

P Aesculus hippocastanum

Common Name(s)

Horse Chestnut

How Used

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Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	(+)-CATECHIN	Bark	--	--	Jim Duke's personal files.
30	(+)-CATECHIN	Leaf	--	--	Jim Duke's personal files.
30	(+)-CATECHIN	Fruit Epidermis	--	--	Jim Duke's personal files.
0	(+)-PINITOL	Pericarp	--	--	Jim Duke's personal files.
38	(-)-EPICATECHIN	Fruit Epidermis	--	--	Jim Duke's personal files.
38	(-)-EPICATECHIN	Leaf	--	--	Jim Duke's personal files.
38	(-)-EPICATECHIN	Seed Coat	816.3	4000	Jim Duke's personal files.
38	(-)-EPICATECHIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	(-)-QUERBRACHITOL	Pericarp	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	(-)-QUINIC-ACID	Pericarp	--	--	Jim Duke's personal files.
0	1,8-CINEOL	Flower Essent. Oil	--	66000	Jim Duke's personal files.
0	1-KESTOSE	Seed	--	--	Gruenwald, J. et al. 1998. PDR for Herbal Medicine. 1st ed. Medical Economics Co., Montvale, NJ. 1244 pp. (abbreviated as PHR or Physicians Herbal Reference in my mind)
0	16-DESOXY-BARRINGTOGENOL	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	2,3-DIMETHYL-HEPT-5-EN-1-AL	Flower Essent. Oil	--	--	Jim Duke's personal files.
0	2-CARBOXYARABINITOL	Leaf	--	11	-0.8556705725703454 Jim Duke's personal files.
0	2-KESTOSE	Seed	--	--	Gruenwald, J. et al. 1998. PDR for Herbal Medicine. 1st ed. Medical Economics Co., Montvale, NJ. 1244 pp. (abbreviated as PHR or Physicians Herbal Reference in my mind)
0	2-METHYL-BUTEN-1-AL	Flower Essent. Oil	--	--	Jim Duke's personal files.
0	24-METHYLENE-CYCLOARTENOL	Seed Oil	--	--	Jim Duke's personal files.
0	3',4',7-TRIMETHYL-ETHER	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	3,5-DIHYDROXY-3',4'-TRIMETHOXYFLAVONE	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	3-METHYL-BUTAN-1-AL	Flower Essent. Oil	--	4000	Jim Duke's personal files.
0	3[2'(BETA-D-GLUCOPYRANOSIDO)4'(BETA-D-GLUCOPYRANOSIDO)BETA-D-GLUCURONOPYRANOSIDO]21-BETA-ANGELOYL-22-ALPHA-ACETYL-PROTOA	Seed	--	--	Jim Duke's personal files.
0	3[2'(BETA-D-GLUCOPYRANOSIDO)4'(BETA-D-GLUCOPYRANOSIDO)BETA-D-GLUCURONOPYRANOSIDO]21-BETA-TIGLOYL-22-ALPHA-ACETYL-PROTOAE	Seed	--	--	Jim Duke's personal files.
0	5-ALPHA-TIRUCALLA-8-23-DIEN-3-BETA-OL	Seed Oil	--	--	Jim Duke's personal files.
0	5-HYDROXY-METHYL-FURFURAL	Flower Essent. Oil	--	4000	Jim Duke's personal files.
1	6,7-DIHYDROXYCOUMARIN	Seed	--	--	
0	6,7-DIHYDROXYCOUMARIN-6-GLUCOSIDE	Seed	--	--	
16	ACETIC-ACID	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
11	ADENINE	Seed	--	--	
11	ADENINE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
28	ADENOSINE	Seed	--	--	
28	ADENOSINE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	AESCIGENIN	Seed	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
50	AESCIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
50	AESCIN	Seed	--	130000	
32	AESCULETIN	Bark	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
1	AESCULETOL	Seed	--	--	
33	AESCULIN	Bark	--	30000	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	AESCLITANNIN-A	Seed Coat	--	122.4	Jim Duke's personal files.
0	AESCLITANNIN-B	Seed Coat	--	132.7	Jim Duke's personal files.
0	AESCLITANNIN-C	Seed Coat	--	15	Jim Duke's personal files.
0	AESCLITANNIN-D	Seed Coat	--	2.2	Jim Duke's personal files.
0	AESCLITANNIN-E	Seed Coat	--	55.1	Jim Duke's personal files.
0	AESCLITANNIN-F	Seed Coat	--	11.4	Jim Duke's personal files.
0	AESCLITANNIN-G	Seed Coat	--	17.6	Jim Duke's personal files.
3	AESCULOSIDE	Seed	--	--	
0	ALLANTOIC-ACID	Leaf	--	--	Jim Duke's personal files.
12	ALLANTOIN	Leaf	--	--	Jim Duke's personal files.
12	ALLANTOIN	Branches	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
12	ALLANTOIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	ALPHA-AESCIN	Seed	--	--	
0	ALPHA-AESCIN	Fruit	--	--	Jim Duke's personal files.
0	ALPHA-AMURIN	Seed Oil	--	--	Jim Duke's personal files.
7	ALPHA-CAROTENE	Leaf	--	--	Jim Duke's personal files.
0	ALPHA-METHYL-BETA-HYDROXYBUTYRIC-ACID	Seed	--	--	
28	ALPHA-PINENE	Flower Essent. Oil	--	177000	1 Jim Duke's personal files.
2	ALPHA-SPINASTEROL	Seed	--	--	Jim Duke's personal files.
2	ALPHA-SPINASTEROL	Bark	--	--	Jim Duke's personal files.
0	AMINO-ACIDS	Leaf	--	--	Jim Duke's personal files.
1	ANGELIC-ACID	Seed	--	--	Chemical Constituents of Oriental Herbs (3 diff. books)
0	APS-SULFOTRANSFERASE	Leaf	--	--	Jim Duke's personal files.
112	ASCORBIC-ACID	Seed	--	24	-0.32404827353208815 Jim Duke's personal files.
112	ASCORBIC-ACID	Leaf	--	147.2	-0.4302618126885385 Jim Duke's personal files.
0	ASH	Seed	14000	30000	-0.537791441673595
7	ASTRAGALIN	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	BARRINGTOGENOL-C	Seed	--	--	
1	BARRINGTOGENOL-C-21-ANGELATE	Fruit	--	4.7	Jim Duke's personal files.
0	BARRINGTOGENOL-D	Seed	--	--	Chemical Constituents of Oriental Herbs (3 diff. books)
24	BENZALDEHYDE	Flower Essent. Oil	--	11000	Jim Duke's personal files.
1	BENZYL-FORMATE	Flower Essent. Oil	--	22000	Jim Duke's personal files.
8	BETA-AESCIN	Seed	--	--	
9	BETA-AMYRIN	Bark	--	--	
9	BETA-AMYRIN	Seed Oil	--	--	Jim Duke's personal files.
0	BETA-CARYOPHYLLENE	Flower Essent. Oil	--	13000	Jim Duke's personal files.
13	BETA-PINENE	Flower Essent. Oil	--	122000	Jim Duke's personal files.
47	BETA-SITOSTEROL	Seed	--	--	Jim Duke's personal files.
47	BETA-SITOSTEROL	Leaf	--	--	Jim Duke's personal files.
47	BETA-SITOSTEROL	Bark	--	--	Jim Duke's personal files.
0	BUTYL-ACETATE	Flower Essent. Oil	--	21000	Jim Duke's personal files.
0	BUTYROSPERMOL	Seed	--	--	
0	BUTYROSPERMOL	Seed Oil	--	--	Jim Duke's personal files.
0	CAMPEST-7-EN-3-BETA-OL	Seed	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
2	CAMPESTEROL	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
2	CAMPESTEROL	Bark	--	--	Jim Duke's personal files.
2	CAMPESTEROL	Seed	--	--	Jim Duke's personal files.
9	CAMPHENE	Flower Essent. Oil	--	83000	Jim Duke's personal files.
0	CARBOHYDRATES	Seed	740000	740000 0.8608030703879392	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
0	CASTAPRENOL-10	Leaf	--	--	Jim Duke's personal files.
0	CASTAPRENOL-11	Leaf	--	--	Jim Duke's personal files.
0	CASTAPRENOL-12	Leaf	--	--	Jim Duke's personal files.
0	CASTAPRENOL-13	Leaf	--	--	Jim Duke's personal files.
1	CHOLESTEROL	Bark	--	--	Jim Duke's personal files.
1	CHOLESTEROL	Seed	--	--	Jim Duke's personal files.
20	CHOLINE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	CINNAMTANNIN-B-1	Seed Coat	--	408.2	Jim Duke's personal files.
2	CINNAMTANNIN-B-2	Seed Coat	--	132.7	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
23	CITRIC-ACID	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	CRYPTOAESCIGENIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	CRYPTOAESCIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	CRYPTOAESCIN-A	Seed	--	--	
0	CRYPTOAESCIN-B	Seed	--	--	
7	CYANIDIN	Leaf	--	--	Jim Duke's personal files.
0	DECAN-1-OL	Flower Essent. Oil	--	82000 1	Jim Duke's personal files.
0	DODEC-2-EN-1-OL	Flower Essent. Oil	--	14000	Jim Duke's personal files.
1	ELEUTHEROSIDE-B-1	Stem	--	--	Jim Duke's personal files.
0	EPI-CATECHIN-(4-BETA-6)-EPI-CATECHIN-(4-BETA-6)-EPI-CATECHIN	Fruit Epidermis	--	46.6	Jim Duke's personal files.
0	EPI-CATECHIN-(4-BETA-8)-EPI-CATECHIN-(4-BETA-8,2-BETA-8)-EPI-CATECHIN	Fruit Epidermis	--	22.6	Jim Duke's personal files.
0	EPI-CATECHIN-(4-BETA-8,2-BETA-7)-CATECHIN-(4-BETA-8)-EPI-CATECHIN	Fruit Epidermis	--	30.6	Jim Duke's personal files.
0	EPI-CATECHIN-(4-BETA-8,2-BETA-7)-EPI-CATECHIN-(4-ALPHA-8)-ENT-EPI-CATECHIN	Fruit Epidermis	--	118.6	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
40	EPICATECHIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
40	ESCIN	Tissue Culture	--	--	Jim Duke's personal files.
40	ESCIN	Leaf	--	--	Jim Duke's personal files.
40	ESCIN	Bark	--	--	
40	ESCIN	Seed	22000	125300	Jim Duke's personal files.
30	ESCULETIN	Seed	--	--	Jim Duke's personal files.
30	ESCULETIN	Bark	--	--	
29	ESCULIN	Bark	30000	30000	
29	ESCULIN	Seed	--	--	Jim Duke's personal files.
29	ESCULIN	Pericarp	--	--	Jim Duke's personal files.
29	ESCULIN	Stem	--	--	Jim Duke's personal files.
0	FAT	Seed	30000	50000	-1.1345234870329484
0	FLAVAZIDE	Leaf	--	--	Jim Duke's personal files.
0	FLAVONES	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
12	FRAXETIN	Bark	--	--	
10	FRAXIN	Seed	--	--	Jim Duke's personal files.
10	FRAXIN	Pericarp	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
10	FRAXIN	Bark	--	--	
10	FRAXIN	Stem	--	--	Jim Duke's personal files.
2	FRIEDELIN	Seed	--	--	
1	GALACTOSE	Seed	--	--	
1	GALACTOSE	Pericarp	--	--	Jim Duke's personal files.
0	GAMMA-BUTYROLACTONE	Flower Essent. Oil	--	--	Jim Duke's personal files.
35	GERANIOL	Flower Essent. Oil	--	4000	Jim Duke's personal files.
7	GLUCOSE	Seed	--	--	
4	GLUCURONIC-ACID	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	GUANINE	Seed	--	--	
1	GUANINE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	HIPPOAESCULIN	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	HIPPOCAESCULIN	Fruit	--	3.1	Jim Duke's personal files.
0	HIPPOCASTANINE	Seed	--	--	
0	HIPPOCASTANOSIDE	Pericarp	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
7	HISTIDINE	Leaf	--	--	Jim Duke's personal files.
0	ISOKAEMPFERIDE	Bud	--	--	Jim Duke's personal files.
22	ISOQUERCITRIN	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
22	ISOQUERCITRIN	Leaf	--	--	Jim Duke's personal files.
11	ISORHAMNETIN	Bud	--	--	Jim Duke's personal files.
1	JUGLANIN	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
75	KAEMPFEROL	Bud	--	--	Jim Duke's personal files.
75	KAEMPFEROL	Seed	--	--	
0	KAEMPFEROL-3-O-GLUCOSIDE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	KAEMPFEROL-3-ARABINOSIDE	Flower	--	--	
0	KAEMPFEROL-3-ARABINOSIDE	Leaf	--	--	
4	KAEMPFEROL-3-O-GLUCOSIDE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	KAEMPFEROL-3-RHAMNOFURANOSIDE	Flower	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	KAEMPFEROL-3-RHAMNOFURANOSIDE	Leaf	--	--	
4	KAEMPFEROL-3-RHAMNOGLUCOSIDE	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	KAEMPFEROL-4',7-DIMETHYL-ETHER	Bud	--	--	Jim Duke's personal files.
0	L-(+)-LYSINE	Seed	--	--	
0	L-(-)-TRYPTOPHAN	Seed	--	--	
7	LAURIC-ACID	Leaf	--	--	Jim Duke's personal files.
0	LEUCOANTHOCYANS	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
1	LEUCOCYANIDIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
2	LEUCODELPHINIDIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
60	LIMONENE	Flower Essent. Oil	--	42000	-1.4135017793261806 Jim Duke's personal files.
27	LINOLEIC-ACID	Leaf	--	--	Jim Duke's personal files.
27	LINOLEIC-ACID	Seed	--	6415	-0.8628692587662965
0	LINOLENIC-ACID	Leaf	--	--	Jim Duke's personal files.
0	LINOLENIC-ACID	Seed	--	620	-0.5690384903493066

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
3	LUTEOLOL	Seed	--	--	
0	MYO-INOSITOL	Pericarp	--	--	Jim Duke's personal files.
34	MYRICETIN	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	MYRICETIN-3',4',7-TRIMETHYL-ETHER	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	MYRICETIN-3',4',7-TRIMETHYL-ETHER	Bud	--	--	Jim Duke's personal files.
6	MYRISTIC-ACID	Leaf	--	--	Jim Duke's personal files.
0	NONAN-1-AL	Flower Essent. Oil	--	23000	Jim Duke's personal files.
18	OLEIC-ACID	Seed	--	18990	-0.8229912615024234
25	OPCS	Seed	--	--	Gruenwald, J. et al. 1998. PDR for Herbal Medicine. 1st ed. Medical Economics Co., Montvale, NJ. 1244 pp. (abbreviated as PHR or Physicians Herbal Reference in my mind)
13	PALMITIC-ACID	Seed	--	1245	-0.6739126598848639
13	PALMITIC-ACID	Leaf	--	--	Jim Duke's personal files.
2	PALMITOLEIC-ACID	Leaf	--	--	Jim Duke's personal files.
0	PARKEOL	Seed Oil	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
2	PHYTOSTEROLS	Plant	--	--	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	PLASTOQUINONE-8	Seed	--	--	
0	PLASTOQUINONE-8	Plant	--	--	
0	POLYPRENOLS	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	PROANTHOCYANIDIN-A-4	Seed	--	--	Jim Duke's personal files.
0	PROANTHOCYANIDIN-A-6	Seed Coat	--	17.9	Jim Duke's personal files.
0	PROANTHOCYANIDIN-A-7	Seed Coat	--	12.7	Jim Duke's personal files.
0	PROANTHOCYANIDIN-POLYMER	Fruit	--	--	Jim Duke's personal files.
0	PROANTHOCYANIN-A-2	Fruit	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	PROCYANIDIN-A-1	Leaf	--	--	Jim Duke's personal files.
0	PROCYANIDIN-A-1	Fruit Epidermis	--	--	Jim Duke's personal files.
17	PROCYANIDIN-A-2	Fruit	--	--	Jim Duke's personal files.
17	PROCYANIDIN-A-2	Seed Coat	510.2	1733.3	Jim Duke's personal files.
17	PROCYANIDIN-A-2	Leaf	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
17	PROCYANIDIN-A-2	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-A-4	Seed Coat	--	204.1	Jim Duke's personal files.
1	PROCYANIDIN-B-1	Leaf	--	--	Jim Duke's personal files.
1	PROCYANIDIN-B-1	Fruit Epidermis	--	--	Jim Duke's personal files.
1	PROCYANIDIN-B-1	Seed Coat	--	240	Jim Duke's personal files.
1	PROCYANIDIN-B-2	Seed Coat	612.2	3066.7	Jim Duke's personal files.
1	PROCYANIDIN-B-2	Leaf	--	--	Jim Duke's personal files.
1	PROCYANIDIN-B-2	Fruit Epidermis	--	--	Jim Duke's personal files.
2	PROCYANIDIN-B-3	Leaf	--	--	Jim Duke's personal files.
2	PROCYANIDIN-B-3	Fruit Epidermis	--	--	Jim Duke's personal files.
4	PROCYANIDIN-B-4	Leaf	--	--	Jim Duke's personal files.
4	PROCYANIDIN-B-4	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-B-5	Leaf	--	--	Jim Duke's personal files.
0	PROCYANIDIN-B-5	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-B-5	Seed Coat	40	204.1	Jim Duke's personal files.
0	PROCYANIDIN-C-1	Seed Coat	13.3	204.1	Jim Duke's personal files.
0	PROCYANIDIN-C-1	Leaf	--	--	Jim Duke's personal files.
0	PROCYANIDIN-C-1	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-D-1	Fruit Epidermis	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	PROCYANIDIN-D-1	Leaf	--	--	Jim Duke's personal files.
1	PROCYANIDIN-D2	Leaf	--	--	Jim Duke's personal files.
1	PROCYANIDIN-D2	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-E	Leaf	--	--	Jim Duke's personal files.
0	PROCYANIDIN-E	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROCYANIDIN-G	Leaf	--	--	Jim Duke's personal files.
0	PROCYANIDIN-G	Fruit Epidermis	--	--	Jim Duke's personal files.
0	PROTEIN	Seed	80000	110000	-1.1012301318918487 List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PROTOAESCIGENIN	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	PROVITAMIN-D	Seed	--	0.9	
0	QUEBRACHITOL	Branches	--	--	Jim Duke's personal files.
0	QUEBRACHITOL	Leaf	--	--	Jim Duke's personal files.
176	QUERCETIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
176	QUERCETIN	Seed	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	QUERCETIN-3',4',7-TRIMETHYL-ETHER	Bud	--	--	Jim Duke's personal files.
2	QUERCETIN-3'-GLUCOSIDE	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
1	QUERCETIN-3,3'-DIMETHYLETHER	Bud	--	--	Jim Duke's personal files.
0	QUERCETIN-3-ARABINOSIDE	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	QUERCETIN-3-RHAMNOSIDE	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	QUERCETIN-3-RHAMNOSIDOGLUCOSIDE	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
1	QUERCETOL	Seed	--	--	
1	QUERCETOSIDE	Seed	--	--	
44	QUERCITRIN	Leaf	--	--	
44	QUERCITRIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
44	QUERCITRIN	Seed	--	--	
0	QUINONES	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	RHAMNAZIN	Bud	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
1	RHAMNETOL	Seed	--	--	
7	RHAMNOCITRIN	Bud	--	--	Jim Duke's personal files.
7	RHAMNOCITRIN	Flower	--	--	Jim Duke's personal files.
87	RUTIN	Plant	--	--	Jim Duke's personal files.
87	RUTIN	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
4	RUTOSIDE	Seed	--	--	
0	SAPONIN	Seed	55000	260000	1.6716596237594439
5	SAPONINS	Seed	55000	260000	3.4837614172571465
44	SCOPOLETIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	SCOPOLIN	Pericarp	--	--	Jim Duke's personal files.
3	SCOPOLIN	Bark	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	SERINE	Leaf	--	--	Jim Duke's personal files.
0	SITOSTEROL	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	SPINASTEROL	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	STACHYOSE	Seed	--	--	Gruenwald, J. et al. 1998. PDR for Herbal Medicine. 1st ed. Medical Economics Co., Montvale, NJ. 1244 pp. (abbreviated as PHR or Physicians Herbal Reference in my mind)
5	STARCH	Seed	300000	600000	1.1736828138582762 List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	STEARIC-ACID	Seed	--	1015	-0.5433679869069411
8	STEARIC-ACID	Leaf	--	--	Jim Duke's personal files.
1	STIGMAST-4-EN-3-ONE	Seed	--	--	Jim Duke's personal files.
0	STIGMAST-7-EN-3-BETA-OL	Seed	--	--	Jim Duke's personal files.
0	STIGMASTA-5,7-DIEN-3-BETA-OL	Seed	--	--	Jim Duke's personal files.
12	STIGMASTEROL	Leaf	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
12	STIGMASTEROL	Seed	--	--	Jim Duke's personal files.
12	STIGMASTEROL	Bark	--	--	Jim Duke's personal files.
14	SUCROSE	Branches	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
35	TANNIN	Flower	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
35	TANNIN	Wood	--	--	Jim Duke's personal files.
2	TARAXEROL	Seed	--	--	
2	TARAXEROL	Seed Oil	--	--	Jim Duke's personal files.
1	TIGLIC-ACID	Seed	--	--	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	TRIACONTANE	Seed	--	--	
0	TRIDEC-2-EN-1-OL	Flower Essent. Oil	--	34000	Jim Duke's personal files.
0	UREA	Leaf	--	--	Jim Duke's personal files.
0	URIC-ACID	Plant	--	--	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
0	URIC-ACID	Seed	--	--	
0	VITAMIN-K-1	Leaf	--	--	
0	WATER	Seed	30000	400000	0.661543470938804
1	XANTHORHAMNOSIDE	Seed	--	--	
3	XYLOSE	Seed	--	--	