

# List of Plants



## Chemid

### THREONINE

\*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	650.0	6500.0	1.45	USDA's Ag Handbook 8 and sequelae)
Acacia farnesiana	Seed	1050.0	1100.0	-1.57	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	2000.0	10730.0	0.32	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Albizia lebbek	Seed	--	--		Wealth of India.
Allium ampeloprasum	Plant	--	--		*
Allium sativum var. sativum	Bulb	2.0	10000.0	1.0	*
Allium cepa	Bulb	280.0	3052.0	-1.0	USDA's Ag Handbook 8 and sequelae)
Allium sativum var. sativum	Leaf	--	--		*
Allium schoenoprasum	Leaf	1110.0	13875.0	1.37	USDA's Ag Handbook 8 and sequelae)
Aloe vera	Leaf	--	14652.0	1.63	*
Alpinia galanga	Leaf	--	--		*
Amaranthus sp.	Leaf	990.0	11910.0	0.71	*
Anacardium occidentale	Seed	5920.0	6022.0	-0.47	*
Ananas comosus	Fruit	78.0	859.0	-0.9	*
Anastatica hierochuntica	Plant	--	--		*
Anethum graveolens	Fruit	5750.0	6227.0	1.33	*
Anethum graveolens	Seed	5750.0	6227.0	-0.43	USDA's Ag Handbook 8 and sequelae)
Angelica sinensis	Root	--	--		Jim Duke's personal files.
Apium graveolens	Pt	190.0	4105.0		USDA's Ag Handbook 8 and sequelae)
Arachis hypogaea	Seed	7430.0	9570.0	0.32	*
Arctium lappa	Root	260.0	1300.0	-0.72	USDA's Ag Handbook 8 and sequelae)
Artocarpus altilis	Seed	3850.0	8800.0	0.15	USDA's Ag Handbook 8 and sequelae)
Artocarpus altilis	Fruit	520.0	1770.0	-0.52	*
Asimina triloba	Fruit	254.0	2812.0	-0.09	*
Asparagus officinalis	Shoot	850.0	10968.0	-0.14	*
Avena sativa	Seed	3000.0	7000.0	-0.25	Jim Duke's personal files.*
Avena sativa	Plant	--	16000.0	1.17	Jim Duke's personal files.*

<i>Averrhoa carambola</i>	Fruit	230.0	2530.0	-0.2	USDA's Ag Handbook 8 and sequelae)
<i>Basella alba</i>	Leaf	550.0	7970.0	-0.61	*
<i>Bertholletia excelsa</i>	Seed	4600.0	4759.0	-0.76	USDA's Ag Handbook 8 and sequelae)
<i>Beta vulgaris</i>	Root	440.0	3470.0	-0.07	USDA's Ag Handbook 8 and sequelae)
<i>Bixa orellana</i>	Seed	4360.0	7600.0	-0.12	*
<i>Brassica rapa</i>	Root	250.0	3075.0	-0.19	*
<i>Brassica oleracea</i> var. <i>viridis</i> L.	Leaf	550.0	9014.0	-0.26	*
<i>Brassica oleracea</i> var. <i>botrytis</i> L.	Leaf	910.0	9773.0	-0.01	*
<i>Brassica chinensis</i>	Leaf	490.0	10471.0	0.23	*
<i>Brassica oleracea</i>	Stem	490.0	5445.0		*
<i>Brassica oleracea</i> var. <i>italica</i>	Leaf	910.0	9773.0	-0.01	USDA's Ag Handbook 8 and sequelae)
<i>Brassica oleracea</i> var. <i>capitata</i> L.	Leaf	420.0	5615.0	-1.4	USDA's Ag Handbook 8 and sequelae)
<i>Brassica nigra</i>	Leaf	660.0	9720.0	-0.02	USDA's Ag Handbook 8 and sequelae)
<i>Brassica oleracea</i> var. <i>botrytis</i> L.	Flower	720.0	9300.0		*
<i>Brassica oleracea</i> var. <i>sabellica</i> L.	Leaf	1470.0	9460.0	-0.11	*
<i>Brassica rapa</i>	Leaf	490.0	10471.0	0.23	USDA's Ag Handbook 8 and sequelae)
<i>Brassica oleracea</i> var. <i>gemmifera</i>	Leaf	1200.0	8568.0	-0.41	USDA's Ag Handbook 8 and sequelae)
<i>Brassica napus</i> var. <i>napobrassica</i>	Root	460.0	4445.0	0.22	USDA's Ag Handbook 8 and sequelae)
<i>Cajanus cajan</i>	Seed	7190.0	8580.0	0.1	*
<i>Calathea allouia</i>	Root	2815.0	3095.0	-0.18	*
<i>Camellia sinensis</i>	Leaf	--	--		*
<i>Capsicum frutescens</i>	Fruit	740.0	6038.0	1.26	USDA's Ag Handbook 8 and sequelae)
<i>Capsicum annuum</i>	Fruit	310.0	4228.0	0.5	*
<i>Carica papaya</i>	Fruit	110.0	985.0	-0.84	USDA's Ag Handbook 8 and sequelae)
<i>Carum carvi</i>	Seed	7560.0	8390.0	0.06	Revised USDA data received 1993.
<i>Castanea dentata</i>	Seed	1904.0	3389.0	-1.06	*
<i>Castanea sativa</i>	Seed	729.0	1604.0	-1.46	*
<i>Castanea mollissima</i>	Seed	1806.0	3214.0	-1.1	*
<i>Ceratonia siliqua</i>	Seed	--	16920.0	1.96	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
<i>Chenopodium album</i>	Leaf	1630.0	10383.0	0.2	*
<i>Cicer arietinum</i>	Seed	7160.0	8090.0	-0.01	USDA's Ag Handbook 8 and sequelae)
<i>Cichorium endivia</i>	Leaf	500.0	8051.0	-0.58	*

<i>Cichorium intybus</i>	Leaf	250.0	5712.0	-1.37	USDA's Ag Handbook 8 and sequelae)
<i>Citrullus lanatus</i>	Seed	--	15300.0	1.6	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
<i>Citrullus lanatus</i>	Fruit	--	3180.0	0.07	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
<i>Citrus paradisi</i>	Fruit	--	100.0	-1.21	*
<i>Citrus sinensis</i>	Fruit	150.0	1132.0	-0.78	USDA's Ag Handbook 8 and sequelae)
<i>Citrus reticulata</i>	Fruit	100.0	806.0	-0.92	USDA's Ag Handbook 8 and sequelae)
<i>Cnidioscolus chayamansa</i>	Leaf	2045.0	10230.0	0.15	*
<i>Coccinia grandis</i>	Flower	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
<i>Cocos nucifera</i>	Leaf	--	--		Jim Duke's personal files.
<i>Cocos nucifera</i>	Seed	1210.0	2285.0	-1.31	USDA's Ag Handbook 8 and sequelae)
<i>Colocasia esculenta</i>	Root	690.0	2350.0	-0.41	*
<i>Colocasia esculenta</i>	Leaf	1670.0	11645.0	0.62	*
<i>Corchorus olitorius</i>	Leaf	890.0	13350.0	1.19	*
<i>Coriandrum sativum</i>	Leaf	--	--		*
<i>Crocus sativus</i>	Bulb	--	--		*
<i>Cryptotaenia japonica</i>	Shoot	--	--		*
<i>Cryptotaenia japonica</i>	Root	--	--		*
<i>Cucumis sativus</i>	Fruit	150.0	3797.0	0.32	*
<i>Cucurbita pepo</i>	Fruit	250.0	3452.0	0.18	*
<i>Cucurbita spp</i>	Fruit	280.0	4430.0	0.59	*
<i>Cucurbita foetidissima</i>	Seed	4605.0	26000.0	4.0	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Cucurbita pepo</i>	Seed	6205.0	9701.0	0.35	*
<i>Daucus carota</i>	Root	380.0	3110.0	-0.18	*
<i>Dioscorea pentaphylla</i>	Root	470.0	2530.0	-0.35	*
<i>Eryngium creticus</i>	Shoot	--	5045.0	-1.15	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Fagopyrum esculentum</i>	Seed	--	5850.0	-0.51	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Ficus carica</i>	Fruit	240.0	1149.0	-0.78	USDA's Ag Handbook 8 and sequelae)
<i>Foeniculum vulgare</i>	Seed	6020.0	6604.0	-0.34	USDA's Ag Handbook 8 and sequelae)
<i>Foeniculum vulgare</i>	Fruit	6020.0	6604.0	1.49	*
<i>Fragaria spp</i>	Fruit	190.0	2254.0	-0.32	USDA's Ag Handbook 8 and sequelae)
<i>Ginkgo biloba</i>	Seed	2680.0	7300.0	-0.19	USDA's Ag Handbook 8 and sequelae)
<i>Glycine max</i>	Shoot	--	--		*
<i>Glycine max</i>	Seed	15850.0	17330.0	2.06	USDA's Ag Handbook 8 and sequelae)
<i>Helianthus tuberosus</i>	Tuber	--	3431.0	-0.65	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>Helianthus annuus</i>	Seed	9280.0	9805.0	0.37	*
<i>Humulus lupulus</i>	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Hypericum perforatum	Plant	--	--		*
Ipomoea batatas	Root	720.0	3019.0	-0.21	*
Ipomoea aquatica	Leaf	1400.0	18590.0	2.95	*
Juglans cinerea	Seed	9400.0	9725.0	0.36	*
Juglans nigra	Seed	7300.0	7630.0	-0.11	USDA's Ag Handbook 8 and sequelae)
Juglans regia	Seed	4480.0	4650.0	-0.78	USDA's Ag Handbook 8 and sequelae)
Lablab purpureus	Seed	1430.0	11789.0	0.82	*
Lactuca sativa	Leaf	590.0	9833.0	0.01	*
Lagenaria siceraria	Fruit	180.0	4035.0	0.42	*
Lens culinaris	Sprout Seedling	3280.0	10935.0	-0.38	USDA's Ag Handbook 8 and sequelae)
Lens culinaris	Seed	10060.0	11325.0	0.71	USDA's Ag Handbook 8 and sequelae)
Lentinus edodes	Fruit	--	--		*
Lepidium meyenii	Root	--	3310.0	-0.12	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Linum usitatissimum	Seed	--	0.195	-1.82	*
Lupinus albus	Seed	13310.0	14860.0	1.5	*
Lycopersicon esculentum	Fruit	65.0	3637.0	0.26	*
Macadamia spp	Seed	2630.0	2705.0	-1.22	USDA's Ag Handbook 8 and sequelae)
Malus domestica	Fruit	30.0	435.0	-1.07	*
Mangifera indica	Fruit	190.0	2250.0	-0.32	*
Manihot esculenta	Root	650.0	2065.0	-0.49	*
Medicago sativa	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Melia azedarach	Seed	--	--		*
Mentha spicata	Leaf	1350.0	9340.0	-0.15	*
Mentha x piperita	Leaf	1540.0	7215.0	-0.86	USDA's Ag Handbook 8 and sequelae)
Momordica charantia	Seed	--	17.8	-1.82	Jim Duke's personal files.
Moringa oleifera	Shoot	4110.0	19260.0	1.29	USDA's Ag Handbook 8 and sequelae)
Mucuna pruriens	Seed	6250.0	13250.0	1.14	*
Murraya sp	Fruit	340.0	979.0	-0.85	*
Musa x paradisiaca	Fruit	340.0	1321.0	-0.71	USDA's Ag Handbook 8 and sequelae)
Myrciaria dubia	Fruit	--	--		Jim Duke's personal files.
Nasturtium officinale	Herb	1330.0	26600.0	1.0	USDA's Ag Handbook 8 and sequelae)
Nelumbo nucifera	Seed	2000.0	6060.0	-0.46	*
Nelumbo nucifera	Rhizome	510.0	2440.0	1.0	*
Nigella sativa	Seed	2615.0	3345.0	-1.07	*
Ocimum basilicum	Leaf	--	5880.0	-1.31	USDA's Ag Handbook 8 and sequelae)
Oenothera biennis	Seed	3500.0	4600.0	-0.79	*

<i>Opuntia ficus-indica</i>	Seed	--	7330.0	-0.18	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Opuntia ficus-indica</i>	Bud	--	3845.0		Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Oryza sativa</i>	Hay	--	--		*
<i>Pachyrhizus erosus</i>	Tuber	350.0	3225.0	-0.71	*
<i>Panax ginseng</i>	Leaf	--	--		*
<i>Panax quinquefolius</i>	Plant	584.0	1070.0	-1.3	*
<i>Panax ginseng</i>	Root	--	--		*
<i>Papaver bracteatum</i>	Seed	6350.0	7800.0	-0.08	*
<i>Papaver somniferum</i>	Seed	9050.0	9708.0	0.35	*
<i>Perideridia gairdneri</i>	Root	--	2413.0	-0.39	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>Persea americana</i>	Fruit	530.0	2565.0	-0.19	*
<i>Phaseolus acutifolius</i>	Seed	10700.0	11665.0	0.79	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Phaseolus vulgaris</i>	Sprout Seedling	1760.0	18925.0	1.37	USDA's Ag Handbook 8 and sequelae)
<i>Phaseolus lunatus</i>	Seed	2900.0	10320.0	0.49	*
<i>Phaseolus vulgaris</i>	Seed	9090.0	10216.0	0.46	USDA's Ag Handbook 8 and sequelae)
<i>Phaseolus vulgaris</i>	Fruit	790.0	8119.0	2.12	USDA's Ag Handbook 8 and sequelae)
<i>Phoenix dactylifera</i>	Fruit	10.0	980.0	-0.85	*
<i>Phyllanthus emblica</i>	Fruit	135.0	668.0	-0.98	*
<i>Pinus pinea</i>	Seed	7610.0	8190.0	0.01	*
<i>Pinus edulis</i>	Seed	3670.0	3900.0	-0.95	USDA's Ag Handbook 8 and sequelae)
<i>Pistacia vera</i>	Seed	7220.0	7511.0	-0.14	*
<i>Pisum sativum</i>	Seed	2030.0	9603.0	0.33	*
<i>Pisum sativum</i>	Fruit	990.0	9792.0	2.82	*
<i>Portulaca oleracea</i>	Herb	470.0	9400.0	-1.0	*
<i>Pouteria caimito</i>	Fruit	--	2190.0	-0.34	Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
<i>Prunus persica</i>	Fruit	270.0	2187.0	-0.35	*
<i>Prunus cerasus</i>	Fruit	--	--		*
<i>Prunus dulcis</i>	Seed	7390.0	7730.0	-0.09	USDA's Ag Handbook 8 and sequelae)
<i>Prunus armeniaca</i>	Fruit	470.0	3445.0	0.18	USDA's Ag Handbook 8 and sequelae)
<i>Prunus domestica</i>	Fruit	160.0	1081.0	-0.81	USDA's Ag Handbook 8 and sequelae)
<i>Psidium guajava</i>	Fruit	310.0	2232.0	-0.33	USDA's Ag Handbook 8 and sequelae)
<i>Psidium cattleianum</i>	Fruit	220.0	1140.0	-0.78	*
<i>Psophocarpus tetragonolobus</i>	Seed	11790.0	12863.0	1.06	*
<i>Psophocarpus tetragonolobus</i>	Leaf	1820.0	7862.0	-0.65	*
<i>Psophocarpus tetragonolobus</i>	Tuber	4510.0	10587.0	1.72	*

<i>Psoralea esculenta</i>	Root	--	1477.0	-0.67	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>Pyrus communis</i>	Fruit	100.0	618.0	-1.0	*
<i>Raphanus sativus</i>	Root	290.0	5620.0	0.57	*
<i>Rehmannia glutinosa</i>	Root	1000.0	16000.0	3.68	*
<i>Ribes nigrum</i>	Fruit Juice	--	17.0		*
<i>Rosmarinus officinalis</i>	Leaf	1360.0	4220.0	-1.87	USDA's Ag Handbook 8 and sequelae)
<i>Sambucus canadensis</i>	Fruit	270.0	1336.0	-0.7	USDA's Ag Handbook 8 and sequelae)
<i>Scutellaria baicalensis</i>	Root	--	--		*
<i>Secale cereale</i>	Seed	5320.0	5975.0	-0.48	USDA's Ag Handbook 8 and sequelae)
<i>Sechium edule</i>	Fruit	440.0	6285.0	1.36	*
<i>Senna obtusifolia</i>	Seed	--	5940.0	-0.49	*
<i>Sesamum indicum</i>	Seed	7360.0	12396.0	0.95	*
<i>Sinapis alba</i>	Seed	10950.0	11720.0	0.8	*
<i>Solanum tuberosum</i>	Tuber	750.0	4300.0	-0.36	*
<i>Solanum melongena</i>	Fruit	380.0	4957.0	0.81	*
<i>Spinacia oleracea</i>	Leaf	--	--		*
<i>Spinacia oleracea</i>	Plant	1220.0	14489.0	0.92	USDA's Ag Handbook 8 and sequelae)
<i>Stachys officinalis</i>	Shoot	--	--		*
<i>Theobroma cacao</i>	Seed	--	1400.0	-1.51	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
<i>Thymus vulgaris</i>	Plant	2520.0	2722.0	-1.03	USDA's Ag Handbook 8 and sequelae)
<i>Trifolium pratense</i>	Plant	--	--		*
<i>Trigonella foenum-graecum</i>	Seed	8980.0	9880.0	0.39	*
<i>Trigonella foenum-graecum</i>	Leaf	--	--		*
<i>Triticum aestivum</i>	Seed	3000.0	6000.0	-0.48	*
<i>Urtica dioica</i>	Leaf	--	--		Jim Duke's personal files.
<i>Vaccinium corymbosum</i>	Fruit	180.0	1170.0	-0.77	*
<i>Valerianella locusta</i>	Plant	750.0	10415.0	0.24	*
<i>Vicia faba</i>	Seed	2080.0	10950.0	0.63	USDA's Ag Handbook 8 and sequelae)
<i>Vigna unguiculata</i>	Fruit	1040.0	8560.0	2.3	USDA's Ag Handbook 8 and sequelae)
<i>Vigna angularis</i>	Seed	6740.0	7787.0	-0.08	*
<i>Vigna radiata</i>	Sprout Seedling	780.0	8192.0	-0.99	USDA's Ag Handbook 8 and sequelae)
<i>Vigna unguiculata</i>	Seed	1100.0	10165.0	0.45	USDA's Ag Handbook 8 and sequelae)
<i>Vigna unguiculata</i>	Seed	9260.0	10112.0	0.44	USDA's Ag Handbook 8 and sequelae)

Vigna radiata	Seed	7820.0	8598.0	0.1	USDA's Ag Handbook 8 and sequelae)
Vitis vinifera	Fruit	180.0	926.0	-0.87	USDA's Ag Handbook 8 and sequelae)
Zea mays	Seed	1290.0	5366.0	-0.62	USDA's Ag Handbook 8 and sequelae)
Zingiber officinale	Tuber	--	--		*
Zingiber officinale	Rhizome	360.0	2057.0	-1.0	*
Zingiber officinale	Shoot	--	--		*
Zingiber officinale	Root	360.0	2057.0	-0.49	USDA's Ag Handbook 8 and sequelae)