

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Aesculus hippocastanum*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	(+)-CATECHIN	Bark				Jim Duke's personal files.
30	(+)-CATECHIN	Fruit Epidermis				Jim Duke's personal files.
30	(+)-CATECHIN	Leaf				Jim Duke's personal files.
0	(+)-PINITOL	Pericarp				Jim Duke's personal files.
38	(-)-EPICATECHIN	Seed Coat	816.3	4000.0		Jim Duke's personal files.
38	(-)-EPICATECHIN	Leaf				Jim Duke's personal files.
38	(-)-EPICATECHIN	Fruit Epidermis				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.
0	(-)-QUINIC-ACID	Pericarp				Jim Duke's personal files.
0	1,8-CINEOL	Flower Essent. Oil		66000.0		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	-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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3',4',7-TRIMETHYL-ETHER	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	3,5-DIHYDROXY-3',4'7-TRIMETHOXYFLAVONE	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	3-METHYL-BUTAN-1-AL	Flower Essent. Oil		4000.0		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		4000.0		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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	AESCIGENIN	Seed				--
50	AESCIN	Seed		130000.0		--
50	AESCIN	Bark				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
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		30000.0		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	AESCULITANNIN-A	Seed Coat		122.4		Jim Duke's personal files.
0	AESCULITANNIN-B	Seed Coat		132.7		Jim Duke's personal files.
0	AESCULITANNIN-C	Seed Coat		15.0		Jim Duke's personal files.
0	AESCULITANNIN-D	Seed Coat		2.2		Jim Duke's personal files.
0	AESCULITANNIN-E	Seed Coat		55.1		Jim Duke's personal files.
0	AESCULITANNIN-F	Seed Coat		11.4		Jim Duke's personal files.
0	AESCULITANNIN-G	Seed Coat		17.6		Jim Duke's personal files.
3	AESCULOSIDE	Seed				--
0	ALLANTOIC-ACID	Leaf				Jim Duke's personal files.
12	ALLANTOIN	Branches				Jim Duke's personal files.
12	ALLANTOIN	Leaf				Jim Duke's personal files.
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	Fruit				Jim Duke's personal files.
0	ALPHA-AESCIN	Seed				--
0	ALPHA-AMURIN	Seed Oil				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	ALPHA-CAROTENE	Leaf				Jim Duke's personal files.
0	ALPHA-METHYL-BETA-HYDROXYBUTYRIC-ACID	Seed				--
28	ALPHA-PINENE	Flower Essent. Oil		177000.0	1.0	Jim Duke's personal files.
2	ALPHA-SPINASTEROL	Bark				Jim Duke's personal files.
2	ALPHA-SPINASTEROL	Seed				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	Leaf		147.2	-0.4302618126885385	Jim Duke's personal files.
112	ASCORBIC-ACID	Seed		24.0	-0.32404827353208815	Jim Duke's personal files.
0	ASH	Seed	14000.0	30000.0	-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.
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		11000.0		Jim Duke's personal files.
1	BENZYL-FORMATE	Flower Essent. Oil		22000.0		Jim Duke's personal files.
8	BETA-AESCIN	Seed				--
9	BETA-AMYRIN	Seed Oil				Jim Duke's personal files.
9	BETA-AMYRIN	Bark				--
0	BETA-CARYOPHYLLENE	Flower Essent. Oil		13000.0		Jim Duke's personal files.
13	BETA-PINENE	Flower Essent. Oil		122000.0		Jim Duke's personal files.
47	BETA-SITOSTEROL	Seed				Jim Duke's personal files.
47	BETA-SITOSTEROL	Bark				Jim Duke's personal files.
47	BETA-SITOSTEROL	Leaf				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BUTYL-ACETATE	Flower Essent. Oil		21000.0		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.
2	CAMPESTEROL	Seed				Jim Duke's personal files.
2	CAMPESTEROL	Bark				Jim Duke's personal files.
2	CAMPESTEROL	Leaf				Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
9	CAMPHENE	Flower Essent. Oil		83000.0		Jim Duke's personal files.
0	CARBOHYDRATES	Seed		740000.0	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	Seed				Jim Duke's personal files.
1	CHOLESTEROL	Bark				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.
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	CRYPTOAESICIGENIN	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	CRYPTOAESKIN	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	CRYPTOAESKIN-A	Seed				--
0	CRYPTOAESKIN-B	Seed				--
7	CYANIDIN	Leaf				Jim Duke's personal files.
0	DECAN-1-OL	Flower Essent. Oil		82000.0	1.0	Jim Duke's personal files.
0	DODEC-2-EN-1-OL	Flower Essent. Oil		14000.0		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.
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	Seed	22000.0	125300.0		Jim Duke's personal files.
40	ESCIN	Bark				--
40	ESCIN	Leaf				Jim Duke's personal files.
40	ESCIN	Tissue Culture				Jim Duke's personal files.
30	ESCULETIN	Bark				--
30	ESCULETIN	Seed				Jim Duke's personal files.
29	ESCULIN	Bark		30000.0		--
29	ESCULIN	Stem				Jim Duke's personal files.
29	ESCULIN	Pericarp				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
29	ESCULIN	Seed				Jim Duke's personal files.
0	FAT	Seed	30000.0	50000.0	-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	Bark				--
10	FRAXIN	Stem				Jim Duke's personal files.
10	FRAXIN	Pericarp				Jim Duke's personal files.
10	FRAXIN	Seed				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		4000.0		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	Flower				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	GUANINE	Seed				--
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				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HIPPOCASTANOSIDE	Pericarp				Jim Duke's personal files.
7	HISTIDINE	Leaf				Jim Duke's personal files.
0	ISOKAEMPFERIDE	Bud				Jim Duke's personal files.
22	ISOQUERCITRIN	Leaf				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.
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	Seed				--
75	KAEMPFEROL	Bud				Jim Duke's personal files.
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	Leaf				--
0	KAEMPFEROL-3-RHAMNOFURANOSIDE	Flower				--
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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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		42000.0	-1.4135017793261806	Jim Duke's personal files.
27	LINOLEIC-ACID	Leaf				Jim Duke's personal files.
27	LINOLEIC-ACID	Seed		6415.0	-0.8628692587662965	--
0	LINOLENIC-ACID	Leaf				Jim Duke's personal files.
0	LINOLENIC-ACID	Seed		620.0	-0.5690384903493066	--
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	Bud				Jim Duke's personal files.
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.
6	MYRISTIC-ACID	Leaf				Jim Duke's personal files.
0	NONAN-1-AL	Flower Essent. Oil		23000.0		Jim Duke's personal files.
18	OLEIC-ACID	Seed		18990.0	-0.8229912615024234	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	Leaf				Jim Duke's personal files.
13	PALMITIC-ACID	Seed		1245.0	-0.6739126598848639	--
2	PALMITOLEIC-ACID	Leaf				Jim Duke's personal files.
0	PARKEOL	Seed Oil				Jim Duke's personal files.
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	Fruit Epidermis				Jim Duke's personal files.
0	PROCYANIDIN-A-1	Leaf				Jim Duke's personal files.
17	PROCYANIDIN-A-2	Fruit				Jim Duke's personal files.
17	PROCYANIDIN-A-2	Fruit Epidermis				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
17	PROCYANIDIN-A-2	Leaf				Jim Duke's personal files.
17	PROCYANIDIN-A-2	Seed Coat	510.2	1733.3		Jim Duke's personal files.
0	PROCYANIDIN-A-4	Seed Coat		204.1		Jim Duke's personal files.
1	PROCYANIDIN-B-1	Fruit Epidermis				Jim Duke's personal files.
1	PROCYANIDIN-B-1	Leaf				Jim Duke's personal files.
1	PROCYANIDIN-B-1	Seed Coat		240.0		Jim Duke's personal files.
1	PROCYANIDIN-B-2	Fruit Epidermis				Jim Duke's personal files.
1	PROCYANIDIN-B-2	Leaf				Jim Duke's personal files.
1	PROCYANIDIN-B-2	Seed Coat	612.2	3066.7		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	Fruit Epidermis				Jim Duke's personal files.
4	PROCYANIDIN-B-4	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-B-5	Fruit Epidermis				Jim Duke's personal files.
0	PROCYANIDIN-B-5	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-B-5	Seed Coat	40.0	204.1		Jim Duke's personal files.
0	PROCYANIDIN-C-1	Fruit Epidermis				Jim Duke's personal files.
0	PROCYANIDIN-C-1	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-C-1	Seed Coat	13.3	204.1		Jim Duke's personal files.
0	PROCYANIDIN-D-1	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-D-1	Fruit Epidermis				Jim Duke's personal files.
1	PROCYANIDIN-D2	Fruit Epidermis				Jim Duke's personal files.
1	PROCYANIDIN-D2	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-E	Fruit Epidermis				Jim Duke's personal files.
0	PROCYANIDIN-E	Leaf				Jim Duke's personal files.
0	PROCYANIDIN-G	Fruit Epidermis				Jim Duke's personal files.
0	PROCYANIDIN-G	Leaf				Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PROTEIN	Seed	80000.0	110000.0	-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	Leaf				Jim Duke's personal files.
0	QUEBRACHITOL	Branches				Jim Duke's personal files.
176	QUERCETIN	Seed				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.
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-RHAMNOSIDOGUCOSIDE	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	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	Leaf				--
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.
1	RHAMNETOL	Seed				--
7	RHAMNOCITRIN	Flower				Jim Duke's personal files.
7	RHAMNOCITRIN	Bud				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.
87	RUTIN	Plant				Jim Duke's personal files.
4	RUTOSIDE	Seed				--
0	SAPONIN	Seed	55000.0	260000.0	1.6716596237594439	--
5	SAPONINS	Seed	55000.0	280000.0	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	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.
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.

Activities Count	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	300000.0	600000.0	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	Leaf				Jim Duke's personal files.
8	STEARIC-ACID	Seed		1015.0	-0.5433679869069411	--
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	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	Bark				Jim Duke's personal files.
14	SUCROSE	Branches				Jim Duke's personal files.
35	TANNIN	Wood				Jim Duke's personal files.
35	TANNIN	Flower				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	TRIACONTANE	Seed				--
0	TRIDEC-2-EN-1-OL	Flower Essent. Oil		34000.0		Jim Duke's personal files.
0	UREA	Leaf				Jim Duke's personal files.
0	URIC-ACID	Seed				--
0	URIC-ACID	Plant				CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
0	VITAMIN-K-1	Leaf				--
0	WATER	Seed	30000.0	400000.0	0.661543470938804	--
1	XANTHORHAMNOSIDE	Seed				--
3	XYLOSE	Seed				--