

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Avena sativa

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	1,3,4-PENTANE-TRICARBOXYLIC-ACID-TRIMETHYL-ESTER	Hull Husk		1.3		--
0	1,3,4-PENTANE-TRICARBOXYLIC-ACID-TRIMETHYL-ESTER	Pericarp		1.3		--
0	1,3-AMINO-PROPYL-PYRROLINIUM	Sprout Seedling				--
0	2,2,6-TRIMETHYL-CYCLOHEXANONE	Seed				--
0	2-CARBOXYARABINITOL	Leaf		517.0	0.7377260172344527	Moore, B. D., Isidoro, E., Seemann, J. R. 1993. Distribution of 2-Carboxyarabinitol Among Plants. Phytochemistry 34 3: 703-707. Dept. Biochem. Univ. Nevada Reno 89557, USA.
0	2-METHYL-HEPT-2-EN-6-ONE	Seed				--
0	26-DESGLUCOAVENACOSIDES	Plant				J.S. Glasby Dict.Plis Containing 2ndary Metabolite. 1991.
0	29-ISOFUCOSTEROL	Seed				--
0	3'-HYDROXYAVENALUMIC-ACID	Fruit				--
0	3,4-DIMETHOXY-ACETOPHENONE	Petiole				--
0	3,4-DIMETHOXY-ACETOPHENONE	Hull Husk				--
0	4,5-DIHYDROXY-7-METHOXY-8-C-GLUCOSYLO-RHAMNOSIDE	Leaf				--
4	4-VINYL-GUAIACOL	Seed				--
0	5-DEHYDRO-AVENASTEROL	Seed				--
0	5-DEHYDRO-AVENASTEROL	Leaf				--
0	5-HYDROXY-3',5'-DIMETHOXY-GLUCOSIDE	Leaf				--
0	5-HYDROXY-N-HENTRIACONTAN-14,16-DIONE	Seed				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar. Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	6-HYDROXY-N-HENTRIACONTAN-14,16-DIONE	Seed				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar. Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
0	7-DEHYDRO-AVENASTEROL	Seed				--
0	7-DEHYDRO-AVENASTEROL	Leaf				--
0	7-HYDROXY-N-HENTRIACONTAN-14,16-DIONE	Seed				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar. Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
0	7-METHOXY-VITEXIN-O-RHAMNOSIDE	Leaf				--
0	7-O-METHOXYVITEXIN-O-RHAMNO-GLUCOSIDE	Sprout Seedling				--
16	ACETIC-ACID	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	ACONITIC-ACID	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	AEGILOPSIN	Hull Husk				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
3	ALANINE	Seed		4000.0	-1.3086899322606569	Jim Duke's personal files.*
0	ALPHA-KETO-GLUTARIC-ACID	Petiole				--
0	ALPHA-KETO-GLUTARIC-ACID	Hull Husk				--
32	ALPHA-TOCOPHEROL	Seed	4.4	10.1	-0.6988762675539839	Jim Duke's personal files.*
5	ALUMINUM	Plant				--
0	APIGENIN-6,8-DI-C-GLUCOSIDE	Leaf				--
0	APIGENIN-6-C-GLUCOSIDE	Leaf				--
0	APIGENIN-6-C-GLUCOSYL-ARABINOSIDE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	APIGENIN-6-C-GLUCOSYL-O-ARABINOSIDE	Leaf				--
0	APIGENIN-8-C-ARABINOSYLHEXOSIDE	Leaf				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar, Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
0	APIGENIN-8-C-GLUCOSYL-O-RHAMNOSIDE	Leaf				--
0	APIGENIN-8-C-RHAMNOSYLGLUCOSIDE	Leaf				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar, Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
14	ARGININE	Seed	3000.0	13000.0	-0.492896993165164	Jim Duke's personal files.*
112	ASCORBIC-ACID	Plant	26.0	120.0	-0.5655146584691259	--
0	ASH	Seed	19000.0	96000.0	1.4473321359680458	--
0	ASH	Plant	18040.0	82000.0	-0.7048006092883108	--
3	ASPARTIC-ACID	Seed		7000.0	-1.3839193496072566	Jim Duke's personal files.*
0	AVENACIN-A-1	Plant				--
0	AVENACIN-A-1	Root				--
0	AVENACIN-B-2	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	AVENACINS	Root				--
0	AVENACOSIDE-A	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	AVENACOSIDE-A	Shoot				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	AVENACOSIDE-B	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	AVENACOSIDE-B	Shoot				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
2	AVENACOSIDES	Plant	1000.0	15000.0		--
0	AVENALUMIC-ACID	Fruit				--
0	AVENALUMIN-I	Leaf				--
0	AVENANTHRAMIDE-G	Shoot		22.4		--
3	AVENANTHRAMIDES	Seed				--
0	AVENARIN	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	AVENEIN	Sprout Seedling				Wealth of India.
0	AVENIC-ACID-A	Root				--
0	AVENIC-ACIDS	Root				--
1	AVENIN	Root				--
1	AVENIN	Seed	11200.0	185600.0		--
24	BENZALDEHYDE	Seed				--
53	BETA-CAROTENE	Plant	16.0	72.0	-0.3372351827937805	--
0	BETA-CYCLOCITRAL	Seed				--
0	BETA-HYDROXY-BETA-METHYL-GLUTARIC-ACID	Hull Husk				--
0	BETA-HYDROXY-BETA-METHYL-GLUTARIC-ACID	Petiole				--
13	BETA-IONONE	Seed				--
47	BETA-SITOSTEROL	Leaf				--
47	BETA-SITOSTEROL	Plant				Stitt, Paul. Why George should eat broccoli.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Seed				--
14	BETAINE	Shoot		2.0	-0.576538228658353	--
14	BETAINE	Root		0.1	-0.36834838536964337	--
4	BIOTIN	Seed	0.132	1.4	-0.5261329414364116	Jim Duke's personal files.*
4	BORON	Seed	2.0	7.0	-0.8116798946510148	Betting on Boron, Unpublished draft by J. A. Duke on file at USDA, draft and papers relating to boron percentages. Includes Internat. Z. Vit. Ern. Forschung 43:1973 (boron).
0	BRASSICASTEROL	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	BUTENYL-ISOTHIOCYANATE	Seed				--
102	CAFFEIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
0	CAFFEIC-ACID-ESTER	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
28	CALCIUM	Plant	3146.0	14300.0	0.07601124250227355	--
28	CALCIUM	Seed	400.0	4800.0	0.12003541790252584	--
0	CAMPESTANOL	Leaf				--
0	CAMPESTANOL	Seed				--
2	CAMPESTEROL	Seed				--
0	CARBOHYDRATES	Seed	562000.0	775000.0	0.9999001412733444	--
0	CARBOHYDRATES	Plant	265000.0	861000.0	1.2143728174932495	--
0	CAROTENE	Seed	0.0	0.22	-1.0	Jim Duke's personal files.*
0	CAROTENE	Plant	2.6	702.0	0.3623054192861281	Jim Duke's personal files.*
31	CARYOPHYLLENE	Seed				--
1	CELLULOSE	Plant		305000.0	0.0010903022272763664	Jim Duke's personal files.*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	CELLULOSE	Hull Husk		350000.0	-0.16222142113076254	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
7	CHLORINE	Seed	500.0	1900.0	3.160532696671519	Jim Duke's personal files.*
7	CHLORINE	Plant	1000.0	5700.0	-0.16621641797392214	Jim Duke's personal files.*
0	CHLOROPHYLL-A	Plant				Stitt, Paul. Why George should eat broccoli.
0	CHLOROPHYLL-B	Plant				Stitt, Paul. Why George should eat broccoli.
0	CHOLEST-7-EN-3-BETA-OL	Seed				--
0	CHOLEST-7-EN-3-BETA-OL	Leaf				--
0	CHOLESTANOL	Seed				--
0	CHOLESTANOL	Leaf				--
1	CHOLESTEROL	Leaf				--
1	CHOLESTEROL	Seed				--
20	CHOLINE	Shoot		0.3	-0.7676470168924543	--
20	CHOLINE	Seed	134.0	1712.0	0.03730095447113204	--
20	CHOLINE	Root		0.2	-0.4135487761450312	--
24	CHROMIUM	Plant	0.9	3.9	-0.4995358912242695	--
23	CITRIC-ACID	Petiole				--
23	CITRIC-ACID	Hull Husk				--
2	COBALT	Seed	0.0	0.32	-0.19206513214434717	Jim Duke's personal files.*
2	COBALT	Plant	0.4	1.7	-0.4218779584044709	--
0	COLAMINE	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
12	COPPER	Seed	2.4	25.7	0.987370350962101	Jim Duke's personal files.*
12	COPPER	Plant		4.0	-1.1092588472799756	Jim Duke's personal files.*
2	CYSTINE	Seed	1000.0	5000.0	1.2870395709433473	Jim Duke's personal files.*
5	DAUCOSTEROL	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	DEC-TRANS-2-EN-1-AL	Seed				--
0	DEC-TRANS-2-TRANS-4-DIEN-1-AL	Seed				--
1	DELTA-5-AVENASTEROL	Seed				--
1	DELTA-7-AVENASTEROL	Seed				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar. Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
0	DELTA-7-STIGMASTEROL	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	DELTA-AMINO-LEVULINIC-ACID	Sprout Seedling				--
0	DIADENOSINE-TETRAPHOSPHORIC-ACID	Sprout Seedling				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	DIAMINO-PROPANE	Sprout Seedling				--
0	DIHYDROHAEMATINIC-ACID	Hull Husk				--
0	DIMETHOXY-BUTYL-BENZENE	Hull Husk				--
0	DIMETHOXY-BUTYL-BENZENE	Petiole				--
0	ERGOTHIONEINE	Seed				--
0	FAT	Seed	11000.0	97000.0	-0.8869576751709459	--
0	FAT	Plant	1540.0	7000.0	-0.6531012955597851	--
61	FERULIC-ACID	Seed				--
0	FERULIC-ACID-ESTER	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
15	FIBER	Seed	10000.0	289000.0	1.2177567557101374	--
15	FIBER	Plant	122000.0	417000.0	1.43574425001656	Jim Duke's personal files.*
0	FIBER(CRUDE)	Plant		173000.0	1.2755446864775144	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	FIBER(DIETARY)	Plant		620000.0	2.767466493208292	--
15	FOLACIN	Seed	0.0	0.75	-0.7652388262743898	--
23	FOLIC-ACID	Seed	0.0	0.75	-0.35541240931301027	Jim Duke's personal files.*
12	FORMALDEHYDE	Seed				--
8	FRUCTOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	FRUCTOSE	Root				--
0	FUR-2-ALDEHYDE	Seed				--
6	FURFURAL	Hull Husk	100000.0	132000.0		--
0	GAMMA-MUUROLENE	Seed				--
0	GERANIOL-ACETONE	Seed				--
7	GLUCOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	GLUCOVANILLIN	Hull Husk				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
8	GLUTAMIC-ACID	Plant		19000.0	-0.17653409934818678	Jim Duke's personal files.*
8	GLUTAMIC-ACID	Seed	29000.0	31000.0	-0.4519999471714031	Jim Duke's personal files.*
0	GLUTARIC-ACID	Petiole				--
0	GLUTARIC-ACID	Hull Husk				--
2	GLUTEN	Seed				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
12	GLYCINE	Seed		2000.0	-1.294330495155266	Jim Duke's personal files.*



Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GRAMININE	Rhizome				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	GUANINE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	HEPTAN-1-AL	Seed				--
0	HEPTANAL	Seed				--
0	HEX-CIS-3-EN-1-OL	Seed				--
0	HEX-TRANS-3-ENYL-ACETATE	Seed				--
0	HEXAN-1-AL	Seed				--
5	HEXANAL	Seed				--
1	HEXYL-ACETATE	Seed				--
7	HISTIDINE	Seed	1000.0	6000.0	-0.03298707830764554	Jim Duke's personal files.*
8	HORDENINE	Leaf				Wealth of India.
0	HYPOXANTHIN	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	INDOLE-3-ACETIC-ACID-GLUCOPROTEIN	Shoot				--
0	INDOLE-3-ACETIC-ACID-GLUCOPROTEIN	Seed				--
12	IODINE	Plant		0.154	-0.4470535169676872	Jim Duke's personal files.*
6	IRON	Plant	3.0	13.5	-0.7224047313177726	--
6	IRON	Seed	20.0	300.0	0.6932609533256522	Jim Duke's personal files.*
3	ISOLEUCINE	Seed	4000.0	9000.0	-0.1903246733732836	Jim Duke's personal files.*
3	ISOLEUCINE	Plant		13000.0	0.629975306413423	Jim Duke's personal files.*
4	ISOORIENTIN	Leaf				--
0	ISOORIENTIN-2'-O-ALPHA-L-ARABINOSIDE	Leaf				--
0	ISOORIENTIN-2'-O-ARABINOSIDE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOORIENTIN-2'-O-BETA-D-DIGLYCOSIDE	Leaf				--
0	ISOORIENTIN-7-O-BETA-D-DIGLYCOSIDE	Leaf				--
0	ISOPROPYL-TARTARIC-ACID	Hull Husk				--
0	ISOSWERTISIN-2'-O-ALPHA-L-RHAMNOSIDE	Shoot				--
0	ISOSWERTISIN-2'-O-ALPHA-L-RHAMNOSIDE	Leaf				--
0	ISOSWERTISIN-2'-RHAMNOSIDE	Leaf		16.0		--
0	ISOSWERTISIN-O'-RHAMNOSIDE	Leaf		16.0		--
4	ISOVITEXIN	Plant				Stitt, Paul. Why George should eat broccoli.
4	ISOVITEXIN	Sprout Seedling				--
0	ISOVITEXIN--O-ARABINOSIDE	Sprout Seedling				--
0	ISOVITEXIN-2'-O-ALPHA-L-ARABINOSIDE	Shoot				--
0	ISOVITEXIN-2'-O-ARABINOSIDE	Leaf				--
0	ISOVITEXIN-2'-O-RHAMNOSIDE	Stem				--
0	KILOCALORIES	Seed	3740.0	4710.0	-0.11644557042776867	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
0	KILOCALORIES	Plant	4529.0	4540.0	1.1415923130022652	--
2	LEUCINE	Seed	6000.0	14000.0	-0.2949527778801378	Jim Duke's personal files.*
2	LEUCINE	Plant		18000.0	0.4870195094224758	Jim Duke's personal files.*
0	LICHENIN	Seed				--
13	LIGNIN	Plant		85000.0	-0.9668714696835661	Jim Duke's personal files.*
13	LIGNIN	Hull Husk	100000.0	150000.0	-1.0	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
60	LIMONENE	Seed				--
0	LOPHENOL	Seed				--
0	LOPHENOL	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	LUTEOLIN-6-C-GLUCOSIDE	Leaf				--
0	LUTEOLIN-6-C-GLUCOSYL-ARABINOSIDE	Leaf				--
0	LUTEOLIN-6-C-GLUCOSYL-O-ARABINOSIDE	Leaf				--
4	LYSINE	Seed	2000.0	7000.0	-0.6906340633332377	Jim Duke's personal files.*
4	LYSINE	Plant		14000.0	0.48205927294439394	Jim Duke's personal files.*
65	MAGNESIUM	Seed	300.0	2900.0	-0.018215347061146407	Jim Duke's personal files.*
65	MAGNESIUM	Plant	2640.0	12000.0	2.4628926226809362	--
15	MALIC-ACID	Petiole				--
15	MALIC-ACID	Hull Husk				--
1	MALONIC-ACID	Petiole				--
1	MALONIC-ACID	Hull Husk				--
14	MANGANESE	Seed	20.0	204.0	1.8744753503352685	Jim Duke's personal files.*
14	MANGANESE	Plant	0.1	0.5	-0.6913213438464151	--
23	MELATONIN	Seed				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.
15	METHIONINE	Plant		2000.0	0.009670052634868679	Jim Duke's personal files.*
15	METHIONINE	Seed	1000.0	4000.0	-0.0812868777702854	Jim Duke's personal files.*
0	METHOXY-MALIC-ACID	Hull Husk				--
0	METHOXY-MALIC-ACID	Petiole				--
0	MYOINOSITOL-OXIDASE	Shoot				Wealth of India.
22	MYRCENE	Seed				--
39	NIACIN	Seed	6.0	44.0	0.03334512236633281	Jim Duke's personal files.*
39	NIACIN	Plant	17.0	75.0	-0.024042680398474098	--
1	NICOTIANAMINE	Sprout Seedling				--
0	NONA-TRANS-2-TRANS-4-DIENAL	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NONAN-1-AL	Seed				--
0	NONAN-1-OL	Seed				--
0	NUATIGENIN	Seed				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	O'-RHAMNOSYL-8-C-D-GLUCOPYRANOSYLGENK WANIN	Sprout Seedling				Rizk, A.F.M., The Phytochemistry of the Flora of Qatar. Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986.
0	OCT-1-EN-3-OL	Seed				--
0	OCT-TRANS-2-EN-1-OL	Seed				--
0	OCTAN-1-AL	Seed				--
0	OCTAN-1-OL	Seed				--
0	OCTANAL	Seed				--
0	ORGOTHIONENINE	Seed				Wealth of India.
9	OXALIC-ACID	Plant		400.0	-0.5323291024119612	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
25	P-COUMARIC-ACID	Seed				--
13	P-HYDROXY-BENZOIC-ACID	Seed				--
11	PANTOTHENIC-ACID	Seed	4.4	28.3	1.2104233244034384	Jim Duke's personal files.*
11	PANTOTHENIC-ACID	Plant	3.5	45.3	0.9128756483055993	Jim Duke's personal files.*
24	PECTIN	Plant		800.0	-0.774079561685048	Wealth of India.
0	PENTANE-1,3,4-TRICARBOXYLIC-ACID	Hull Husk				--
0	PENTOSANS	Hull Husk	320000.0	360000.0	1.0	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	PHAEOPHORBIDE	Sprout Seedling				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	PHENYLALANINE	Seed	4000.0	10000.0	-0.1839547111693311	Jim Duke's personal files.*
4	PHOSPHORUS	Seed	500.0	10200.0	1.2807700551263885	Jim Duke's personal files.*
4	PHOSPHORUS	Plant	618.0	2810.0	-0.3741734298409137	--
5	PHYLLOQUINONE	Seed		0.1	-0.04540766091865027	--
0	PHYTATE	Seed	8970.0	10000.0	-0.30876780753705974	--
9	PHYTIC-ACID	Bran				--
9	PHYTIC-ACID	Hull Husk	5600.0	8700.0		--
2	PHYTOSTEROLS	Seed		580.0	-0.49166318384124835	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
14	POTASSIUM	Seed	2200.0	8900.0	-0.3227574844725049	Jim Duke's personal files.*
14	POTASSIUM	Plant	598.0	2720.0	-1.3304292991673436	--
0	PROLINE	Shoot		1.3	-0.7081532669989642	--
0	PROLINE	Root		2.4	-1.2997594393680416	--
0	PROPANAL	Seed				--
0	PROTEIN	Seed	74000.0	232000.0	-0.01597695077093895	Jim Duke's personal files.*
0	PROTEIN	Plant	15840.0	72000.0	-0.8315036968096554	--
0	PUTRESCINE	Leaf		1186.0		--
43	PYRIDOXINE	Seed	0.22	2.4	-0.8240428163590194	Jim Duke's personal files.*
43	PYRIDOXINE	Plant	1.76	3.08		Jim Duke's personal files.*
176	QUERCETIN	Hay		310.0		--
15	RIBOFLAVIN	Seed	0.66	11.7	3.1334031477822193	Jim Duke's personal files.*
15	RIBOFLAVIN	Plant	0.4	2.0	-0.6558678757056521	--
7	SALICYLATES	Seed		0.0	-0.3401776874861938	--
0	SALICYLIC-ACID-METHYL-ESTER	Seed				--
5	SAPONINS	Seed	1000.0	13000.0	-0.3206748989657371	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
44	SCOPOLETIN	Sprout Seedling				--
44	SCOPOLETIN	Root		10.0	-1.0	--
3	SCOPOLIN	Sprout Seedling				--
0	SECALOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
60	SELENIUM	Plant	0.3	1.3	-0.3695058107533004	--
60	SELENIUM	Bran				--
1	SERINE	Seed		4000.0	-1.2599694074180983	Jim Duke's personal files.*
0	SILICA	Plant		36000.0	-0.6150458899014142	Wealth of India.
1	SILICIC-ACID	Leaf				Wealth of India.
4	SILICON	Plant	4.0	18.3	-0.4358023545388019	--
0	SILICON-OXIDE	Plant				--
0	SILICON-OXIDE	Ash				--
9	SINAPIC-ACID	Seed				--
1	SODIUM	Seed	100.0	1600.0	1.824152591251745	Jim Duke's personal files.*
1	SODIUM	Plant	862.0	3920.0	-0.08708138356494911	--
1	SPERMIDINE	Leaf		14.0		--
1	SPERMINE	Leaf		13.0		--
5	STARCH	Seed	500000.0	600000.0	1.1736828138582762	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	STIGMAST-7-EN-3-BETA-OL	Seed				--
0	STIGMAST-7-EN-3-BETA-OL	Leaf				--
0	STIGMASTA-7,24(28)-DIEN-3-BETA-OL	Seed				--
0	STIGMASTADIENOL	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
0	STIGMASTANEDIOL	Seed				--
0	STIGMASTANOL	Seed				--
0	STIGMASTANOL	Leaf				--
12	STIGMASTEROL	Seed				--
12	STIGMASTEROL	Leaf				--
14	SUCROSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	SUGARS	Plant	30000.0	93000.0	-0.22286679279323657	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	SUGARS	Seed	20000.0	50000.0	-0.14394703178324852	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
14	SULFUR	Seed	1500.0	3100.0	0.31967317026072223	Jim Duke's personal files.*
14	SULFUR	Plant	800.0	4100.0	0.1026280463781624	Jim Duke's personal files.*
6	TARTARIC-ACID	Hull Husk				--
6	TARTARIC-ACID	Petiole				--
31	THIAMIN	Seed	2.6	12.1	1.3159899428962132	--
31	THIAMIN	Plant	0.9	4.0	-0.3059929673424499	Jim Duke's personal files.*
0	THIAMINE	Plant	0.4	2.0	-0.4618949437111338	--
4	THREONINE	Seed	3000.0	7000.0	-0.2544416663340577	Jim Duke's personal files.*
4	THREONINE	Plant		16000.0	1.1658056814606805	Jim Duke's personal files.*
4	TIN	Plant	1.3	6.0	-1.008758312691185	--
0	TRANS-BETA-OCIMENE	Seed				--
0	TRANS-HEPT-2-ENAL	Seed				--
0	TRANS-NON-2-EN-1-AL	Seed				--
0	TRANS-NON-2-ENAL	Seed				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	TRICIN	Leaf				--
0	TRICIN-4',7-DI-O-BETA-D-GLYCOSIDE	Inflorescence				--
0	TRICIN-4'-O-ALPHA-L-ARABINOSIDE	Leaf				--
0	TRICIN-4'-O-ALPHA-L-ARABINOSIDE	Inflorescence				--
0	TRICIN-4'-O-BETA-D-GLUCOSIDE	Leaf				--
0	TRICIN-4'-O-BETA-D-GLYCOSIDE	Leaf				--
0	TRICIN-7-O-ALPHA-L-RHAMNOSYL-HEXOSIDE	Stem				--
0	TRICIN-7-O-BETA-D-GLUCOSIDE	Leaf				--
0	TRICIN-7-O-BETA-D-GLYCOSIDE	Leaf				--
15	TRIGONELLINE	Seed				Wealth of India.
29	TRYPTOPHAN	Seed	0.0	3000.0	-0.1108675145369685	Jim Duke's personal files.*
29	TRYPTOPHAN	Plant		2000.0	-0.9503762425454777	Jim Duke's personal files.*
8	TYROSINE	Seed	2000.0	14000.0	1.4498681987287636	Jim Duke's personal files.*
0	URONIC-ACIDS	Plant				--
3	VALINE	Seed	4000.0	11000.0	-0.12458055729354042	Jim Duke's personal files.*
3	VALINE	Plant		12000.0	0.45057332688469326	Jim Duke's personal files.*
24	VANILLIC-ACID	Seed				--
28	VANILLIN	Plant				Stitt, Paul. Why George should eat broccoli.
0	VITAMIN-A	Leaf		0.6		--
24	VITAMIN-B-1	Seed		7.0	1.0000000000000002	--
0	VITAMIN-B-2	Seed		1.3	1.0	--
1	VITEXIN-2"-O-ALPHA-L-RHAMNOSIDE	Shoot				--
0	VITEXIN-2'-RHAMNOSIDE	Leaf				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	VITEXIN-O-GLUCOSIDE	Sprout Seedling				--
0	WATER	Seed	48000.0	213000.0	-0.05605353286919712	Jim Duke's personal files.*



Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	WATER	Plant		780000.0	0.038825343690180966	--
0	WAX	Seed		9000.0	-0.0905357460425187	--
0	XANTHOPHYLL-EPOXIDE	Sprout Seedling				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
77	ZINC	Plant				--