-BICYCLO(2,2,1)HEPTANE	Fruit	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	3-BETA-19-ALPHA-DIHYDROXY-2-OXO-URS-12-EN-28-OIC-ACID	Wood	1000	1000		
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	20000		
0	6-METHYL-HEPTEN-5-EN-2-ONE	Fruit	--	--		
0	7-HEXANOIC-ACID	Plant	--	--		
0	ABSCISIC-ACID	Fruit	--	--		
0	ABSCISIC-ACID	Fruit Juice	--	--		
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.
6	ACETALDEHYDE	Fruit	--	--		
16	ACETIC-ACID	Plant	--	--		
0	ACETIC-ACID-AMYL-ESTER	Plant	--	--		
3	ACETONE	Plant	--	--		
11	ADENINE	Root	--	--		
3	ALANINE	Fruit	70	435	-1.2861845168681025	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-ALANINE	Fruit	--	--		
0	ALPHA-AMINO-BUTYRIC-ACID	Plant	--	--		

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
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	1120	-0.6452626880371877	
0	ALPHA-OXOGLUTARIC-ACID	Plant	--	--		
32	ALPHA-TOCOPHEROL	Fruit	2	37	-0.5521025162177928	
5	ALUMINUM	Fruit	0.4	129	-0.18599251654737567	
0	AMMONIA	Pericarp	235	1029		
0	AMMONIA	Fruit	--	235	-1	
0	AMMONIA(NH3)	Fruit Epidermis	235	1029		
8	AMYGDALIN	Seed	6000	13800	-0.8422024808761887	
0	AMYL-ACETATE	Plant	--	--		
0	AMYL-ACETATE	Fruit	--	--		
3	AMYL-BUTYRATE	Plant	--	--		
3	AMYL-BUTYRATE	Fruit	--	--		
1	AMYL-FORMATE	Fruit	--	--		
0	AMYL-PROPIONATE	Plant	--	--		
0	ANILINE	Fruit	1.5	1.5		
0	ANILINE	Fruit Epidermis	--	1.7		
0	ANILINE	Pericarp	1.7	1.7		
101	APIGENIN	Heart Wood	--	--		
0	ARABINOSE	Plant	--	--		
14	ARGININE	Fruit	60	373	-1.0500818434124615	USDA's Ag Handbook 8 and sequelae)

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	AROMADENDRIN-3-O-BETA-D-GLUCOSIDE	Heart Wood	--	--		
2	ARSENIC	Fruit	0.001	0.43	0.014133429185321438	
112	ASCORBIC-ACID	Fruit	20	402	-0.2594938543964892	
0	ASCORBIDASE	Plant	--	--		
0	ASH	Fruit	2300	43000	-0.3538278176314037	
2	ASPARAGINE	Fruit	171	171	-0.825458790451801	
3	ASPARTIC-ACID	Fruit	210	2115	-1.056731649443471	USDA's Ag Handbook 8 and sequelae)
7	AVICULARIN	Fruit	--	--		
7	AVICULARIN	Leaf	--	1425		
7	AVICULARIN	Fruit Juice	--	--		
7	AVICULARIN	Pericarp	--	--		
0	BARIUM	Fruit	0.22	8.6	-0.8622422515184034	
20	BENZOIC-ACID	Plant	--	--		
20	BENZOIC-ACID	Leaf	98	710	1.3479809099758226	
9	BENZYL-ACETATE	Plant	--	--		
0	BENZYL-AMINE	Fruit	0.3	3		
0	BENZYL-AMINE	Fruit Epidermis	--	0.6		
0	BENZYL-AMINE	Pericarp	0.6	0.6		
2	BETA-ALANINE	Fruit	--	--		
53	BETA-CAROTENE	Fruit	--	76	-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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Fruit	110	660	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.)
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	--	--	
4	BIOTIN	Plant	--	--	
4	BORON	Fruit	1	110	1.410811087811246
0	BROMINE	Fruit	--	1	-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
0	CAFFEETANNIN	Plant	--	--	
102	CAFFEIC-ACID	Fruit	85	1270	-0.10378621224302456
102	CAFFEIC-ACID	Fruit Juice	--	--	
28	CALCIUM	Fruit	43	570	-0.75834467805693
4	CALCIUM-OXALATE	Plant	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
2	CAMPESTEROL	Fruit	10	60	-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	948550	0.8859136568099041	
0	CAROTENOIDS	Plant	--	126		
1	CATALASE	Plant	--	--		
77	CHLOROGENIC-ACID	Fruit	5	15	-1.0935971883111022	
77	CHLOROGENIC-ACID	Leaf	100	1200	-1.3240006985895736	
77	CHLOROGENIC-ACID	Pericarp	8	18		
77	CHLOROGENIC-ACID	Fruit Juice	--	--		
77	CHLOROGENIC-ACID	Seed	--	--		
77	CHLOROGENIC-ACID	Pt	--	--		
21	CHLOROPHYLL	Fruit	--	1	-0.9710352631864654	
24	CHROMIUM	Fruit	0.005	0.3	-0.4654957769727276	
60	CINNAMALDEHYDE	Fruit	--	--		
0	CIS-2,TRANS-4-ABSCISIC-ACID	Bark	--	--		
0	CIS-2,TRANS-4-ABSCISIC-ACID	Stem Bark	--	--		
0	CIS-N-HEX-3-EN-1-OL	Plant	--	--		
0	CITRAMALIC-ACID	Plant	--	--		
23	CITRIC-ACID	Plant	--	--		
2	COBALT	Fruit	0.005	0.043	-0.5299096696083117	
12	COPPER	Fruit	0.24	4	-0.6863742487163819	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	187	-1.078139109591067
0	D-2-METHYLBUTAN-1-OL	Plant	--	--	
4	D-CATECHIN	Fruit	--	--	
0	D-GALACTURONIC-ACID	Plant	13	54	
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	3	
0	DIGALACTOSYL-DIGLYCERIDE	Fruit	49	107	
0	DIHYDROXYTRICARBALLYLIC-ACID	Fruit	1	1	
0	DIPHOSPHATIDYL-GLYCEROL	Fruit	4	6	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	EO	Fruit	25	35	-0.8192816022307305
40	EPICATECHIN	Fruit	4	11	
40	EPICATECHIN	Pericarp	20	80	
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	3	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	ETHYL-PENTANOATE	Plant	--	--		
0	ETHYL-PHENACETATE	Plant	--	--		
1	ETHYL-PROPIONATE	Plant	--	--		
1	ETHYL-PROPIONATE	Fruit	--	--		
1	ETHYL-VALERATE	Fruit	--	--		
0	ETHYL-VALERIANATE	Plant	--	--		
2	FARNESENE	Fruit Epidermis	--	--		
2	FARNESENE	Pericarp	--	--		
0	FAT	Fruit	3210	34200	-0.3800352407430785	
0	FAT	Seed	180000	230000	-0.1863991011784708	
61	FERULIC-ACID	Fruit	4	95	1.7162326606420661	
15	FIBER	Fruit	5200	49636	-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	60800	0.04916971831634761	
7	FUMARIC-ACID	Plant	--	--		
0	GALACTANASE	Plant	--	--		
0	GALACTARIC-ACID	Plant	--	--		
62	GALLIC-ACID	Fruit	--	--		
62	GALLIC-ACID	Pericarp	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	GAMMA-GUANIDINOBTURAMIDE	Shoot	--	--	
0	GAMMA-GUANIDINOBTURAMIDE	Stem	--	--	
0	GAMMA-GUANIDINOBTURIC-ACID	Shoot	--	--	
0	GAMMA-GUANIDINOBTURIC-ACID	Stem	--	--	
0	GAMMA-GUANIDINOPROPIONIC-ACID	Shoot	--	--	
0	GAMMA-GUANIDINOPROPIONIC-ACID	Stem	--	--	
0	GAMMA-METHYL-PROLINE	Plant	--	--	
35	GERANIOL	Plant	--	--	
0	GIBBERELLIN-A-62	Seed	--	--	
0	GLUCOCEREBROSIDE	Plant	34	49	
7	GLUCOSE	Fruit	17200	18200	-0.7019443383136035
8	GLUTAMIC-ACID	Fruit	156	1244	-0.9333642189445454
5	GLUTAMINE	Plant	20	20	
3	GLYCERIC-ACID	Plant	--	--	
12	GLYCINE	Plant	80	497	-0.8208359653564842
4	GLYCOLIC-ACID	Plant	--	--	
1	GLYOXYLIC-ACID	Plant	--	--	
6	GUANIDINE	Shoot	--	--	
6	GUANIDINE	Stem	--	--	
0	GUANIDINOACETIC-ACID	Shoot	--	--	
0	GUANIDINOACETIC-ACID	Stem	--	--	
0	GUANIDINOSUCCINIC-ACID	Shoot	--	--	
0	HEMICELLULOSE	Plant	--	--	
0	HEPTACOSANE	Plant	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	HEPTENOIC-ACID	Plant	--	--	
0	HEXACOSANOL	Plant	--	--	
5	HEXANAL	Fruit	--	--	
3	HEXANOL	Plant	--	--	
1	HEXYL-ACETATE	Plant	--	--	
1	HEXYL-ACETATE	Fruit	--	--	
1	HEXYL-BUTYRATE	Plant	--	--	
1	HEXYL-BUTYRATE	Fruit	--	--	
1	HEXYL-FORMATE	Plant	--	--	
7	HISTIDINE	Fruit	30	187	-1.0696353953245137
0	HYDROXYCINNAMIC-ACID	Fruit	1340	1340	
14	HYPERIN	Plant	--	--	
30	HYPEROSIDE	Fruit	--	--	
30	HYPEROSIDE	Pericarp	--	--	
30	HYPEROSIDE	Fruit Juice	--	--	
30	HYPEROSIDE	Heart Wood	--	--	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	I-PROPANOL	Plant	--	--	
0	IDAEIN	Plant	--	--	
7	INDOLE-3-ACETIC-ACID	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
7	INDOLE-3-ACETIC-ACID	Leaf	--	--	
7	INDOLE-3-ACETIC-ACID	Stem Bark	--	--	
8	INOSITOL	Plant	--	--	
12	IODINE	Plant	--	--	
6	IRON	Fruit	1.1	123	-0.039580333705947705
2	ISOAMYL-ACETATE	Fruit	--	--	
0	ISOAMYL-BUTYRATE	Plant	--	--	
0	ISOAMYL-BUTYRATE	Fruit	--	--	
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	497	-0.9433250929721118
4	ISOPROPYL-ACETATE	Fruit	--	--	
0	ISOPROPYL-BUTYRATE	Plant	--	--	
3	ISOQUERCETIN	Fruit Juice	--	--	
22	ISOQUERCITRIN	Fruit	--	--	
22	ISOQUERCITRIN	Fruit Juice	--	--	
22	ISOQUERCITRIN	Pericarp	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
1	ISOVALERALDEHYDE	Fruit	--	--		
0	JASMONIC-ACID	Fruit	--	--		
75	KAEMPFEROL	Fruit	--	2	-0.5794291374991353	
0	KILOCALORIES	Fruit	3419	3419	-0.36687576531452953	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
1	L-ARGININE	Shoot	--	--		
1	L-ARGININE	Stem	--	--		
0	L-EPICATECHIN	Fruit	--	--		
0	L-MALIC-ACID	Plant	--	--		
0	L-QUINIC-ACID	Plant	--	--		
8	LACTIC-ACID	Plant	--	--		
7	LAURIC-ACID	Fruit	10	63	-0.44474745342800637	
0	LEAD	Fruit	0.002	64	3.294104898397132	
20	LECITHIN	Plant	--	--		
2	LEUCINE	Fruit	120	746	-0.9258535515942413	
0	LINOLENIC-ACID	Fruit	870	5411	-0.1866295815550338	
11	LITHIUM	Fruit	0.044	0.172	-0.8448748858580687	
15	LUTEIN	Fruit	0.4	5	-0.4027761600563295	
78	LUTEOLIN	Heart Wood	--	--		
0	LUTEOXANTHIN	Fruit	--	--		
4	LYSINE	Fruit	20	746	-0.8724121045963826	
65	MAGNESIUM	Fruit	48	478	-0.7648501234386748	
0	MALVIDIN-MONOGLYCOSIDE	Plant	--	--		
14	MANGANESE	Fruit	--	29	-0.2123152729972876	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	0.02	0.10095423065636192
2	METHANOL	Plant	--	--	
15	METHIONINE	Plant	20	124	-0.9578509469925256
2	METHYL-2-METHYL-BUTYRATE	Plant	--	--	
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Fruit Epidermis	--	--	
0	METHYL-2-XI-ACETOXY-20-BETA-HYDROXY-URSONATE	Pericarp	--	--	
3	METHYL-ACETATE	Plant	--	--	
1	METHYL-AMINE	Fruit Epidermis	--	4.5	
1	METHYL-AMINE	Pericarp	4.5	4.5	
1	METHYL-AMINE	Fruit	--	5.6	
4	METHYL-BENZOATE	Fruit	--	--	
2	METHYL-BUTYRATE	Plant	--	--	
2	METHYL-BUTYRATE	Fruit	--	--	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	36	1.9898059802462824
2	MOLYBDENUM	Fruit	0.077	0.43	-0.3990584824882058
0	MONOGALACTOSYL-DIGLYCERIDE	Plant	12	42	
13	MUFA	Fruit	150	935	-0.24039423421132997 USDA's Ag Handbook 8 and sequelae)
0	MYO-INOSITOL	Pollen Or Spore	4500	4500	
34	MYRICETIN	Fruit	--	0.5	-0.7536633445071549
6	MYRISTIC-ACID	Fruit	20	124	-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	Shoot	--	--	
0	N-ALPHA-ACETYL-L-ARGININE	Stem	--	--	
0	N-BUTANOL	Plant	--	--	
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	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	Plant	--	--	
1	N-HEXYL-PROPIONATE	Fruit	--	--	
0	N-METHYL-BETA-PHENETHYLAMINE	Fruit	1.2	1.2	
0	N-METHYL-PHENETHYLAMINE	Exocarp	--	1.3	
0	N-METHYL-PHENETHYLAMINE	Fruit	1.2	1.2	
0	N-METHYL-PHENETHYLAMINE	Pericarp	1.3	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	--	--	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	N-PENTANOIC-ACID	Plant	--	--		
0	N-PENTENOIC-ACID	Plant	--	--		
0	N-PENTYL-2-METHYLBUTYRATE	Plant	--	--		
0	N-PENTYL-AMINE	Fruit	0.3	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	7	-0.7178505836876389	
3	NICKEL	Fruit	0.004	0.645	-0.5833033975627046	
0	NITROGEN	Fruit	280	4000	-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	--	--		

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	871	-0.4740320725940964	
9	OXALIC-ACID	Plant	--	--		
0	OXALOACETIC-ACID	Plant	--	--		
25	P-COUMARIC-ACID	Fruit	15	460	1.836295249622603	
25	P-COUMARIC-ACID	Leaf	--	--		
0	P-COUMARIC-ACID-1	Leaf	--	320		
0	P-COUMARIC-ACID-2	Leaf	--	185		
0	P-COUMARYL-QUINIC-ACID	Fruit	--	--		
13	P-HYDROXY-BENZOIC-ACID	Fruit	--	--		
13	PALMITIC-ACID	Fruit	480	2986	-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	62	-0.3340992517515945	
11	PANTOTHENIC-ACID	Fruit	1	4	-0.8996713902808875	USDA's Ag Handbook 8 and sequelae)
0	PECTASE	Plant	--	--		
24	PECTIN	Fruit	1400	66585	0.16029071562128944	
0	PECTIN-DEMETHOXYXYLASE	Plant	--	--		
0	PENTAN-2-ONE	Fruit	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	PENTANOL	Plant	--	--	
0	PENTYL-BUTYRATE	Plant	--	--	
0	PENTYL-HEXANOATE	Plant	--	--	
0	PEROXIDASE	Plant	--	--	
0	PHENOLICS	Plant	1100	3400	-1
7	PHENYLALANINE	Fruit	50	311	-1.0455516744717288
0	PHENYLBENZOATE	Fruit	--	--	
0	PHLORETAMIDE	Fruit	--	--	
9	PHLORETIN	Leaf	300	11000	
0	PHLORETIN-2'-XYLOGLUCOSIDE	Fruit Juice	--	--	
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Fruit	--	6486	
0	PHLORETIN-4'-O-BETA-D-GLUCOPYRANOSIDE	Leaf	6486	6486	
1	PHLORETIN-GLUCOSIDE	Fruit	--	1	
1	PHLORETIN-GLUCOSIDE	Pericarp	10	15	
0	PHLORETIN-XYLOGLUCOSIDE	Fruit	1	3	
0	PHLORETIN-XYLOGLUCOSIDE	Pericarp	7	27	
0	PHLORETIN-XYLOSIDE	Fruit Juice	--	--	
8	PHLORIDZIN	Leaf	54000	140000	1
8	PHLORIDZIN	Fruit Juice	--	--	
8	PHLORIZIN	Plant	--	--	
8	PHLORIZIN	Leaf	--	--	
8	PHLORIZIN	Pericarp	--	--	
2	PHOSPHATIDYL-CHOLINE	Fruit	189	214	
0	PHOSPHATIDYL-ETHANOLAMINE	Fruit	101	124	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0	PHOSPHATIDYL-GLYCEROL	Fruit	8	27		
0	PHOSPHATIDYL-INOSITOL	Fruit	53	59		
0	PHOSPHATIDYL-SERINE	Fruit	4	4		
0	PHOSPHATIDYLIC-ACID	Fruit	3	6		
4	PHOSPHORUS	Fruit	68	925	-0.6958662309301713	
5	PHYLLOQUINONE	Fruit	--	0.06	-0.22359887323159108	
0	PHYTATE	Fruit	630	4040	-0.2108482779177121	
2	PHYTOSTEROLS	Fruit	120	745	-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	12140	-0.5110685274797335	
17	PROCYANIDIN-A-2	Leaf	--	--		
1	PROCYANIDIN-B-1	Fruit	--	--		
1	PROCYANIDIN-B-1	Fruit Juice	--	--		
1	PROCYANIDIN-B-1	Leaf	--	--		
1	PROCYANIDIN-B-1	Pericarp	--	--		
1	PROCYANIDIN-B-2	Leaf	150	900	0.9999999999999998	
1	PROCYANIDIN-B-2	Fruit	2	10		
1	PROCYANIDIN-B-2	Pericarp	15	100		
1	PROCYANIDIN-B-2	Fruit Juice	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
4	PROCYANIDIN-B-4	Leaf	--	--		
0	PROCYANIDIN-B-5	Leaf	--	--		
0	PROCYANIDIN-C-1	Fruit	--	--		
0	PROCYANIDIN-C-1	Fruit Juice	--	--		
0	PROCYANIDIN-C-1	Leaf	--	--		
0	PROCYANIDIN-C-1	Pericarp	--	--		
0	PROCYANIDIN-D-1	Leaf	--	--		
0	PROCYANIDIN-E	Leaf	--	--		
0	PROCYANIDIN-G	Leaf	--	--		
0	PROCYANIDIN-OLIGOMERS	Fruit	--	--		
27	PROCYANIDINS	Leaf	--	--		
0	PROLINE	Plant	20	435	-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	12800	-1.2962859772396575	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing, Bountiful, Utah. 377 pp.
43	PROTocatechuic-acid	Fruit	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
4	PUFA	Fruit	1050	6535	-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	1.5		
1	PYRUVIC-ACID	Plant	--	--		
176	QUERCETIN	Pericarp	58	263	1	Pizzorno, J.E. and Murray, M.T. 1985. A Textbook of Natural Medicine. John Bastyr College Publications, Seattle, Washington (Looseleaf).
176	QUERCETIN	Heart Wood	--	--		
176	QUERCETIN	Fruit	2.5	41	-0.582618968173555	
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	39		
0	QUERCETIN-ARABINOSIDE	Plant	--	--		
0	QUERCETIN-ARABINOSIDE	Pericarp	18	37		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	QUERCETIN-GALACTOSIDE	Pericarp	28	60	
0	QUERCETIN-GLUCOSIDE	Pericarp	9	20	
0	QUERCETIN-XYLOSIDE	Pericarp	9	19	
44	QUERCITRIN	Fruit	--	--	
44	QUERCITRIN	Pericarp	--	--	
44	QUERCITRIN	Leaf	600	9015	1.7298124819748746
44	QUERCITRIN	Fruit Juice	--	--	
2	REYNOUSTRIN	Fruit	--	--	
2	REYNOUSTRIN	Fruit Juice	--	--	
2	REYNOUSTRIN	Pericarp	--	--	
15	RIBOFLAVIN	Fruit	1	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	-0.6798204139542442 ACTA AGRIC SCAND SUPPL 22: 1980
87	RUTIN	Fruit Epidermis	--	--	
87	RUTIN	Pericarp	--	--	
87	RUTIN	Leaf	--	8885	-0.45294433702030634
87	RUTIN	Fruit Juice	--	--	
87	RUTIN	Fruit	--	--	
7	SALICYLATES	Fruit	0.8	60	-0.16469419114376535
60	SELENIUM	Fruit	--	--	-0.38618723699673646
1	SERINE	Fruit	80	497	-1.1107007920496865 USDA's Ag Handbook 8 and sequelae)

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	SFA	Fruit	580	3610	-0.29989489934752117	USDA's Ag Handbook 8 and sequelae)
14	SHIKIMIC-ACID	Plant	--	--		
4	SILICON	Fruit	1	70	-0.3810148443665756	
3	SILVER	Fruit	0.011	0.086	-0.4995614833070808	
9	SINAPIC-ACID	Fruit	--	--		
1	SODIUM	Fruit	--	133	-0.1713385458263085	
11	SORBITOL	Leaf	--	--		
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	435	-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	36200	-0.49014841841433165	
0	SUGAR	Fruit	60100	166000	-0.15008461399428302	
14	SULFUR	Fruit	1.65	23	-0.9685087927350676	
0	TETRADECENYL-ACETATE	Leaf	--	--		
0	TETRADECYL-ACETATE	Leaf	--	--		
31	THIAMIN	Fruit	1	2	-0.4266044741562528	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
4	THREONINE	Fruit	30	435	-1.0736073129874002	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
4	TIN	Fruit	--	--	-0.3771396188984718 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	TITANIUM	Fruit	0.055	3	-0.6858409400678522
0	TRANS-2-HEXENOIC-ACID	Plant	--	--	
0	TRANS-ABSCISIC-ACID	Fruit	--	--	
0	TRANS-ABSCISIC-ACID	Fruit Juice	--	--	
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	50	
29	TRYPTOPHAN	Fruit	20	124	-1.0195295627538696
8	TYROSINE	Fruit	40	249	-0.8990776765345502
0	URONIC-ACID	Fruit	7	1440	
89	URSOLIC-ACID	Fruit Epidermis	--	--	
89	URSOLIC-ACID	Pericarp	--	--	
89	URSOLIC-ACID	Wax	--	--	
0	VALERALDEHYDE	Fruit	--	--	
3	VALINE	Fruit	40	560	-0.8032333881374735
0	VIT-B-6	Fruit	1	3	-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	896000	0.5453564376102144
3	XYLOSE	Plant	--	--	
77	ZINC	Fruit	--	35	0.1413570623516533

Chemical Plant Part	Low PPM High PPM	StdDev	Reference Citation
0 ZIRCONIUM	Fruit 0.22	0.86	-0.546541741871023
