

List of Plants



Chemid

VALINE

*Unless otherwise noted all references are to Duke, James A. 1992. Handbook of phytochemical constituents of GRAS herbs and other economic plants. Boca Raton, FL. CRC Press.

Plant	Part	Low PPM	High PPM	StdDev	*Reference
Abelmoschus esculentus	Fruit	910.0	9100.0	0.96	USDA's Ag Handbook 8 and sequelae)
Acacia senegal	Plant	--	--		Pakistan Encyclopedia Planta Medica. 1986.
Acacia farnesiana	Seed	1600.0	1650.0	-1.28	Rizk, A.F.M. and Al-Nowaihi, A.S., The Phytochemistry of the Horticultural Plants of Qatar, Scientific and Applied Research Centre, University of Qatar.
Acacia farnesiana	Leaf	3120.0	16740.0	1.13	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Albizia lebeck	Seed	--	--		Wealth of India.
Alisma plantago-aquatica	Rhizome	--	--		*
Allium schoenoprasum	Leaf	1240.0	15500.0	0.79	USDA's Ag Handbook 8 and sequelae)
Allium ampeloprasum	Plant	--	--		*
Allium sativum var. sativum	Bulb	0.8	6984.0	1.0	*
Allium sativum var. sativum	Leaf	--	--		*
Allium cepa	Bulb	270.0	2943.0	-1.0	*
Aloe vera	Leaf	--	12769.0	0.02	*
Alpinia galanga	Leaf	--	--		*
Althaea officinalis	Root	--	--		*
Amaranthus sp.	Leaf	1370.0	16481.0	1.06	*
Anacardium occidentale	Seed	10400.0	10580.0	-0.18	*
Ananas comosus	Fruit	39.0	1185.0	-0.67	*
Anethum graveolens	Seed	11200.0	12130.0	0.01	USDA's Ag Handbook 8 and sequelae)
Anethum graveolens	Fruit	11200.0	12130.0	1.58	*
Angelica sinensis	Root	--	--		Jim Duke's personal files.
Angelica archangelica	Leaf	--	--		*
Apium graveolens	Shoot	--	--		*
Apium graveolens	Pt	260.0	5600.0		USDA's Ag Handbook 8 and sequelae)
Arachis hypogaea	Seed	10970.0	12437.0	0.05	*
Arctium lappa	Root	330.0	1650.0	-1.41	USDA's Ag Handbook 8 and sequelae)
Artemisia dracunculus	Leaf	--	--		*

<i>Artemisia dracunculus</i>	Root	--	--		*
<i>Artocarpus altilis</i>	Fruit	470.0	1600.0	-0.59	*
<i>Artocarpus altilis</i>	Seed	5350.0	12235.0	0.03	USDA's Ag Handbook 8 and sequelae)
<i>Asimina triloba</i>	Fruit	334.0	3661.0	-0.16	*
<i>Asparagus officinalis</i>	Shoot	1180.0	15226.0	0.14	*
<i>Avena sativa</i>	Seed	4000.0	11000.0	-0.12	Jim Duke's personal files.*
<i>Avena sativa</i>	Plant	--	12000.0	0.45	Jim Duke's personal files.*
<i>Averrhoa carambola</i>	Fruit	260.0	2860.0	-0.33	USDA's Ag Handbook 8 and sequelae)
<i>Basella alba</i>	Leaf	650.0	9420.0	-0.92	*
<i>Bertholletia excelsa</i>	Seed	9110.0	9425.0	-0.32	USDA's Ag Handbook 8 and sequelae)
<i>Beta vulgaris</i>	Root	520.0	4100.0	0.02	USDA's Ag Handbook 8 and sequelae)
<i>Bixa orellana</i>	Seed	7620.0	7730.0	-0.53	*
<i>Borago officinalis</i>	Leaf	--	--		Jim Duke's personal files.
<i>Brassica oleracea</i>	Stem	500.0	5555.0		*
<i>Brassica oleracea</i> var. <i>sabellica</i> L.	Leaf	1810.0	11645.0	-0.29	*
<i>Brassica oleracea</i> var. <i>gemmifera</i>	Leaf	1550.0	11067.0	-0.46	USDA's Ag Handbook 8 and sequelae)
<i>Brassica rapa</i>	Leaf	660.0	14104.0	0.4	USDA's Ag Handbook 8 and sequelae)
<i>Brassica napus</i> var. <i>napobrassica</i>	Root	480.0	4640.0	0.33	USDA's Ag Handbook 8 and sequelae)
<i>Brassica oleracea</i> var. <i>viridis</i> L.	Leaf	770.0	12620.0	-0.02	*
<i>Brassica oleracea</i> var. <i>botrytis</i> L.	Leaf	1280.0	13747.0	0.3	*
<i>Brassica chinensis</i>	Leaf	660.0	14104.0	0.4	*
<i>Brassica rapa</i>	Root	300.0	3690.0	-0.22	*
<i>Brassica oleracea</i> var. <i>botrytis</i> L.	Flower	1000.0	12920.0		*
<i>Brassica oleracea</i> var. <i>capitata</i> L.	Leaf	520.0	6952.0	-1.61	USDA's Ag Handbook 8 and sequelae)
<i>Brassica oleracea</i> var. <i>italica</i>	Leaf	1280.0	13747.0	0.3	USDA's Ag Handbook 8 and sequelae)
<i>Brassica nigra</i>	Leaf	970.0	14286.0	0.45	USDA's Ag Handbook 8 and sequelae)
<i>Cajanus cajan</i>	Seed	9130.0	10480.0	-0.19	*
<i>Calathea allouia</i>	Root	4585.0	5040.0	0.56	*
<i>Camellia sinensis</i>	Leaf	--	--		*
<i>Capsicum frutescens</i>	Fruit	840.0	6854.0	0.5	USDA's Ag Handbook 8 and sequelae)
<i>Capsicum annum</i>	Fruit	360.0	4910.0	0.09	*
<i>Carica papaya</i>	Fruit	100.0	895.0	-0.73	USDA's Ag Handbook 8 and sequelae)
<i>Carum carvi</i>	Seed	10370.0	11510.0	-0.06	Revised USDA data received 1993.

Castanea mollissima	Seed	2233.0	3976.0	-0.99	*
Castanea dentata	Seed	2596.0	4622.0	-0.91	*
Castanea sativa	Seed	1081.0	2378.0	-1.19	*
Ceratonia siliqua	Seed	--	20680.0	1.07	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
Chenopodium album	Leaf	2260.0	14396.0	0.48	*
Cicer arietinum	Seed	8090.0	10150.0	-0.23	*
Cichorium intybus	Leaf	410.0	9180.0	-0.98	USDA's Ag Handbook 8 and sequelae)
Cichorium endivia	Leaf	630.0	10145.0	-0.71	*
Citrullus lanatus	Seed	--	10200.0	-0.22	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Citrullus lanatus	Fruit	--	1885.0	-0.53	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Citrus sinensis	Fruit	100.0	3020.0	-0.3	*
Citrus reticulata	Fruit	20.0	2176.0	-0.47	*
Citrus paradisi	Fruit	--	240.0	-0.87	*
Cnidioscolus chayamansa	Leaf	3040.0	15190.0	0.7	*
Coccinia grandis	Flower	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Cocos nucifera	Leaf	--	--		Jim Duke's personal files.
Cocos nucifera	Endosperm	--	--		Jim Duke's personal files.
Cocos nucifera	Seed	2020.0	3810.0	-1.01	USDA's Ag Handbook 8 and sequelae)
Colocasia esculenta	Leaf	2560.0	17850.0	1.45	*
Colocasia esculenta	Root	820.0	2790.0	-0.75	*
Corchorus olitorius	Leaf	2480.0	20185.0	2.1	*
Coriandrum sativum	Fruit	--	--		*
Coriandrum sativum	Leaf	--	--		*
Crocus sativus	Bulb	--	--		*
Cryptotaenia japonica	Root	--	--		*
Cryptotaenia japonica	Shoot	--	--		*
Cucumis sativus	Fruit	170.0	4304.0	-0.03	*
Cucurbita pepo	Seed	19720.0	22725.0	1.32	*
Cucurbita pepo	Fruit	350.0	4165.0	-0.06	USDA's Ag Handbook 8 and sequelae)
Cucurbita spp	Fruit	530.0	8385.0	0.81	*
Cucurbita foetidissima	Seed	11665.0	48000.0	4.43	*
Daucus carota	Root	440.0	3600.0	-0.27	*
Dioscorea pentaphylla	Root	540.0	2910.0	-0.68	*
Eryngium creticus	Shoot	--	11200.0	-0.25	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Fagopyrum esculentum	Seed	--	8140.0	-0.48	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Ficus carica	Fruit	280.0	1340.0	-0.64	USDA's Ag Handbook 8 and sequelae)
Foeniculum vulgare	Seed	9150.0	10037.0	-0.24	USDA's Ag Handbook 8 and sequelae)

Foeniculum vulgare	Fruit	9150.0	10037.0	1.15	*
Fragaria spp	Fruit	180.0	2135.0	-0.48	USDA's Ag Handbook 8 and sequelae)
Ginkgo biloba	Seed	2830.0	7730.0	-0.53	USDA's Ag Handbook 8 and sequelae)
Glechoma hederacea	Plant	--	--		Oriental Materia Medica (three volumes by Dr. Hsu and collaborators)
Glycine max	Seed	18210.0	19910.0	0.97	USDA's Ag Handbook 8 and sequelae)
Harpagophytum procumbens	Root	--	--		*
Helianthus tuberosus	Tuber	--	4098.0	-0.73	Izadoost, M. & Robinson, T., Synergism & antagonism in the pharmacology of alkaloidal plants, pp 137-58 in Craker, L. & Simon, J., eds., Herbs, Spices & Medicinal Plants: Recent Advances in Botany, Horticulture & Pharmacology, v. 2, 1987, 255pp.
Helianthus annuus	Seed	13150.0	50000.0	4.68	*
Hordeum vulgare	Seed	6000.0	9000.0	-0.37	Jim Duke's personal files.*
Humulus lupulus	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Ipomoea aquatica	Leaf	1350.0	17930.0	1.47	*
Ipomoea batatas	Root	830.0	3976.0	-0.06	*
Juglans regia	Seed	7230.0	7505.0	-0.56	USDA's Ag Handbook 8 and sequelae)
Juglans cinerea	Seed	15410.0	15942.0	0.48	*
Juglans nigra	Seed	12860.0	13445.0	0.18	USDA's Ag Handbook 8 and sequelae)
Lablab purpureus	Seed	1430.0	13670.0	0.2	*
Lactuca sativa	Leaf	700.0	11667.0	-0.29	*
Lagenaria siceraria	Fruit	270.0	6055.0	0.33	*
Larrea tridentata	Plant	--	4200.0	-0.76	*
Lens culinaris	Sprout Seedling	3990.0	13300.0	-0.75	USDA's Ag Handbook 8 and sequelae)
Lens culinaris	Seed	13920.0	15675.0	0.45	USDA's Ag Handbook 8 and sequelae)
Lentinus edodes	Fruit	--	--		*
Lepidium meyenii	Root	--	7930.0	2.25	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Linum usitatissimum	Seed	--	0.284	-1.48	*
Lupinus albus	Seed	15100.0	16860.0	0.6	*
Lycium chinense	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Lycopersicon esculentum	Fruit	1.0	3801.0	-0.13	*
Lycopodium clavatum	Pollen Or Spore	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
Macadamia spp	Seed	3210.0	3300.0	-1.07	USDA's Ag Handbook 8 and sequelae)
Malus domestica	Fruit	40.0	560.0	-0.8	*
Mangifera indica	Fruit	260.0	2700.0	-0.36	*
Manihot esculenta	Root	790.0	2510.0	-0.91	*
Medicago sativa	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Mentha spicata	Leaf	1640.0	11350.0	-0.38	*
Mentha x piperita	Leaf	1870.0	8760.0	-1.1	USDA's Ag Handbook 8 and sequelae)

Moringa oleifera	Shoot	6110.0	28630.0	1.45	USDA's Ag Handbook 8 and sequelae)
Mucuna pruriens	Seed	8600.0	18232.0	0.77	*
Murraya sp	Fruit	460.0	1325.0	-0.65	*
Musa x paradisiaca	Fruit	460.0	1826.0	-0.54	USDA's Ag Handbook 8 and sequelae)
Myrciaria dubia	Fruit	--	--		Jim Duke's personal files.
Nasturtium officinale	Herb	1370.0	27400.0	1.0	USDA's Ag Handbook 8 and sequelae)
Nelumbo nucifera	Seed	2660.0	8061.0	-0.49	*
Nelumbo nucifera	Rhizome	550.0	2630.0	-1.0	*
Nigella sativa	Seed	6500.0	8325.0	-0.45	*
Ocimum basilicum	Leaf	--	7170.0	-1.55	USDA's Ag Handbook 8 and sequelae)
Oenothera biennis	Seed	5200.0	8645.0	-0.41	*
Opuntia ficus-indica	Bud	--	5485.0		Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Opuntia ficus-indica	Seed	--	10500.0	-0.19	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Oryza sativa	Hay	--	--		*
Pachyrhizus erosus	Tuber	420.0	3870.0	-0.79	*
Panax quinquefolius	Plant	--	82.0	-1.4	*
Panax ginseng	Leaf	--	--		*
Panax ginseng	Root	--	--		*
Papaver somniferum	Seed	12870.0	13806.0	0.22	*
Papaver bracteatum	Seed	8450.0	10600.0	-0.17	*
Passiflora incarnata	Leaf	--	--		Jim Duke's personal files.
Passiflora incarnata	Stem	--	--		Jim Duke's personal files.
Passiflora incarnata	Seed	--	--		Jim Duke's personal files.
Perideridia gairdneri	Root	--	3175.0	-0.52	Izadoost, M. & Robinson, T., Synergism & antagonism in the pharmacology of alkaloidal plants, pp 137-58 in Craker, L. & Simon, J., eds., Herbs, Spices & Medicinal Plants: Recent Advances in Botany, Horticulture & Pharmacology, v. 2, 1987, 255pp.
Persea americana	Fruit	970.0	3770.0	-0.14	*
Phaseolus vulgaris	Sprout Seedling	2160.0	23226.0	1.41	USDA's Ag Handbook 8 and sequelae)
Phaseolus lunatus	Seed	4270.0	14370.0	0.29	*
Phaseolus vulgaris	Seed	11300.0	12699.0	0.08	USDA's Ag Handbook 8 and sequelae)
Phaseolus acutifolius	Seed	15900.0	17330.0	0.66	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Phaseolus vulgaris	Fruit	900.0	9250.0	0.99	USDA's Ag Handbook 8 and sequelae)
Phoenix dactylifera	Fruit	5.0	2710.0	-0.36	*
Phyllanthus emblica	Fruit	159.0	785.0	-0.76	*
Pinus pinea	Seed	12410.0	15300.0	0.41	*
Pinus edulis	Seed	5980.0	6255.0	-0.71	USDA's Ag Handbook 8 and sequelae)

<i>Pistacia vera</i>	Seed	14100.0	14688.0	0.33	*
<i>Pisum sativum</i>	Shoot	--	33.0	-1.34	*
<i>Pisum sativum</i>	Seed	2350.0	11116.0	-0.11	*
<i>Pisum sativum</i>	Fruit	2730.0	27003.0	4.65	*
<i>Plantago ovata</i>	Plant	--	--		*
<i>Portulaca oleracea</i>	Herb	660.0	13200.0	-1.0	*
<i>Prunus cerasus</i>	Fruit	--	--		*
<i>Prunus dulcis</i>	Seed	10280.0	10752.0	-0.16	USDA's Ag Handbook 8 and sequelae)
<i>Prunus armeniaca</i>	Fruit	470.0	3445.0	-0.21	USDA's Ag Handbook 8 and sequelae)
<i>Prunus domestica</i>	Fruit	190.0	1284.0	-0.65	USDA's Ag Handbook 8 and sequelae)
<i>Prunus persica</i>	Fruit	380.0	3078.0	-0.28	*
<i>Psidium guajava</i>	Fruit	280.0	2016.0	-0.5	USDA's Ag Handbook 8 and sequelae)
<i>Psidium cattleianum</i>	Fruit	200.0	1035.0	-0.71	*
<i>Psophocarpus tetragonolobus</i>	Tuber	5990.0	14061.0	1.68	*
<i>Psophocarpus tetragonolobus</i>	Seed	15300.0	16692.0	0.58	*
<i>Psophocarpus tetragonolobus</i>	Leaf	2450.0	10583.0	-0.59	*
<i>Psoralea esculenta</i>	Root	--	1730.0	-1.36	Izadoost, M. & Robinson, T., Synergism & antagonism in the pharmacology of alkaloidal plants, pp 137-58 in Craker, L. & Simon, J., eds., Herbs, Spices & Medicinal Plants: Recent Advances in Botany, Horticulture & Pharmacology, v. 2, 1987, 255pp.
<i>Punica granatum</i>	Fruit	--	--		*
<i>Pyrus communis</i>	Fruit	140.0	865.0	-0.74	*
<i>Raphanus sativus</i>	Root	320.0	6200.0	1.24	*
<i>Rehmannia glutinosa</i>	Root	1000.0	7000.0	1.7	*
<i>Ribes nigrum</i>	Fruit Juice	--	170.0		*
<i>Rosmarinus officinalis</i>	Leaf	1650.0	5120.0	-2.12	USDA's Ag Handbook 8 and sequelae)
<i>Sambucus canadensis</i>	Fruit	330.0	1634.0	-0.58	USDA's Ag Handbook 8 and sequelae)
<i>Secale cereale</i>	Seed	7470.0	8390.0	-0.45	USDA's Ag Handbook 8 and sequelae)
<i>Sechium edule</i>	Fruit	690.0	9860.0	1.12	*
<i>Senna obtusifolia</i>	Seed	--	7420.0	-0.57	*
<i>Sesamum indicum</i>	Seed	5490.0	15527.0	0.43	*
<i>Sinapis alba</i>	Seed	13250.0	14178.0	0.27	*
<i>Solanum tuberosum</i>	Tuber	117.0	6450.0	-0.16	*
<i>Solanum melongena</i>	Fruit	550.0	7063.0	0.54	*
<i>Spinacia oleracea</i>	Plant	1610.0	19120.0	1.56	USDA's Ag Handbook 8 and sequelae)
<i>Stachys officinalis</i>	Shoot	--	--		*
<i>Theobroma cacao</i>	Seed	--	5700.0	-0.78	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
<i>Thymus vulgaris</i>	Plant	5020.0	5422.0	-0.57	USDA's Ag Handbook 8 and sequelae)

<i>Tilia</i> sp.	Fruit	--	--		*
<i>Trifolium pratense</i>	Plant	--	--		*
<i>Trigonella foenum-graecum</i>	Seed	9410.0	12120.0	0.01	*
<i>Trigonella foenum-graecum</i>	Leaf	--	--		*
<i>Triticum aestivum</i>	Seed	2000.0	9000.0	-0.37	*
<i>Urtica dioica</i>	Leaf	--	--		Jim Duke's personal files.
<i>Vaccinium corymbosum</i>	Fruit	280.0	1820.0	-0.54	*
<i>Valeriana officinalis</i>	Rhizome	--	--		*
<i>Valerianella locusta</i>	Plant	990.0	13750.0	0.72	*
<i>Vicia faba</i>	Seed	2740.0	14420.0	0.3	USDA's Ag Handbook 8 and sequelae)
<i>Vigna unguiculata</i>	Seed	11600.0	12688.0	0.08	USDA's Ag Handbook 8 and sequelae)
<i>Vigna radiata</i>	Seed	12370.0	13600.0	0.2	USDA's Ag Handbook 8 and sequelae)
<i>Vigna unguiculata</i>	Seed	1710.0	12731.0	0.09	USDA's Ag Handbook 8 and sequelae)
<i>Vigna angularis</i>	Seed	10230.0	11818.0	-0.02	*
<i>Vigna unguiculata</i>	Fruit	1620.0	13333.0	1.83	USDA's Ag Handbook 8 and sequelae)
<i>Vigna aconitifolia</i>	Seed	7340.0	8127.0	-0.48	*
<i>Vigna radiata</i>	Sprout Seedling	1300.0	13655.0	-0.67	USDA's Ag Handbook 8 and sequelae)
<i>Vitellaria paradoxa</i>	Seed	--	1020.0	-1.35	*
<i>Vitis vinifera</i>	Fruit	180.0	926.0	-0.73	USDA's Ag Handbook 8 and sequelae)
<i>Zea mays</i>	Seed	1850.0	7696.0	-0.53	USDA's Ag Handbook 8 and sequelae)
<i>Zingiber officinale</i>	Shoot	--	--		*
<i>Zingiber officinale</i>	Root	730.0	4202.0	0.08	USDA's Ag Handbook 8 and sequelae)
<i>Zingiber officinale</i>	Tuber	--	--		*
<i>Zingiber officinale</i>	Rhizome	730.0	4202.0	1.0	*