

# C METHIONINE

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METHIONINE

ubiquitous

Yes

\*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	210	2100	1.4056535776128818	USDA's Ag Handbook 8 and sequelae)
Acacia farnesiana	Leaf	700	3860	0.6425258768913413	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Acacia farnesiana	Seed	175	200	-1.0625192949985425	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.
Albizia lebeck	Seed	--	--		Wealth of India.
Allium ampeloprasum	Plant	--	--		--
Allium cepa	Bulb	100	1090	-1	--
Allium sativum var. sativum	Bulb	0.1	1824	1	--
Allium sativum var. sativum	Leaf	--	--		--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Allium schoenoprasum	Leaf	300	3750	0.6342145968917519	USDA's Ag Handbook 8 and sequelae)
Alpinia galanga	Leaf	--	--		--
Amaranthus sp.	Leaf	360	4331	1.0339871648720063	--
Anacardium occidentale	Seed	2740	2787	-0.39450659411183164	--
Ananas comosus	Fruit	110	815	-0.17673494188159297	USDA's Ag Handbook 8 and sequelae)
Anastatica hierochuntica	Plant	--	--		--
Anethum graveolens	Fruit	1430	1549	0.7271352318996868	--
Anethum graveolens	Seed	1430	1549	-0.7141817868825112	USDA's Ag Handbook 8 and sequelae)
Angelica sinensis	Root	--	--		Jim Duke's personal files.
Annona muricata	Fruit	70	370	-0.7247216276209246	--
Annona reticulata	Fruit	40	140	-1.0079507011491187	--
Annona squamosa	Fruit	70	260	-0.8601790106126695	--
Apium graveolens	Pt	50	1120		USDA's Ag Handbook 8 and sequelae)
Arachis hypogaea	Seed	2630	3430	-0.22847174035452394	--
Arctium lappa	Root	90	450	-1.0886471756957197	USDA's Ag Handbook 8 and sequelae)
Artocarpus altilis	Fruit	100	340	-0.7616645502550369	--
Artocarpus altilis	Seed	960	2195	-0.5473722759537075	USDA's Ag Handbook 8 and sequelae)
Asimina triloba	Fruit	70	836	-0.1508748960377144	--
Asparagus officinalis	Shoot	290	3742	-1	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Avena sativa	Plant	2000	2000	0.009670052634868679	Jim Duke's personal files.*
Avena sativa	Seed	1000	4000	-0.0812868777702854	Jim Duke's personal files.*
Averrhoa carambola	Fruit	110	1210	0.3096802061342183	USDA's Ag Handbook 8 and sequelae)
Basella alba	Leaf	190	2755	-0.27587056306329755	--
Benincasa hispida	Fruit	30	770	-0.23214932583276135	--
Bertholletia excelsa	Seed	10140	10346	1.557371259000904	--
Beta vulgaris	Root	170	1341	0.4540719233816342	USDA's Ag Handbook 8 and sequelae)
Bixa orellana	Seed	1280	1660	-0.6855194715371594	--
Brassica chinensis	Leaf	90	1923	-0.9673690590291433	--
Brassica napus var. napobrassica	Root	100	965	-0.19695207353540853	USDA's Ag Handbook 8 and sequelae)
Brassica nigra	Leaf	230	3387	0.24940233291075833	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea	Stem	130	1445		--
Brassica oleracea var. botrytis l.	Leaf	340	3652	0.46965125289987986	--
Brassica oleracea var. botrytis l.	Flower	280	3615		--
Brassica oleracea var. capitata l.	Leaf	120	1604	-1.232498891016048	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. gemmifera	Leaf	320	2285	-0.6665007230440037	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. italica	Leaf	340	3652	0.46965125289987986	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. sabellica l.	Leaf	320	2060	-0.8535045230347672	--
Brassica oleracea var. viridis l.	Leaf	210	3442	0.29511437290850057	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Brassica rapa	Root	110	1350	0.46965494458443574	--
Brassica rapa	Leaf	90	1923	-0.9673690590291433	USDA's Ag Handbook 8 and sequelae)
Cajanus cajan	Seed	1860	2720	-0.41180727094190883	--
Calathea allouia	Root	1415	1560	0.8332587726498054	--
Capsella bursa-pastoris	Plant	--	--		--
Capsicum annuum	Fruit	100	1364	0.49932054232266115	USDA's Ag Handbook 8 and sequelae)
Capsicum frutescens	Fruit	240	1958	1.2307904104780838	USDA's Ag Handbook 8 and sequelae)
Carica papaya	Fruit	10	179	-0.9599249017247726	--
Carum carvi	Seed	3610	4005	-0.07999578248445874	Revised USDA data received 1993.
Castanea dentata	Seed	893	1589	-0.7038530245958979	--
Castanea mollissima	Seed	1014	1804	-0.6483359273053518	--
Castanea sativa	Seed	468	1028	-0.8487139156656485	--
Ceratonia siliqua	Seed	4700	4700	0.09946646224544615	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
Chenopodium album	Leaf	490	3121	0.028322284921677862	--
Chrysophyllum cainito	Fruit	20	60	-1.1064651615067513	Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
Cicer arietinum	Seed	2320	2860	-0.3756566029387625	--
Cichorium endivia	Leaf	140	2254	-0.6922656910427311	--
Cichorium intybus	Leaf	50	1224	-1.5483275310004487	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Citrullus lanatus	Fruit	707	707	-0.30972946336439705	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Citrullus lanatus	Seed	5742	5742	0.36853071981172086	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Citrus aurantiifolia	Fruit	20	170	-0.9710077785150063	USDA's Ag Handbook 8 and sequelae)
Citrus paradisi	Fruit	3	222	-0.9069733792825451	--
Citrus reticulata	Fruit	130	1048	0.11018842391001216	USDA's Ag Handbook 8 and sequelae)
Citrus sinensis	Fruit	200	1510	0.6791094324753408	USDA's Ag Handbook 8 and sequelae)
Cnidioscolus chayamansa	Leaf	745	3720	0.5261679568970884	--
Cocos nucifera	Endosperm	--	--		Jim Duke's personal files.
Cocos nucifera	Leaf	--	--		Jim Duke's personal files.
Cocos nucifera	Seed	620	1170	-0.8120468095481715	USDA's Ag Handbook 8 and sequelae)
Coffea arabica	Seed	--	--		--
Colocasia esculenta	Leaf	790	5510	2.0138870768236075	--
Colocasia esculenta	Root	200	680	-0.6904144116241244	--
Corchorus olitorius	Leaf	460	5290	1.8310389168326386	--
Coriandrum sativum	Leaf	--	--		--
Crocus sativus	Bulb	--	--		--
Cryptotaenia japonica	Root	--	--		--
Cucumis sativus	Fruit	40	1012	0.06585691674907745	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Cucurbita foetidissima	Seed	2610	19000	3.791998979709676	--
Cucurbita pepo	Fruit	110	1310	0.43282328158125916	--
Cucurbita pepo	Seed	5195	5920	0.9218941593170248	--
Cucurbita spp	Fruit	170	2690	2.1321977227504227	--
Daucus carota	Root	70	575	-0.8722163256568093	--
Dioscorea pentaphylla	Root	180	970	-0.18829483953385212	--
Fagopyrum esculentum	Seed	--	--		--
Ficus carica	Fruit	60	287	-0.8269303802419685	USDA's Ag Handbook 8 and sequelae)
Foeniculum vulgare	Fruit	3010	3302	2.8858333444863127	--
Foeniculum vulgare	Seed	3010	3302	-0.2615237796716863	USDA's Ag Handbook 8 and sequelae)
Fragaria spp	Fruit	10	119	-1.0338107469929971	USDA's Ag Handbook 8 and sequelae)
Ginkgo biloba	Seed	550	1226	-0.7216701395403058	USDA's Ag Handbook 8 and sequelae)
Glycine max	Seed	4920	5380	0.2750554211178711	USDA's Ag Handbook 8 and sequelae)
Glycine max	Shoot	--	--		--
Helianthus annuus	Seed	4940	20500	4.1793275654576725	--
Helianthus tuberosus	Tuber	858	858	-0.921338732376355	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.
Hordeum vulgare	Seed	1000	4000	-0.0812868777702854	Jim Duke's personal files.*
Ipomoea aquatica	Leaf	440	5845	2.2923149568098555	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Ipomoea batatas	Root	230	1510	0.7466864326342412	--
Juglans cinerea	Seed	6111	6321	0.5180395539104474	--
Juglans nigra	Seed	4730	4945	0.1627301312509522	USDA's Ag Handbook 8 and sequelae)
Juglans regia	Seed	2800	2905	-0.36403674536632263	USDA's Ag Handbook 8 and sequelae)
Lablab purpureus	Seed	140	2105	-0.5706119910985873	--
Lactuca sativa	Leaf	160	2667	-0.3490098270596851	--
Lagenaria siceraria	Fruit	40	900	-0.07206332775160827	--
Lens culinaris	Sprout Seedling	1050	3500	-0.7690821640735394	USDA's Ag Handbook 8 and sequelae)
Lentinus edodes	Fruit	--	--		--
Lepidium meyenii	Root	--	2800	2.9802528050357973	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Linum usitatissimum	Seed	--	0.09	-1.1141398667164637	--
Lupinus albus	Seed	2550	2850	-0.3782387935104158	--
Lycopersicon esculentum	Fruit	16	1322	0.44760045063490406	--
Macadamia spp	Seed	920	950	-0.8688550021245444	USDA's Ag Handbook 8 and sequelae)
Malus domestica	Plant	20	124	-0.9578509469925256	--
Mangifera indica	Fruit	50	550	-0.5030640918162512	--
Manihot esculenta	Root	260	825	-0.4393546255789883	--
Medicago sativa	Plant	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Melia azedarach	Seed	--	--		--
Melicoccus bijugatas	Fruit	0	0	-1.1803510067749758	Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
Mentha spicata	Leaf	460	3180	0.07735883691925587	--
Mentha x piperita	Leaf	530	2480	-0.5044307630520085	USDA's Ag Handbook 8 and sequelae)
Moringa oleifera	Shoot	1230	5765	1	USDA's Ag Handbook 8 and sequelae)
Mucuna pruriens	Seed	1875	3975	-0.08774235419941867	--
Murraya sp	Fruit	170	490	-0.5769499370844757	--
Musa x paradisiaca	Fruit	170	490	-0.5769499370844757	USDA's Ag Handbook 8 and sequelae)
Nasturtium officinale	Herb	200	4000	1	USDA's Ag Handbook 8 and sequelae)
Nelumbo nucifera	Rhizome	220	1050	1	--
Nelumbo nucifera	Seed	720	2182	-0.5507291236968568	--
Nigella sativa	Seed	13100	16750	3.2110061010876816	--
Ocimum basilicum	Leaf	2020	2020	-0.8867496430331252	USDA's Ag Handbook 8 and sequelae)
Oenothera biennis	Seed	5400	5763	0.3739533200121928	--
Opuntia ficus-indica	Bud	1890	1890		Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Opuntia ficus-indica	Seed	4830	4830	0.13303493967693916	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Oryza sativa	Plant	--	--		--
Pachyrhizus erosus	Tuber	130	1200	-0.5663988884194827	--



Plant	Part	Low PPM	High PPM	StdDev	Reference
Panax ginseng	Leaf	--	--		--
Panax ginseng	Root	--	--		--
Panax quinquefolius	Plant	34	340	-0.8464519406388384	--
Papaver bracteatum	Seed	4500	5050	0.18984313225331192	--
Papaver somniferum	Seed	4700	5042	0.1877773797959893	--
Perideridia gairdneri	Root	889	889	-0.3285420303590661	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	290	1438	0.5904464181534714	--
Petroselinum crispum	Plant	150	1282	-0.36062849626303595	CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Phaseolus acutifolius	Seed	2680	2920	-0.36016345950884265	Laferriere, J.E., 1988, Nutricomp Program, Nutricomp Database; reviewed in J. Ethnobiology 9(1):27-29.
Phaseolus lunatus	Seed	680	3017	-0.33511621096380556	--
Phaseolus vulgaris	Fruit	220	2261	1.6039139290826174	USDA's Ag Handbook 8 and sequelae)
Phaseolus vulgaris	Seed	3250	3653	-0.17088889060665519	USDA's Ag Handbook 8 and sequelae)
Phaseolus vulgaris	Sprout Seedling	440	4731	1.4123467390935749	USDA's Ag Handbook 8 and sequelae)
Phoenix dactylifera	Fruit	5	2190	1.5164823455152185	--
Phyllanthus emblica	Fruit	20	355	-0.7431930889379808	--
Pinus edulis	Seed	2070	2200	-0.5460811806678808	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Pinus pinea	Seed	4300	6050	0.44806218941864273	--
Pistacia vera	Seed	3810	3963	-0.09084098288540264	--
Pisum sativum	Fruit	110	1088	0.1594456540888285	--
Pisum sativum	Seed	820	3879	-0.11253138368729042	--
Portulaca oleracea	Herb	90	2814	-1	--
Pouteria caimito	Fruit	1780	1780	1.011595736182351	Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
Pouteria campechiana	Fruit	130	330	-0.773978857799741	Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
Prunus armeniaca	Fruit	60	440	-0.638521474807996	USDA's Ag Handbook 8 and sequelae)
Prunus domestica	Fruit	60	405	-0.6816215512144603	USDA's Ag Handbook 8 and sequelae)
Prunus persica	Fruit	170	1377	0.5153291421307765	--
Psidium cattleianum	Fruit	40	205	-0.927907702108542	--
Psidium guajava	Plant	50	360	-0.8361372178283119	--
Psophocarpus tetragonolobus	Leaf	640	2765	-0.267559283063708	--
Psophocarpus tetragonolobus	Seed	3560	3884	-0.11124028840146377	--
Psophocarpus tetragonolobus	Tuber	1430	3357	1.6722129344313175	--
Psoralea esculenta	Root	253	253	-1.4297421953570428	Izidoost, 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.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Punica granatum	Fruit	--	--		--
Pyrus communis	Fruit	50	309	-0.7998389036436195	--
Raphanus sativus	Root	70	1355	0.4783121785859922	--
Rehmannia glutinosa	Root	1000	1000	-0.1363514355245136	--
Rosmarinus officinalis	Leaf	470	1460	-1.3521813230101367	USDA's Ag Handbook 8 and sequelae)
Sambucus canadensis	Fruit	140	693	-0.32696949392698277	USDA's Ag Handbook 8 and sequelae)
Scutellaria baicalensis	Root	--	--		--
Secale cereale	Seed	2480	2785	-0.3950230322261623	USDA's Ag Handbook 8 and sequelae)
Sechium edule	Fruit	10	145	-1.0017935473767665	--
Senna obtusifolia	Seed	2270	2270	-0.5280058466663077	--
Sesamum indicum	Seed	3120	9413	1.3164528786656502	--
Sinapis alba	Seed	4800	5136	0.2120499711695304	--
Solanum melongena	Fruit	60	1487	0.6507865251225214	--
Solanum tuberosum	Tuber	310	1568	-0.1844753136354797	--
Spinacia oleracea	Plant	530	6294	2.224241040054928	USDA's Ag Handbook 8 and sequelae)
Spinacia oleracea	Leaf	--	--		--
Stachys officinalis	Shoot	--	--		--
Tamarindus indica	Fruit	140	204	-0.9291391328630124	USDA's Ag Handbook 8 and sequelae)
Thymus vulgaris	Plant	1370	1980	-0.0006446701756579119	USDA's Ag Handbook 8 and sequelae)

Plant	Part	Low PPM	High PPM	StdDev	Reference
Trifolium pratense	Plant	--	--		--
Trigonella foenum-graecum	Leaf	--	--		--
Trigonella foenum-graecum	Seed	3120	3720	-0.15358821377657803	--
Triticum aestivum	Seed	1000	4000	-0.0812868777702854	--
Urtica dioica	Leaf	--	--		Jim Duke's personal files.
Vaccinium corymbosum	Fruit	110	715	-0.2998780173286338	--
Valerianella locusta	Plant	250	3470	0.7678021792085732	--
Vicia faba	Seed	430	2265	-0.5292969419521343	USDA's Ag Handbook 8 and sequelae)
Vigna aconitifolia	Seed	2200	2436	-0.48514148317686273	--
Vigna angularis	Seed	2100	2426	-0.48772367374851605	--
Vigna radiata	Seed	2860	3145	-0.30206417164664323	USDA's Ag Handbook 8 and sequelae)
Vigna radiata	Sprout Seedling	340	3571	-0.6432645750200348	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Fruit	400	3292	2.8735190369416084	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Seed	3460	3779	-0.1383532894038235	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Seed	420	3805	-0.1316395939175249	USDA's Ag Handbook 8 and sequelae)
Vitis vinifera	Fruit	220	1132	0.21362860728552646	USDA's Ag Handbook 8 and sequelae)
Zea mays	Seed	670	2787	-0.39450659411183164	USDA's Ag Handbook 8 and sequelae)
Zea mays	Pollen Or Spore	--	--		--
Zingiber officinale	Rhizome	130	737	-1	--

<b>Plant</b>	<b>Part</b>	<b>Low PPM</b>	<b>High PPM</b>	<b>StdDev</b>	<b>Reference</b>
Zingiber officinale	Root	130	737	-0.5917219440063812	USDA's Ag Handbook 8 and sequelae)