

Dr. Duke's Phytochemical and Ethnobotanical Databases

List of Plants for GLUTAMIC-ACID

Plant	Part	Low PPM	High PPM	StdDev	Reference
<i>Ceratonia siliqua</i>	Seed		131600.0	3.7924030897032144	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
<i>Rehmannia glutinosa</i>	Root	2000.0	53000.0	3.202606243067563	--
<i>Lycopersicon esculentum</i>	Fruit	90.0	54053.0	3.1763013494537677	--
<i>Cucurbita pepo</i>	Seed	43150.0	101820.0	2.535958532664187	--
<i>Pisum sativum</i>	Fruit	4480.0	44313.0	2.4183217884660655	--
<i>Lupinus albus</i>	Seed	21650.0	96985.0	2.3319656034068434	--
<i>Brassica chinensis</i>	Leaf	3600.0	76932.0	2.1091668817278633	--
<i>Brassica rapa</i>	Leaf	3600.0	76932.0	2.1091668817278633	USDA's Ag Handbook 8 and sequelae)
<i>Cucumis sativus</i>	Fruit	1540.0	38987.0	2.0038454905378824	--
<i>Allium schoenoprasum</i>	Leaf	5790.0	72400.0	1.864122232129579	USDA's Ag Handbook 8 and sequelae)
<i>Cucurbita pepo</i>	Fruit	1840.0	35000.0	1.6935719269179679	--
<i>Spinacia oleracea</i>	Plant	3430.0	40735.0	1.5707193839545637	USDA's Ag Handbook 8 and sequelae)
<i>Glycine max</i>	Seed	70680.0	77280.0	1.500594213331154	USDA's Ag Handbook 8 and sequelae)
<i>Foeniculum vulgare</i>	Fruit	29560.0	32427.0	1.4933376958685471	--
<i>Cucurbita foetidissima</i>	Seed	52800.0	73530.0	1.3423783943621699	--
<i>Beta vulgaris</i>	Root	3930.0	30994.0	1.3370135300475792	USDA's Ag Handbook 8 and sequelae)
<i>Cnidioscolus chayamansa</i>	Leaf	11780.0	58900.0	1.1341789908284232	--
<i>Phaseolus vulgaris</i>	Sprout Seedling	5120.0	55054.0	1.0799400548183595	USDA's Ag Handbook 8 and sequelae)
<i>Abelmoschus esculentus</i>	Fruit	2710.0	27100.0	1.0787835766302012	USDA's Ag Handbook 8 and sequelae)
<i>Zingiber officinale</i>	Rhizome	1620.0	9328.0	1.0	--
<i>Nasturtium officinale</i>	Herb	1900.0	38000.0	1.0	USDA's Ag Handbook 8 and sequelae)
<i>Arachis hypogaea</i>	Seed	54650.0	65281.0	0.994345783515463	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Helianthus tuberosus	Tuber		26493.0	0.992368582660606	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.
Asparagus officinalis	Shoot	5010.0	64645.0	0.9806017011914672	--
Solanum melongena	Fruit	2010.0	24907.0	0.9081214434427236	--
Triticum aestivum	Seed	39000.0	63000.0	0.8981083746972622	--
Juglans cinerea	Seed	60840.0	62942.0	0.8956613033638753	--
Raphanus sativus	Root	1320.0	25580.0	0.8780332997335651	--
Acacia farnesiana	Leaf	10080.0	54070.0	0.8730215200517875	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Prunus dulcis	Seed	59340.0	62070.0	0.8588708515929542	USDA's Ag Handbook 8 and sequelae)
Pinus pinea	Seed	40840.0	59800.0	0.7630975425103956	--
Solanum tuberosum	Tuber	3470.0	24150.0	0.6715518059550106	--
Capsicum frutescens	Fruit	2640.0	21542.0	0.6462527347442002	USDA's Ag Handbook 8 and sequelae)
Cajanus cajan	Seed	40790.0	56270.0	0.6141637182542585	--
Valerianella locusta	Plant	2030.0	28195.0	0.5626421499717483	--
Juglans nigra	Seed	52130.0	54505.0	0.53969680612619	USDA's Ag Handbook 8 and sequelae)
Cucurbita spp	Fruit	1260.0	19935.0	0.5211938893122456	--
Sechium edule	Fruit	1370.0	19570.0	0.4927891111027475	--
Sinapis alba	Seed	49790.0	53275.0	0.48780201750436314	--
Citrullus lanatus	Seed		53000.0	0.4761995241133043	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Phaseolus vulgaris	Fruit	1870.0	19219.0	0.46547383123553154	USDA's Ag Handbook 8 and sequelae)
Sesamum indicum	Seed	24670.0	51927.0	0.4309287044456456	--
Pistacia vera	Seed	49160.0	51139.0	0.3976822870196297	--
Moringa oleifera	Shoot	10350.0	48500.0	0.39220423591385656	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Lens culinaris	Seed	43500.0	49000.0	0.30743598387972115	USDA's Ag Handbook 8 and sequelae)
Papaver somniferum	Seed	45410.0	48713.0	0.2953271998679615	--
Aloe vera	Leaf		43256.0	0.28830994883469857	--
Lens culinaris	Sprout Seedling	12580.0	41935.0	0.25078727322053307	USDA's Ag Handbook 8 and sequelae)
Vigna radiata	Seed	42640.0	46883.0	0.21811788021109724	USDA's Ag Handbook 8 and sequelae)
Basella alba	Leaf	2830.0	41015.0	0.1671393707787067	--
Capsicum annuum	Fruit	1120.0	15277.0	0.15870222657295222	USDA's Ag Handbook 8 and sequelae)
Vicia faba	Seed	8550.0	45000.0	0.13867244364613796	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. botrytis l.	Leaf	3750.0	40275.0	0.12712766718145815	--
Brassica oleracea var. italica	Leaf	3750.0	40275.0	0.12712766718145815	USDA's Ag Handbook 8 and sequelae)
Corchorus olitorius	Leaf	4930.0	40130.0	0.11928753607118647	--
Daucus carota	Root	2020.0	16545.0	0.11207718948474456	--
Trigonella foenum-graecum	Seed	39880.0	43870.0	0.0909967435301507	--
Psophocarpus tetragonolobus	Seed	40100.0	43749.0	0.08589164643808482	--
Brassica rapa	Root	1300.0	15990.0	0.06502620540194483	--
Papaver bracteatum	Seed	37600.0	43200.0	0.06272885054102553	--
Vigna unguiculata	Seed		43190.0	0.06230694169044158	--
Vigna unguiculata	Seed		43190.0	0.06230694169044158	--
Lablab purpureus	Seed	1720.0	42815.0	0.04648535979354315	--
Lepidium meyenii	Root		15650.0	0.036202179116986435	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Manihot esculenta	Root	4700.0	14925.0	-0.025260818108292494	--
Secale cereale	Seed	36610.0	41110.0	-0.025450099231021674	USDA's Ag Handbook 8 and sequelae)
Mucuna pruriens	Seed	19075.0	40440.0	-0.05371799222014686	--
Psophocarpus tetragonolobus	Tuber	8000.0	18779.0	-0.06387581149516006	--
Brassica oleracea var. capitata l.	Leaf	2700.0	36099.0	-0.09866810879436606	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Brassica napus var. napobrassica	Root	1420.0	13730.0	-0.12656879284513156	USDA's Ag Handbook 8 and sequelae)
Prunus armeniaca	Fruit	1570.0	11500.0	-0.13522886191273067	USDA's Ag Handbook 8 and sequelae)
Cicer arietinum	Seed	33600.0	38150.0	-0.15033511900387322	--
Amaranthus sp.	Leaf	2920.0	35128.0	-0.15116995229832328	--
Hordeum vulgare	Seed	32000.0	38000.0	-0.15666375176263259	Jim Duke's personal files.*
Avena sativa	Plant		19000.0	-0.17653409934818678	Jim Duke's personal files.*
Opuntia ficus-indica	Seed		37500.0	-0.17775919429183049	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Phaseolus vulgaris	Seed	32940.0	37019.0	-0.19805301000491887	USDA's Ag Handbook 8 and sequelae)
Fragaria spp	Fruit	900.0	10676.0	-0.19935362148704966	USDA's Ag Handbook 8 and sequelae)
Anacardium occidentale	Seed	36240.0	36867.0	-0.20446602453379503	--
Ipomoea aquatica	Leaf	2520.0	33465.0	-0.24108814565268047	--
Nigella sativa	Seed	28085.0	35900.0	-0.24526461038526376	--
Psoralea esculenta	Root	4093.0	12319.0	-0.24618850192770889	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.
Perideridia gairdneri	Root		12319.0	-0.24618850192770889	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.
Vigna angularis	Seed	30990.0	35802.0	-0.24939931712098654	--
Chenopodium album	Leaf	5210.0	33188.0	-0.25606549956678565	--
Carum carvi	Seed	31690.0	35175.0	-0.2758530020526007	Revised USDA data received 1993.
Pisum sativum	Seed	7400.0	35005.0	-0.283025452512528	--
Phaseolus lunatus	Seed	8810.0	33820.0	-0.333021651306727	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
<i>Prunus persica</i>	Fruit	1060.0	8586.0	-0.3620001597277373	--
<i>Averrhoa carambola</i>	Fruit	770.0	8480.0	-0.3702492186050162	USDA's Ag Handbook 8 and sequelae)
<i>Bertholletia excelsa</i>	Seed	31510.0	32600.0	-0.3844945310779699	--
<i>Foeniculum vulgare</i>	Seed	29560.0	32427.0	-0.3917935541930723	USDA's Ag Handbook 8 and sequelae)
<i>Persea americana</i>	Fruit	1660.0	8045.0	-0.40410148852592487	--
<i>Lactuca sativa</i>	Leaf	1820.0	30333.0	-0.4104349776345486	--
<i>Psidium guajava</i>	Fruit	1070.0	7704.0	-0.43063855529151074	USDA's Ag Handbook 8 and sequelae)
<i>Avena sativa</i>	Seed	29000.0	31000.0	-0.4519999471714031	Jim Duke's personal files.*
<i>Citrullus lanatus</i>	Fruit		7420.0	-0.45273980737780517	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
<i>Asimina triloba</i>	Fruit	622.0	7332.0	-0.4595880826721499	--
<i>Calathea allouia</i>	Root	8825.0	9710.0	-0.4673705153908161	--
<i>Vitis vinifera</i>	Fruit	1380.0	7099.0	-0.47772044794013085	USDA's Ag Handbook 8 and sequelae)
<i>Citrus sinensis</i>	Fruit	60.0	7097.0	-0.4778760905604569	--
<i>Zingiber officinale</i>	Root	1620.0	9328.0	-0.49975515668744586	USDA's Ag Handbook 8 and sequelae)
<i>Mangifera indica</i>	Fruit	600.0	6800.0	-0.5009890196788704	--
<i>Phyllanthus emblica</i>	Fruit	1320.0	6535.0	-0.5216116668720676	--
<i>Juglans regia</i>	Seed	28090.0	29155.0	-0.5298421301041434	USDA's Ag Handbook 8 and sequelae)
<i>Nelumbo nucifera</i>	Seed	9570.0	29000.0	-0.5363817172881947	--
<i>Lycium barbarum</i>	Fruit		6300.0	-0.5398996747603746	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
<i>Phoenix dactylifera</i>	Fruit	400.0	6160.0	-0.5507946581831958	--
<i>Dioscorea pentaphylla</i>	Root	1590.0	8565.0	-0.5644396627328083	--
<i>Oenothera biennis</i>	Seed	26300.0	28068.0	-0.5757036221626196	--
<i>Cichorium endivia</i>	Leaf	1660.0	26731.0	-0.6051946483876423	--
<i>Vaccinium corymbosum</i>	Fruit	830.0	5393.0	-0.6104836030782232	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Larrea tridentata	Plant		13600.0	-0.6106343436470067	--
Arctium lappa	Root	1570.0	7850.0	-0.6250548944791179	USDA's Ag Handbook 8 and sequelae)
Citrus reticulata	Fruit	160.0	5158.0	-0.6287716109665302	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
Zea mays	Seed	6360.0	26457.0	-0.6436731379916952	USDA's Ag Handbook 8 and sequelae)
Sambucus canadensis	Fruit	960.0	4752.0	-0.6603670628927117	USDA's Ag Handbook 8 and sequelae)
Mentha spicata	Leaf	3580.0	24775.0	-0.7109553135717208	USDA's Ag Handbook 8 and sequelae)
Psidium cattleianum	Fruit	760.0	3930.0	-0.7243361798467046	--
Brassica oleracea var. sabellica l.	Leaf	3740.0	24065.0	-0.749344921077189	--
Ipomoea batatas	Root	1590.0	6360.0	-0.7513719508455532	--
Artocarpus altilis	Seed	10360.0	23690.0	-0.7604153169482764	USDA's Ag Handbook 8 and sequelae)
Ficus carica	Fruit	720.0	3447.0	-0.7619238726554377	USDA's Ag Handbook 8 and sequelae)
Murraya sp	Fruit	1160.0	3341.0	-0.7701729315327166	--
Musa x paradisiaca	Fruit	1160.0	3341.0	-0.7701729315327166	USDA's Ag Handbook 8 and sequelae)
Ananas comosus	Fruit	90.0	3333.0	-0.7707955020140207	--
Fagopyrum esculentum	Seed		23300.0	-0.7768697621210507	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Colocasia esculenta	Root	1740.0	5925.0	-0.7882497491807205	--
Ginkgo biloba	Seed	8360.0	22840.0	-0.7962775692479128	USDA's Ag Handbook 8 and sequelae)
Citrus paradisi	Fruit	220.0	2800.0	-0.8122742603309042	--
Prunus domestica	Fruit	370.0	2500.0	-0.8356206533798067	USDA's Ag Handbook 8 and sequelae)
Pinus edulis	Seed	19690.0	20925.0	-0.8770731141347408	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. viridis l.	Leaf	1310.0	21471.0	-0.8896021631464629	--
Pyrus communis	Fruit	280.0	1729.0	-0.8956208835154862	--
Malus domestica	Fruit	156.0	1244.0	-0.9333642189445454	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Macadamia spp	Seed	17820.0	18330.0	-0.9865584608612779	USDA's Ag Handbook 8 and sequelae)
Portulaca oleracea	Herb	1500.0	33792.0	-1.0	--
Nelumbo nucifera	Rhizome	1390.0	6650.0	-1.0	--
Mentha x piperita	Leaf	4090.0	19155.0	-1.0148279814319057	USDA's Ag Handbook 8 and sequelae)
Psophocarpus tetragonolobus	Leaf	3890.0	16803.0	-1.142000315027485	--
Cocos nucifera	Seed	7610.0	14355.0	-1.154267228968401	USDA's Ag Handbook 8 and sequelae)
Ocimum basilicum	Leaf		15650.0	-1.204342874821576	USDA's Ag Handbook 8 and sequelae)
Elaeagnus angustifolia	Root		0.48	-1.2905101027270787	Wheller, C. T., Bond, G. 1970. The Amino Acids of Non-Legume Root Nodules. Phytochemistry 9: 705-708. Dept. Botany Univ. Glasgow Glasgow, Scotland.
Castanea dentata	Seed	6204.0	11043.0	-1.294003440281808	--
Theobroma cacao	Seed		10200.0	-1.3295703563860357	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
Vigna radiata	Sprout Seedling	1610.0	16912.0	-1.3307273280388923	USDA's Ag Handbook 8 and sequelae)
Panax quinquefolius	Plant	396.0	4450.0	-1.3461930909311184	--
Castanea mollissima	Seed	5393.0	9600.0	-1.354884887421073	--
Pisum sativum	Shoot		70.0	-1.3728059371053247	--
Rosmarinus officinalis	Leaf	3610.0	11200.0	-1.4449537951023277	USDA's Ag Handbook 8 and sequelae)
Castanea sativa	Seed	2558.0	5628.0	-1.5224670828730211	--
Pachyrhizus erosus	Tuber	820.0	7560.0	-1.6000445771204561	--
Momordica charantia	Seed		212.0	-1.7509729163492929	Jim Duke's personal files.
Linum usitatissimum	Seed		1.153	-1.7598687378912001	--
Allium sativum var. sativum	Leaf				--
Myrica cerifera	Root				--
Glycine max	Shoot				--
Silybum marianum	Seed				--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Huperzia spp	Plant				--
Cryptotaenia japonica	Shoot				--
Melia azedarach	Plant				--
Stachys officinalis	Shoot				--
Lentinus edodes	Fruit				--
Angelica sinensis	Root				Jim Duke's personal files.
Oryza sativa	Hay				--
Coriandrum sativum	Fruit				--
Chondrus crispus	Thallus				Jim Duke's personal files.
Coffea arabica	Seed				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Taraxacum officinale	Leaf				Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
Cocos nucifera	Endosperm				Jim Duke's personal files.
Plantago ovata	Seed				--
Allium cepa	Bulb				Thomas, D. J., Parkin, K. L. 1994. Quantification of Alk(en)yl-L-Cysteine Sulfoxides and Related Amino Acids in Alliums by High-Performance Liquid Chromatography. J. Agr. Food Chem., 42(8): 1632-1638.
Cocos nucifera	Leaf				Jim Duke's personal files.
Alpinia galanga	Leaf				--
Prunus cerasus	Fruit				--
Crocus sativus	Bulb				--
Astragalus membranaceus	Root				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Capsella bursa-pastoris	Plant				--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Pinellia ternata	Tuber				--
Artemisia dracunculus	Root				--
Momordica charantia	Fruit				Jim Duke's personal files.
Bacopa monnieri	Plant				Wealth of India.
Opuntia ficus-indica	Bud		16000.0		Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Brassica oleracea var. botrytis l.	Flower	2650.0	34240.0		--
Citrus limon	Plant				--
Artemisia dracunculus	Shoot				--
Coccinia grandis	Flower				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Glechoma hederacea	Plant				Oriental Materia Medica (three volumes by Dr. Hsu and collaborators)
Apium graveolens	Shoot				--
Scutellaria baicalensis	Root				--
Centella asiatica	Plant				=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
Allium sativum var. sativum	Bulb	5.0	19320.0		--
Anabasis aphylla	Plant				--
Ribes nigrum	Fruit Juice		210.0		--
Achillea millefolium	Plant				Tunon, H., Thorsell, W., and Bohlin, L. 1993. Mosquito Repelling Activity of Compounds Occurring in Achillea millefolium L. (Asteraceae). Economic Botany 48(2): 111-120, 1994.
Tribulus terrestris	Fruit				--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Allium ampeloprasum	Plant				--
Urtica dioica	Leaf				Jim Duke's personal files.
Panax ginseng	Root				--
Dryopteris marginalis	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Panax ginseng	Leaf				--
Artemisia dracunculus	Leaf				--
Ricinus communis	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Harpagophytum procumbens	Root				--
Carica papaya	Fruit				USDA's Ag Handbook 8 and sequelae)
Morus alba	Leaf				--
Valeriana officinalis	Root				--
Trifolium pratense	Plant				--
Apium graveolens	Pt	860.0	18285.0		USDA's Ag Handbook 8 and sequelae)
Tilia sp.	Fruit				--