

**Dr. Duke's Phytochemical and Ethnobotanical Databases**

**List of Plants for VALINE**

Plant	Part	Low PPM	High PPM	StdDev	Reference
Abelmoschus esculentus	Fruit	910.0	9100.0	0.9588044065437552	USDA's Ag Handbook 8 and sequelae)
Acacia senegal	Plant				Pakistan Encyclopedia Planta Medica. 1986.
Acacia farnesiana	Seed	1600.0	1650.0	-1.2761249121679237	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	1.1346165716482157	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Albizia lebbek	Seed				Wealth of India.
Alisma plantago-aquatica	Rhizome				--
Allium schoenoprasum	Leaf	1240.0	15500.0	0.7869798228124456	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	0.02133791872334207	--
Alpinia galanga	Leaf				--
Althaea officinalis	Root				--
Amaranthus sp.	Leaf	1370.0	16481.0	1.0620053474962283	--
Anacardium occidentale	Seed	10400.0	10580.0	-0.17630768339484962	--
Ananas comosus	Fruit	39.0	1185.0	-0.6742786315009667	--
Anethum graveolens	Seed	11200.0	12130.0	0.014590043883791455	USDA's Ag Handbook 8 and sequelae)
Anethum graveolens	Fruit	11200.0	12130.0	1.5839770667175401	--
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	0.05240010986736746	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Arctium lappa	Root	330.0	1650.0	-1.4093638383718028	USDA's Ag Handbook 8 and sequelae)
Artemisia dracunculus	Leaf				--
Artemisia dracunculus	Root				--
Artocarpus altilis	Fruit	470.0	1600.0	-0.5886526730943261	--
Artocarpus altilis	Seed	5350.0	12235.0	0.027521825409118756	USDA's Ag Handbook 8 and sequelae)
Asimina triloba	Fruit	334.0	3661.0	-0.1634114676097814	--
Asparagus officinalis	Shoot	1180.0	15226.0	0.1421680361092609	--
Avena sativa	Seed	4000.0	11000.0	-0.12458055729354042	Jim Duke's personal files.*
Avena sativa	Plant		12000.0	0.45057332688469326	Jim Duke's personal files.*
Averrhoa carambola	Fruit	260.0	2860.0	-0.32867988371512846	USDA's Ag Handbook 8 and sequelae)
Basella alba	Leaf	650.0	9420.0	-0.9175616553500404	--
Bertholletia excelsa	Seed	9110.0	9425.0	-0.3185572801734499	USDA's Ag Handbook 8 and sequelae)
Beta vulgaris	Root	520.0	4100.0	0.016624403740957434	USDA's Ag Handbook 8 and sequelae)
Bixa orellana	Seed	7620.0	7730.0	-0.5273131819394478	--
Borago officinalis	Leaf				Jim Duke's personal files.
Brassica oleracea	Stem	500.0	5555.0		--
Brassica oleracea var. sabellica l.	Leaf	1810.0	11645.0	-0.2937779729632754	--
Brassica rapa	Leaf	660.0	14104.0	0.3956081281554011	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. gemmifera	Leaf	1550.0	11067.0	-0.4558215542754328	USDA's Ag Handbook 8 and sequelae)
Brassica napus var. napobrassica	Root	480.0	4640.0	0.3309238530229536	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. viridis l.	Leaf	770.0	12620.0	-0.02043456158031096	--
Brassica oleracea var. botrytis l.	Leaf	1280.0	13747.0	0.29552238675671566	--
Brassica chinensis	Leaf	660.0	14104.0	0.3956081281554011	--
Brassica rapa	Root	300.0	3690.0	-0.22201036330648405	--
Brassica oleracea var. capitata l.	Leaf	520.0	6952.0	-1.6094709264199443	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. botrytis l.	Flower	1000.0	12920.0		--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Brassica oleracea var. italica	Leaf	1280.0	13747.0	0.29552238675671566	USDA's Ag Handbook 8 and sequelae)
Brassica nigra	Leaf	970.0	14286.0	0.4466322316135545	USDA's Ag Handbook 8 and sequelae)
Cajanus cajan	Seed	9130.0	10480.0	-0.18862366579992323	--
Calathea allouia	Root	4585.0	5040.0	0.5637382598985062	--
Camellia sinensis	Leaf				--
Capsicum frutescens	Fruit	840.0	6854.0	0.49539259309480443	USDA's Ag Handbook 8 and sequelae)
Capsicum annuum	Fruit	360.0	4910.0	0.09429171805261376	--
Carica papaya	Fruit	100.0	895.0	-0.7341136385803058	USDA's Ag Handbook 8 and sequelae)
Carum carvi	Seed	10370.0	11510.0	-0.061769047027664975	Revised USDA data received 1993.
Castanea mollissima	Seed	2233.0	3976.0	-0.9896551614259114	--
Castanea dentata	Seed	2596.0	4622.0	-0.9100939150891358	--
Castanea sativa	Seed	1081.0	2378.0	-1.1864645602589878	--
Ceratonia siliqua	Seed		20680.0	1.0676065395175858	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	0.47747097546188894	--
Cicer arietinum	Seed	8090.0	10150.0	-0.22926640773666618	--
Cichorium intybus	Leaf	410.0	9180.0	-0.9848461873827702	USDA's Ag Handbook 8 and sequelae)
Cichorium endivia	Leaf	630.0	10145.0	-0.7143062981678361	--
Citrullus lanatus	Seed		10200.0	-0.22310841653412938	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	-0.5298493040680791	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	-0.29566746601618277	--
Citrus reticulata	Fruit	20.0	2176.0	-0.4698079693781215	--
Citrus paradisi	Fruit		240.0	-0.8692582235353649	--
Cnidioscolus chayamansa	Leaf	3040.0	15190.0	0.700070635603503	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
<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>	Endosperm				Jim Duke's personal files.
<i>Cocos nucifera</i>	Seed	2020.0	3810.0	-1.0100996922183336	USDA's Ag Handbook 8 and sequelae)
<i>Colocasia esculenta</i>	Leaf	2560.0	17850.0	1.4458075322995907	--
<i>Colocasia esculenta</i>	Root	820.0	2790.0	-0.7458427787764775	--
<i>Corchorus olitorius</i>	Leaf	2480.0	20185.0	2.1004299585346904	--
<i>Coriandrum sativum</i>	Fruit				--
<i>Coriandrum sativum</i>	Leaf				--
<i>Crocus sativus</i>	Bulb				--
<i>Cryptotaenia japonica</i>	Root				--
<i>Cryptotaenia japonica</i>	Shoot				--
<i>Cucumis sativus</i>	Fruit	170.0	4304.0	-0.030742813982143215	--
<i>Cucurbita pepo</i>	Seed	19720.0	22725.0	1.3194683797013413	--
<i>Cucurbita pepo</i>	Fruit	350.0	4165.0	-0.059422351858102324	USDA's Ag Handbook 8 and sequelae)
<i>Cucurbita spp</i>	Fruit	530.0	8385.0	0.8112801649515915	--
<i>Cucurbita foetidissima</i>	Seed	11665.0	48000.0	4.432332932583698	--
<i>Daucus carota</i>	Root	440.0	3600.0	-0.2743936048534834	--
<i>Dioscorea pentaphylla</i>	Root	540.0	2910.0	-0.6759984567138118	--
<i>Eryngium creticus</i>	Shoot		11200.0	-0.25155063173313597	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Fagopyrum esculentum</i>	Seed		8140.0	-0.4768176540786459	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
<i>Ficus carica</i>	Fruit	280.0	1340.0	-0.642297851855113	USDA's Ag Handbook 8 and sequelae)
<i>Foeniculum vulgare</i>	Seed	9150.0	10037.0	-0.24318346785439937	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Foeniculum vulgare	Fruit	9150.0	10037.0	1.1521333776932061	--
Fragaria spp	Fruit	180.0	2135.0	-0.47826740141347635	USDA's Ag Handbook 8 and sequelae)
Ginkgo biloba	Seed	2830.0	7730.0	-0.5273131819394478	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	0.972773474998519	USDA's Ag Handbook 8 and sequelae)
Harpagophytum procumbens	Root				--
Helianthus tuberosus	Tuber		4098.0	-0.7311563564093865	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	4.678652580685171	--
Hordeum vulgare	Seed	6000.0	9000.0	-0.3709002053950128	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	1.4682357096438339	--
Ipomoea batatas	Root	830.0	3976.0	-0.0555480623904639	--
Juglans regia	Seed	7230.0	7505.0	-0.5550241423508634	USDA's Ag Handbook 8 and sequelae)
Juglans cinerea	Seed	15410.0	15942.0	0.48407529316519776	--
Juglans nigra	Seed	12860.0	13445.0	0.17654521251050953	USDA's Ag Handbook 8 and sequelae)
Lablab purpureus	Seed	1430.0	13670.0	0.20425617292192516	--
Lactuca sativa	Leaf	700.0	11667.0	-0.28761022419360854	--
Lagenaria siceraria	Fruit	270.0	6055.0	0.3305368322106942	--
Larrea tridentata	Plant		4200.0	-0.7595053887243765	--
Lens culinaris	Sprout Seedling	3990.0	13300.0	-0.7453610615393341	USDA's Ag Handbook 8 and sequelae)
Lens culinaris	Seed	13920.0	15675.0	0.4511916201436512	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Lentinus edodes	Fruit				--
Lepidium meyenii	Root		7930.0	2.2458223495743743	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Linum usitatissimum	Seed		0.284	-1.4793036444616081	--
Lupinus albus	Seed	15100.0	16860.0	0.5971360116437736	--
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	-0.13452560212320389	--
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	-1.0729112024842091	USDA's Ag Handbook 8 and sequelae)
Malus domestica	Fruit	40.0	560.0	-0.8032333881374735	--
Mangifera indica	Fruit	260.0	2700.0	-0.3616923014140742	--
Manihot esculenta	Root	790.0	2510.0	-0.9088128635893644	--
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	-0.3764818769201724	--
Mentha x piperita	Leaf	1870.0	8760.0	-1.1025941184400472	USDA's Ag Handbook 8 and sequelae)
Moringa oleifera	Shoot	6110.0	28630.0	1.4529988914891638	USDA's Ag Handbook 8 and sequelae)
Mucuna pruriens	Seed	8600.0	18232.0	0.7661112902413836	--
Murraya sp	Fruit	460.0	1325.0	-0.6453927660143891	--
Musa x paradisiaca	Fruit	460.0	1826.0	-0.5420226330945653	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	-0.48654728017865406	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Nelumbo nucifera	Rhizome	550.0	2630.0	-1.0	--
Nigella sativa	Seed	6500.0	8325.0	-0.45403308662925973	--
Ocimum basilicum	Leaf		7170.0	-1.5483541431568815	USDA's Ag Handbook 8 and sequelae)
Oenothera biennis	Seed	5200.0	8645.0	-0.4146219429330241	--
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	-0.1861604693189085	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	-0.7863242721076872	--
Panax quinquefolius	Plant		82.0	-1.398364895247216	--
Panax ginseng	Leaf				--
Panax ginseng	Root				--
Papaver somniferum	Seed	12870.0	13806.0	0.2210059089928253	--
Papaver bracteatum	Seed	8450.0	10600.0	-0.1738444869138349	--
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	-0.5217589121587581	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	-0.1409217580523746	--
Phaseolus vulgaris	Sprout Seedling	2160.0	23226.0	1.413510807979029	USDA's Ag Handbook 8 and sequelae)
Phaseolus lunatus	Seed	4270.0	14370.0	0.2904680497574405	--
Phaseolus vulgaris	Seed	11300.0	12699.0	0.08466798376866035	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Phaseolus acutifolius	Seed	15900.0	17330.0	0.6550211289476195	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Phaseolus vulgaris	Fruit	900.0	9250.0	0.9897535481365168	USDA's Ag Handbook 8 and sequelae)
Phoenix dactylifera	Fruit	5.0	2710.0	-0.3596290253078901	--
Phyllanthus emblica	Fruit	159.0	785.0	-0.756809675748331	--
Pinus pinea	Seed	12410.0	15300.0	0.40500668612462515	--
Pinus edulis	Seed	5980.0	6255.0	-0.7089739224142836	USDA's Ag Handbook 8 and sequelae)
Pistacia vera	Seed	14100.0	14688.0	0.3296328738055746	--
Pisum sativum	Shoot		33.0	-1.3436162958652884	--
Pisum sativum	Seed	2350.0	11116.0	-0.11029401770365503	--
Pisum sativum	Fruit	2730.0	27003.0	4.652687619445165	--
Plantago ovata	Plant				--
Portulaca oleracea	Herb	660.0	13200.0	-1.0	--
Prunus cerasus	Fruit				--
Prunus dulcis	Seed	10280.0	10752.0	-0.155124193658123	USDA's Ag Handbook 8 and sequelae)
Prunus armeniaca	Fruit	470.0	3445.0	-0.20797823150335815	USDA's Ag Handbook 8 and sequelae)
Prunus domestica	Fruit	190.0	1284.0	-0.6538521980497439	USDA's Ag Handbook 8 and sequelae)
Prunus persica	Fruit	380.0	3078.0	-0.2837004646003149	--
Psidium guajava	Fruit	280.0	2016.0	-0.5028203870770672	USDA's Ag Handbook 8 and sequelae)
Psidium cattleianum	Fruit	200.0	1035.0	-0.7052277730937283	--
Psophocarpus tetragonolobus	Tuber	5990.0	14061.0	1.6795363808808315	--
Psophocarpus tetragonolobus	Seed	15300.0	16692.0	0.57644516120325	--
Psophocarpus tetragonolobus	Leaf	2450.0	10583.0	-0.5915120272081044	--



Plant	Part	Low PPM	High PPM	StdDev	Reference
Psoralea esculenta	Root		1730.0	-1.3628009569966921	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.
Punica granatum	Fruit				--
Pyrus communis	Fruit	140.0	865.0	-0.7403034668988582	--
Raphanus sativus	Root	320.0	6200.0	1.238900039837609	--
Rehmannia glutinosa	Root	1000.0	7000.0	1.7045288535887144	--
Ribes nigrum	Fruit Juice		170.0		--
Rosmarinus officinalis	Leaf	1650.0	5120.0	-2.1230761876031146	USDA's Ag Handbook 8 and sequelae)
Sambucus canadensis	Fruit	330.0	1634.0	-0.5816375343333002	USDA's Ag Handbook 8 and sequelae)
Secale cereale	Seed	7470.0	8390.0	-0.4460276980659619	USDA's Ag Handbook 8 and sequelae)
Sechium edule	Fruit	690.0	9860.0	1.1156133906137475	--
Senna obtusifolia	Seed		7420.0	-0.565492727395176	--
Sesamum indicum	Seed	5490.0	15527.0	0.43296396618414223	--
Sinapis alba	Seed	13250.0	14178.0	0.26682136353969915	--
Solanum tuberosum	Tuber	117.0	6450.0	-0.1620557523637583	--
Solanum melongena	Fruit	550.0	7063.0	0.5385150637140523	--
Spinacia oleracea	Plant	1610.0	19120.0	1.555158000620152	USDA's Ag Handbook 8 and sequelae)
Stachys officinalis	Shoot				--
Theobroma cacao	Seed		5700.0	-0.7773276247624422	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
Thymus vulgaris	Plant	5020.0	5422.0	-0.5699263899456222	USDA's Ag Handbook 8 and sequelae)
Tilia sp.	Fruit				--
Trifolium pratense	Plant				--
Trigonella foenum-graecum	Seed	9410.0	12120.0	0.013358445643284094	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Trigonella foenum-graecum	Leaf				--
Triticum aestivum	Seed	2000.0	9000.0	-0.3709002053950128	--
Urtica dioica	Leaf				Jim Duke's personal files.
Vaccinium corymbosum	Fruit	280.0	1820.0	-0.5432605987582758	--
Valeriana officinalis	Rhizome				--
Valerianella locusta	Plant	990.0	13750.0	0.7220653464123692	--
Vicia faba	Seed	2740.0	14420.0	0.2966260409599773	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Seed	11600.0	12688.0	0.08331322570410224	USDA's Ag Handbook 8 and sequelae)
Vigna radiata	Seed	12370.0	13600.0	0.19563498523837364	USDA's Ag Handbook 8 and sequelae)
Vigna angularis	Seed	10230.0	11818.0	-0.023835821220038234	--
Vigna unguiculata	Seed	1710.0	12731.0	0.0886090981382839	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Fruit	1620.0	13333.0	1.8321891822914884	USDA's Ag Handbook 8 and sequelae)
Vigna aconitifolia	Seed	7340.0	8127.0	-0.47841873179130545	--
Vigna radiata	Sprout Seedling	1300.0	13655.0	-0.6681497464396949	USDA's Ag Handbook 8 and sequelae)
Vitellaria paradoxa	Seed		1020.0	-1.3537156013198874	--
Vitis vinifera	Fruit	180.0	926.0	-0.7277174826511351	USDA's Ag Handbook 8 and sequelae)
Zea mays	Seed	1850.0	7696.0	-0.5315006159571728	USDA's Ag Handbook 8 and sequelae)
Zingiber officinale	Shoot				--
Zingiber officinale	Root	730.0	4202.0	0.07599207749422336	USDA's Ag Handbook 8 and sequelae)
Zingiber officinale	Tuber				--
Zingiber officinale	Rhizome	730.0	4202.0	1.0	--