C MANGANESE

Chemid

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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	10	100	0.2558494650725795	USDA's Ag Handbook 8 and sequelae)
Acacia catechu	Plant	--	--		--
Acacia nilotica	Plant	--	--		--
Acanthopanax gracilistylis	Root Bark	74	74	-0.1168672633574332	--
Achillea millefolium	Plant	1	5	-0.6590690061822261	--
Achyranthes bidentata	Root	40	66	0.2422280668025576	--
Aconitum carmichaelii	Tuber	18	18	-0.5287345940978156	--
Acorus calamus	Rhizome	309	309	1.2244334870971068	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Actaea dahurica	Rhizome	--	74	-0.3439708328532751	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Actaea racemosa	Root	--	1.4	-0.5291560655019355	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Agathosma betulina	Leaf	675	675	0.6622735776500002	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Akebia quinata	Stem	310	310	-0.9696965109469009	--
Albizia julibrissin	Bark	33	33	-0.45579593526577156	--
Alisma plantago-aquatica	Rhizome	360	479	2.359023846210149	--
Allium cepa	Bulb	1	38	1.4045726642160135	--
Allium cepa	Seed	19.4	19.4	-0.425040968734703	--
Allium sativum var. sativum	Bulb	1.6	15.3	-0.55952175946182	--
Allium sativum var. sativum	Root	0.5	1.4	-0.5291560655019355	--
Allium schoenoprasum	Leaf	3	40	-0.3933875459480371	Revised USDA data received 1993.
Alocasia macrorrhiza	Root	6	21	-0.2951138210256497	--
Aloe spp.	Leaf	--	0.6	-0.45888840936498615	--
Aloe vera	Leaf	6	0.6	-0.45888840936498615	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Alpinia officinarum	Plant	--	--		--
Althaea officinalis	Root	0.5	4.4	-0.49333327298005497	--
Amomum xanthioides	Seed	565	565	6.371362626523026	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Amorphophallus campanulatus	Root	3	14	-0.3787003369100375	--
Amorphophallus konjac	Root	--	--		--
Amphicarpaea bracteata	Shoot	120	120	-0.9591769438559322	--
Anacardium occidentale	Seed	8.4	8.4	-0.5620652347681249	--
Ananas comosus	Fruit	12	209	0.9745812460530798	USDA's Ag Handbook 8 and sequelae)
Anemarrhena asphodeloides	Rhizome	10	40	-0.5708889046758836	--
Anethum graveolens	Fruit	--	18	-0.2848478380503656	--
Anethum graveolens	Plant	8	435	2.4228210372847276	--
Anethum graveolens	Seed	18	18	-0.4424804207753204	USDA's Ag Handbook 8 and sequelae)
Angelica dahurica	Root	110	110	0.7676290237901381	--
Angelica laxiflora	Root	83	83	0.4452238910932137	--
Angelica sinensis	Root	0.6	2.6	-0.5148269484931834	--
Annona cherimola	Fruit	1	5	-0.37056814220400325	--
Annona cherimola	Seed	80	100	0.5789731987465522	--
Annona muricata	Fruit	2.7	2.7	-0.3857340421696469	--
Annona squamosa	Leaf	253	253	-0.03928389346554585	--
Anthriscus cerefolium	Leaf	21	21	-0.42497425673286027	--
Apium graveolens	Pt	1	33	-1	USDA's Ag Handbook 8 and sequelae)
Apium graveolens	Root	0.74	23	-0.27123195934439603	ACTA AGRIC SCAND SUPPL 22: 1980

Plant	Part	Low PPM	High PPM	StdDev	Reference
Apium graveolens	Seed	1.3	76	0.28001116376454066	--
Apium graveolens	Fruit	1.3	6.3	-0.3619961117886394	--
Arachis hypogaea	Seed	11	30	-0.2929994032843147	--
Arctium lappa	Root	1.4	6	-0.47422778363505214	--
Arctostaphylos uva-ursi	Leaf	2	16.5	-0.4324553198134763	--
Areca catechu	Seed	67	67	0.16790040064628636	--
Arisaema consanguineum	Rhizome	4	4	-0.8111550983704102	--
Aristolochia debilis	Fruit	33	33	-0.18593979479616832	--
Armoracia rusticana	Root	1.5	8.2	-0.44795773578567305	--
Artemisia capillaris	Plant	37	37	-0.4297190494591039	--
Artemisia dracunculus	Plant	80	80	-0.1215300451124085	USDA's Ag Handbook 8 and sequelae)
Artemisia vulgaris	Plant	160	170	0.5235167081713723	Chem. & Pharm. Bull. 38: 2205.
Artocarpus altilis	Fruit	0.6	3.5	-0.38045894652942297	--
Artocarpus heterophyllus	Fruit	2	7	-0.3573804031034436	--
Asiasarum heterotropoides	Root	120	248	2.41547747979664	--
Asiasarum sieboldii	Root	120	248	2.41547747979664	--
Asimina triloba	Fruit	25	111	0.32838203012565764	--
Aspalathus linearis	Shoot	--	120	-0.9591769438559322	--
Asparagus lucidus	Root	10	10	-0.4264640602725448	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Asparagus officinalis	Shoot	2	100	-0.975011478628626	--
Asparagus officinalis	Root	0.2	2	-0.5219915069975595	--
Astragalus membranaceus	Root	--	--		--
Atractylodes lancea	Rhizome	39	39	-0.5775629656118426	--
Atractylodes ovata	Rhizome	30	139	0.08984312798406438	--
Avena sativa	Plant	0.1	0.5	-0.6913213438464151	--
Avena sativa	Seed	20	204	1.8744753503352685	Jim Duke's personal files.*
Averrhoa carambola	Fruit	1	11	-0.3310049249023243	USDA's Ag Handbook 8 and sequelae)
Barosma betulina	Leaf	675	675	0.6622735776500002	--
Belamcanda chinensis	Rhizome	13	13	-0.7510885499467785	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Berberis vulgaris	Root	60	6	-0.47422778363505214	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Berberis vulgaris	Fruit	72	72	0.07122111766474458	Jim Duke's personal files.
Berberis vulgaris	Bark	--	6	-0.6364342982594638	--
Bertholletia excelsa	Seed	8	8	-0.5670479353511585	USDA's Ag Handbook 8 and sequelae)
Beta vulgaris	Root	3	90	0.5288104069776015	--
Blechnum orientale	Rhizome	28	28	-0.6509776359073924	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Bletilla striata	Tuber	10	10	-0.6331759954010878	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Boehmeria nivea	Plant	80	140	0.3085011237434453	--
Brassica napus var. napobrassica	Root	1.3	17	-0.342877544388157	ACTA AGRIC SCAND SUPPL 22: 1980
Brassica nigra	Leaf	3	53	-0.3717755859373686	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. botrytis l.	Leaf	2	80	-0.32688920745367256	--
Brassica oleracea var. botrytis l.	Flower	1.5	48	-0.2230146829051698	--
Brassica oleracea var. capitata l.	Leaf	1	45	-0.3850752536362415	--
Brassica oleracea var. gemmifera	Leaf	3	24	-0.41998688134578294	USDA's Ag Handbook 8 and sequelae)
Brassica oleracea var. italica	Leaf	2	80	-0.32688920745367256	--
Brassica oleracea var. sabellica l.	Leaf	8	50	-0.376762961324446	--
Brassica oleracea var. viridis l.	Leaf	4	60	-0.3601383767008548	--
Brassica pekinensis	Leaf	9.5	10.5	-0.44243007058763095	--
Brassica rapa	Seed	20	20	-0.41756691786015276	--
Brassica rapa	Root	0.6	7	-0.4622868527944253	--
Broussonetia papyrifera	Fruit	81	81	0.13056594361726293	--
Bupleurum chinense	Root	0.6	5	-0.48616871447567894	--
Cajanus cajan	Seed	17	21	-0.40511016640256897	--
Camellia sinensis	Leaf	1200	1200	1.5350642703885349	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Canavalia ensiformis	Seed	11	11	-0.5296776809784071	--
Capsicum annuum	Fruit	0.4	1.4	-0.39430607258501055	--
Capsicum frutescens	Fruit	2	20	-0.271660098949806	USDA's Ag Handbook 8 and sequelae)
Carica papaya	Fruit	0.1	1	-0.3969436204051225	--
Carthamus tinctorius	Flower	0.4	3.1	-0.38175217245146315	--
Carum carvi	Fruit	13	34	-0.17934592524588852	--
Carum carvi	Seed	13	34	-0.24317239745397942	--
Carya glabra	Shoot	38	3300	1.5585140850023955	--
Carya illinoensis	Seed	30	30	-0.2929994032843147	--
Carya ovata	Seed	58	58	0.05578963752803206	--
Carya ovata	Shoot	37	2700	1.083478041821579	--
Cassia tora	Seed	24	24	-0.36773991202981754	--
Castanea dentata	Seed	19	44	-0.1186048828781413	--
Castanea mollisima	Seed	12	36	-0.21825889453881178	--
Castanea sativa	Seed	5	13	-0.5047641780632395	--
Catalpa ovata	Fruit	14	14	-0.31122331625148486	--
Caulophyllum thalictroides	Root	3	23.7	-0.26287330775595724	--
Celosia cristata	Flower	109	109	-0.007357959913546214	--
Centella asiatica	Leaf	3	27.7	-0.41383578503505414	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Chaenomeles lagenaria	Fruit	15	15	-0.30462944670120506	--
Chamaemelum nobile	Flower	52	52	-0.20887325844670268	--
Chenopodium album	Seed	21	21	-0.40511016640256897	--
Chondrus crispus	Plant	38	38	-0.4225518633115063	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Chrysanthemum parthenium	Plant	--	81	-0.11436285896481094	--
Chrysanthemum parthenium	Leaf	1.5	8.1	-0.4464199708972928	--
Cicer arietinum	Seed	21	26	-0.3428264091146499	USDA's Ag Handbook 8 and sequelae)
Cichorium endivia	Leaf	4	72	-0.3401888751525454	--
Cimicifuga dahurica	Rhizome	--	74	-0.3439708328532751	--
Cimicifuga racemosa	Root	0.3	1.4	-0.5291560655019355	--
Cinnamomum aromaticum	Bark	167	600	3.337609687601768	--
Cinnamomum burmannii	Bark	170	170	0.4607764991837046	--
Cinnamomum sieboldii	Bark	360	360	1.7319353498800583	--
Cinnamomum sieboldii	Root Bark	220	220	2.108691925797159	--
Cinnamomum verum	Bark	66	140	0.2600672069684909	--
Cinnamomum verum	Leaf	101.6	101.6	-0.29098010466671564	--
Cistanche salsa	Plant	20	20	-0.5515612139682625	--
Citrullus lanatus	Fruit	4	4	-0.37716201175428304	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
Citrus aurantium	Fruit	--	8	-0.3507865335531638	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Citrus medica	Fruit	9	9	-0.34419266400288395	--
Citrus paradisi	Fruit	0	5	-0.3527646944182478	--
Citrus reticulata	Fruit	0	4.6	-0.3732056900241152	--
Citrus sinensis	Fruit	0	8	-0.3507865335531638	--
Cnicus benedictus	Plant	0.3	2.1	-0.679853846010259	--
Cnidium officinale	Rhizome	30	30	-0.6376295140354743	--
Cocos nucifera	Seed	9	21	2.833645212569222	--
Coix lacryma-jobi	Seed	--	26	-0.3428264091146499	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Colocasia esculenta	Leaf	45	45	-0.3850752536362415	--
Colocasia esculenta	Root	1.3	7.6	-0.45512229429004925	--
Coptis chinensis	Rhizome	260	398	1.8184249103974641	--
Coptis japonica	Rhizome	260	398	1.8184249103974641	--
Coptis spp	Rhizome	260	398	1.8184249103974641	--
Coriandrum sativum	Fruit	18	19	-0.27825396850008577	--
Coriandrum sativum	Leaf	64	64	-0.35348854285141834	USDA's Ag Handbook 8 and sequelae)
Cornus officinalis	Fruit	11	11	-0.3310049249023243	--
Corylus avellana	Seed	16	100	0.5789731987465522	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Crataegus cuneata	Fruit	12	12	-0.3244110553520445	--
Crataegus laevigata	Fruit	0.4	1.4	-0.39430607258501055	--
Crataegus laevigata	Flower	--	--		--
Crataegus rhipidophylla	Fruit	--	14	-0.31122331625148486	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Crocus sativus	Silk Stigma Style	284	284	1	USDA's Ag Handbook 8 and sequelae)
Cucumis melo	Fruit	0.4	7.7	-0.3527646944182478	--
Cucumis sativus	Fruit	0.5	98	0.24266172597201985	--
Cucurbita pepo	Seed	40	100	0.5789731987465522	--
Cucurbita spp	Fruit	1	27	-0.22550301209784723	--
Cuminum cyminum	Fruit	24	33	-0.18593979479616832	--
Cuminum cyminum	Seed	24	33	-0.25562914891156324	--
Curcuma longa	Rhizome	33	78	-0.31727458910943884	--
Curcuma longa	Plant	2.5	8.2	-0.6361340105099139	--
Cymbopogon citratus	Plant	104	104	0.05048242242993311	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Cynanchum atratum	Root	341	341	3.525984047974935	--
Cynara cardunculus	Flower	2	17	-0.33261072245829	USDA's Ag Handbook 8 and sequelae)
Cyperus rotundus	Rhizome	28	28	-0.6509776359073924	--
Cypripedium pubescens	Root	209	209	1.9497811770121938	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Cyrtosperma chamissonis	Root	2.2	12	-0.40258219859129113	--
Daucus carota	Root	1	62	0.19446434344005029	--
Dendrobium nobile	Stem	53	53	-1.1936469093233868	--
Dioscorea alata	Plant	--	--		--
Dioscorea bulbifera	Rhizome	4	4	-0.8111550983704102	--
Dioscorea sp.	Root	64	64	0.21834620512130393	--
Dioscorea villosa	Root	1.5	6.4	-0.4694514112988013	--
Diospyros virginiana	Leaf	25	1500	2.0338018090962695	--
Diospyros virginiana	Stem	22	1080	-0.29871671814575645	--
Drynaria fortunei	Rhizome	39	39	-0.5775629656118426	--
Echinacea purpurea	Root	3	10.1	-0.4252699671884822	--
Echinacea spp	Root	101	101	0.6601606462244966	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Elaeagnus umbellatus	Fruit	6	34	-0.17934592524588852	--
Elettaria cardamomum	Fruit	66	280	1.4427459841229469	--
Eleutherococcus senticosus	Root	0.6	3	-0.5100505761569326	--
Elytrigia repens	Plant	43	188	0.6525260588281285	--
Ephedra sinica	Plant	1	5.4	-0.656202131723187	--
Ephedra spp	Plant	37	37	-0.4297190494591039	--
Equisetum arvense	Plant	1.5	6.9	-0.6454513525017906	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Equisetum hyemale	Plant	12	12	-0.608898703149043	--
Eriobotrya japonica	Leaf	224	224	-0.08749518887396016	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Eriocaulon sp	Leaf	96	96	-0.3002898720559267	--
Eriodictyon californicum	Leaf	20	91	-0.3086021643677223	--
Erythroxylum coca	Leaf	26	71	-0.34185133361490455	--
Erythroxylum novogranatense	Leaf	28	55	-0.3684506690126504	--
Erythroxylum novogranatense	Leaf	35	36	-0.40003737979747356	--
Eucommia ulmoides	Bark	135	135	0.22661565826595526	--
Euodia rutaecarpa	Fruit	63	63	0.011876291712226211	--
Eupatorium odoratum	Leaf	70	70	-0.3435137920772637	Tramil
Eupatorium perfoliatum	Plant	0.5	5	-0.6590690061822261	--
Euphrasia officinalis	Plant	2	12.6	-0.6045983914604846	--
Fallopia japonica	Plant	59	330	1.670266491786983	Chem. & Pharm. Bull. 38: 2205.
Ficus carica	Fruit	1	7	-0.3573804031034436	USDA's Ag Handbook 8 and sequelae)
Firmiana simplex	Seed	23	23	-0.38019666348740133	--
Foeniculum vulgare	Fruit	24	721	4.350642455796347	--
Foeniculum vulgare	Seed	0.5	4.3	-0.6131379157442186	--
Forsythia suspensa	Fruit	120	120	0.38772685607817603	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Fragaria spp	Fruit	1.4	125	0.4206962038295751	--
Frangula purshiana	Bark	0.4	1.4	-0.6672097230657966	--
Fraxinus rhynchophylla	Bark	89	89	-0.08113858979737261	--
Fritillaria thunbergii	Bulb	12	12	-0.8450509047541928	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Fucus vesiculosus	Plant	0.9	7.6	-0.6404343221984724	--
Gardenia jasminoides	Fruit	16	19	-0.27825396850008577	--
Gastrodia elata	Rhizome	26	26	-0.6643257577793106	--
Genipa americana	Fruit	1	1	-0.3969436204051225	--
Genipa americana	Seed	6	6	-0.5919614382663261	--
Gentiana lutea	Root	0.5	2.3	-0.5184092277453715	--
Gentiana scabra	Root	98	98	0.6243378537026161	--
Geranium thunbergii	Plant	49	49	-0.3437128156879331	--
Ginkgo biloba	Seed	1	3	-0.6293316926390775	USDA's Ag Handbook 8 and sequelae)
Ginkgo biloba	Leaf	0.7	3	-0.4548985090553243	--
Glechoma hederacea	Plant	82	100	0.021813677839542838	Chem. & Pharm. Bull. 38: 2205.
Glehnia littoralis	Root	70	70	0.2899917901650649	--
Glycine max	Seed	8	60	0.08070314044319968	USDA's Ag Handbook 8 and sequelae)
Glycyrrhiza glabra	Root	0.7	4.7	-0.48975099372786696	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Glycyrrhiza uralensis	Root	13	26	-0.23540916682251556	--
Gymnema sylvestre	Leaf	0.4	2	-0.45656096751768344	--
Harpagophytum procumbens	Root	2	7.7	-0.4539282012059865	--
Helianthus annuus	Seed	20	21	-0.40511016640256897	USDA's Ag Handbook 8 and sequelae)
Helianthus tuberosus	Tuber	3	228	2.2128521901130793	--
Hibiscus sabdariffa	Flower	2	15.1	-0.3393278990760618	--
Hordeum vulgare	Seed	2	120	0.8281082278982284	--
Hordeum vulgare	Sprout Seedling	26	26	0.8429272304235246	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Hordeum vulgare	Stem	60	60	-1.1875470930251946	--
Houttuynia cordata	Plant	120	120	0.16515740079149396	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Humulus lupulus	Fruit	81	8.1	-0.3501271465981358	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Humulus lupulus	Flower	1.5	8.1	-0.36407539187837923	--
Hydrangea arborescens	Root	7	18.7	-0.3225779619590914	--
Hydrastis canadensis	Root	2.4	8.5	-0.44437545653348504	--
Hyoscyamus niger	Seed	166	166	1.4011187949470836	--
Inula helenium	Plant	--	--		--
Inula helenium	Root	0.2	0.8	-0.5363206240063116	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Ipomoea batatas	Root	1	15	-0.36675940606941065	--
Isatis tinctoria	Root	181	181	1.6154351134746425	--
Juglans cinerea	Seed	31	72	0.2301841579342054	--
Juglans nigra	Fruit	23	24	-0.2452846207486867	--
Juglans nigra	Seed	30	46	-0.09369137996297368	--
Juglans nigra	Pericarp	0.3	2.4		--
Juglans regia	Seed	27	32	-0.26808590036914703	USDA's Ag Handbook 8 and sequelae)
Juncus effusus	Pith	171	171	1	--
Juniperus communis	Fruit	2	6.3	-0.3619961117886394	--
Juniperus virginiana	Shoot	11	2640	1.0359744375034974	--
Jussiaea repens	Plant	799	799	5.031676795010242	--
Lablab purpureus	Seed	39	39	-0.18088864016606035	--
Lactuca sativa	Leaf	1	240	-0.06089585347621433	--
Lantana camara	Shoot	308	412	-0.7279927361746015	--
Larrea tridentata	Plant	2	5.2	-0.6576355689527066	--
Laurus nobilis	Leaf	82	82	-0.3235642905289543	USDA's Ag Handbook 8 and sequelae)
Lens culinaris	Sprout Seedling	5	18	-1.404878717372541	USDA's Ag Handbook 8 and sequelae)
Lepidium meyenii	Root	--	8	-0.45034592195379847	Taylor, Leslie. 2005. The Healing Power of Rainforest Herbs. SquareOne Publisher, Garden City Park, NY. 519 pp.
Ligustrum japonicum	Fruit	26	26	-0.23209688164812706	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Ligustrum lucidum	Fruit	26	26	-0.23209688164812706	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Linum usitatissimum	Hay	8.1	8.1	-1.0000000000000002	--
Linum usitatissimum	Seed	50	70	0.2052706550190378	--
Liquidambar styraciflua	Stem	14	2400	0.8515343552276342	--
Lobelia inflata	Leaf	0.9	8	-0.4465862167435287	--
Lonicera japonica	Flower	70	70	-0.14523684838360065	--
Lophatherum gracile	Plant	445	445	2.4944928987607033	--
Lycium chinense	Fruit	21	21	-0.2650662293995261	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Lycium chinense	Root Bark	91	91	0.14227319017426585	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Lycopersicon esculentum	Fruit	0.6	100	0.2558494650725795	--
Lycopodium clavatum	Plant	100	100	0.021813677839542838	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Lygodium japonicum	Pollen Or Spore	191	191		--
Magnolia denudata	Flower	42	42	-0.2442268195928705	--
Magnolia fargesii	Flower	42	42	-0.2442268195928705	--
Magnolia kobus	Flower	42	42	-0.2442268195928705	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Magnolia officinalis	Bark	120	120	0.1262610121583484	--
Malus domestica	Fruit	0	29	-0.2123152729972876	--
Mangifera indica	Fruit	0.2	12.2	-0.32309228144198865	--
Manihot esculenta	Root	0.5	2.5	-0.516021041577246	--
Medicago sativa	Plant	0.5	2.5	-0.6769869715512199	--
Mentha arvensis var. piperascens	Plant	44	44	-0.3795487464259209	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Mentha pulegium	Plant	83	83	-0.10002848666961581	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Mentha spicata	Leaf	11	77	-0.3318765828407499	USDA's Ag Handbook 8 and sequelae)
Mentha x piperita	Leaf	0.9	6.1	-0.449744887822011	--
Momordica charantia	Fruit	10	10	-0.33759879445260416	=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
Morinda sp	Root	520	520	5.6634106684471375	--
Morus alba	Root Bark	15	37	-0.6808788386911311	--
Murraya sp	Fruit	0.6	1.8	-0.3916685247648986	--
Musa x paradisiaca	Fruit	0.6	1.8	-0.3916685247648986	--
Myrica cerifera	Bark	1.4	6.4	-0.633758174363261	--
Myristica fragrans	Aril	14	14		--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Myristica fragrans	Seed	23	29	-0.30545615474189847	--
Nardostachys chinensis	Rhizome	141	141	0.10319124985598252	--
Nasturtium officinale	Plant	--	--		--
Nelumbo nucifera	Seed	125	125	0.8903919851861474	--
Nepeta cataria	Plant	5	37.4	-0.42685217500006484	--
Notopterygium incisum	Rhizome	39	39	-0.5775629656118426	--
Nyssa sylvatica	Leaf	12	2730	4.07862571779798	--
Nyssa sylvatica	Stem	2	1320	-0.08958015935059453	--
Ocimum basilicum	Leaf	32	32	-0.40668721364691	USDA's Ag Handbook 8 and sequelae)
Oenothera biennis	Seed	5	168	1.4260322978622513	--
Ophiopogon japonicus	Tuber	5	27	-0.41123801763163437	--
Origanum majorana	Plant	54	54	-0.30787688494994525	USDA's Ag Handbook 8 and sequelae)
Origanum vulgare	Plant	47	47	-0.35804718798312823	USDA's Ag Handbook 8 and sequelae)
Paeonia lactiflora	Root	14	20	-0.3070547518662765	--
Paeonia moutan	Root Bark	10	34	-0.7266095069614309	--
Paeonia suffruticosa	Root Bark	10	34	-0.7266095069614309	--
Panax ginseng	Root	0.4	1.9	-0.5231856000816221	--
Panax ginseng	Fruit	--	--		--
Panax ginseng	Stem	--	--		--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Panax ginseng	Leaf	--	--		--
Panax ginseng	Pt	--	--		--
Panax japonicus	Rhizome	43	43	-0.5508667218680063	--
Panax quinquefolius	Plant	19	156	0.4231761021050064	--
Papaver somniferum	Seed	29	68	0.18035715210387018	--
Parthenium integrifolium	Root	0.2	1	-0.5339324378381862	--
Passiflora incarnata	Flower	0.2	2.1	-0.38528752856607995	--
Pastinaca sativa	Root	2	33	-0.15182265093812775	--
Perilla frutescens	Plant	180	180	0.595188569647348	Suziki, A., Morimoto, I., and Okitzu, T., Elution of Metals from Crude Drugs, Shoykugaku Zasshi 36(3):190-195.
Persea americana	Fruit	2	10	-0.33759879445260416	--
Petasites japonicus	Plant	70	100	0.021813677839542838	Chem. & Pharm. Bull. 38: 2205.
Petroselinum crispum	Plant	0.5	6	-0.6519018200346285	--
Peucedanum decursivum	Plant	43	69	-0.20036909273598175	--
Phaseolus acutifolius	Seed	6	12	-0.5172209295208232	--
Phaseolus coccineus	Seed	3.2	3.2	-0.6268403423475608	--
Phaseolus lunatus	Seed	8	100	0.5789731987465522	--
Phaseolus vulgaris	Fruit	1	150	0.5855429425865706	--
Phaseolus vulgaris	Seed	2	24	-0.36773991202981754	--
Phellodendron amurense	Bark	20	20	-0.5427699618923642	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Phoenix dactylifera	Fruit	3	45	-0.10681336019281051	--
Phoenix dactylifera	Seed	16	16	-0.467393923690488	Abstract (See species file)
Phyllanthus emblica	Fruit	11	55	-0.04087466469001233	--
Pimenta dioica	Bud	29	70		USDA's Ag Handbook 8 and sequelae)
Pimpinella anisum	Fruit	--	23	-0.25187849029896653	--
Pimpinella anisum	Seed	23	23	-0.38019666348740133	USDA's Ag Handbook 8 and sequelae)
Pinellia ternata	Tuber	11	46	-0.16318968953636295	--
Pinus echinata	Shoot	51	1260	-0.056608461812380634	--
Piper nigrum	Fruit	19	56	-0.03428079513973251	--
Pistacia vera	Seed	3.2	3.4	-0.624348992056044	--
Pisum sativum	Plant	85	85	-0.08569411437442066	--
Pisum sativum	Seed	3	21	-0.40511016640256897	--
Plantago asiatica	Plant	74	74	-0.1645331619979939	--
Plantago major	Seed	0.5	1.6	-0.646771144679695	--
Plantago psyllium	Seed	0.4	1.6	-0.646771144679695	--
Platycodon grandiflorum	Root	24	30	-0.18764544346000825	--
Polygala tenuifolia	Root	24	24	-0.2592910285037692	--
Polygonum multiflorum	Rhizome	26	26	-0.6643257577793106	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Polygonum multiflorum	Root	21	21	-0.2951138210256497	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Polygonum multiflorum	Plant	--	18.5	-0.5623119931896589	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Polystichum polyblepharum	Plant	37	62	-0.25053939576916473	--
Portulaca oleracea	Plant	--	--		--
Prunella vulgaris	Flower	96	96	-0.053317589403564354	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Prunus armeniaca	Seed	1	11	-0.5296776809784071	--
Prunus cerasus	Fruit	1	8	-0.3507865335531638	--
Prunus domestica	Fruit	0.22	25.5	-0.23539381642326695	--
Prunus dulcis	Seed	14	32	-0.26808590036914703	--
Prunus persica	Bark	54	54	-0.31529943071512195	--
Prunus persica	Fruit	0	22.5	-0.2551754250741064	--
Prunus persica	Seed	17	17	-0.4549371722329042	--
Psidium guajava	Fruit	1	12	-0.3244110553520445	USDA's Ag Handbook 8 and sequelae)
Psophocarpus tetragonolobus	Seed	34	44	-0.1186048828781413	--
Pueraria pseudohirsuta	Root	3	5	-0.48616871447567894	--
Pulsatilla chinensis	Root	119	119	0.8750974013557795	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Pyrus communis	Fruit	0.3	5.55	-0.3669415139513493	--
Quercus alba	Bark	6	25.3	-0.5073113202676763	--
Quercus alba	Stem	20	3800	2.071497614866079	--
Quercus rubra	Seed	3.9	3.9	-0.618120616327252	--
Quercus rubra	Stem	70	3300	1.6357964507094915	--
Quercus stellata	Stem	12	1680	0.2241246788421484	--
Quercus velutina	Stem	24	1984	0.4890309866493535	--
Quisqualis indica	Fruit	33	33	-0.18593979479616832	--
Raphanus sativus	Root	0.5	20	-0.3070547518662765	--
Raphanus sativus	Seed	40	40	-0.16843188870847656	--
Rehmannia glutinosa	Root	24	24	-0.2592910285037692	--
Rheum palmatum	Rhizome	19	46	-0.5308445390601292	--
Rheum rhabarbarum	Pt	2	35	1	--
Rhizophora mangle	Leaf	300	300	0.0388516542653325	--
Rhodymenia palmata	Plant	37	37	-0.4297190494591039	--
Rhus copallina	Leaf	8	480	0.338094177489973	--
Rhus copallina	Stem	7	915	-0.4424981023174303	--
Rhus glabra	Stem	3	134	-1.1230633207300196	--
Ribes nigrum	Fruit	0.5	27	-0.22550301209784723	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Ribes rubrum	Fruit	1	15	-0.30462944670120506	--
Ribes uva-crispa	Fruit	1	16	-0.2980355771509252	--
Rosa canina	Fruit	0.8	4	-0.37716201175428304	--
Rosa laevigata	Fruit	59	59	-0.01449918648889306	--
Rosmarinus officinalis	Plant	18	19	-0.5587284001158601	USDA's Ag Handbook 8 and sequelae)
Rosmarinus officinalis	Leaf	10	19	-0.4100121305716282	USDA's Ag Handbook 8 and sequelae)
Rubia cordifolia	Root	94	94	0.5765741303401087	--
Rubus chamaemorus	Fruit	7	125	0.4206962038295751	--
Rubus chingii	Fruit	287	287	1.4889030709749056	--
Rubus idaeus	Fruit	10	18	0.12397207406698312	Revised USDA data received 1993.
Rubus idaeus	Leaf	25	146	-0.21716694893797103	--
Rumex acetosa	Leaf	6	60	-0.3601383767008548	--
Rumex crispus	Root	4	14.5	-0.3727298714897241	--
Ruscus aculeatus	Root	2	7	-0.4622868527944253	--
Salix alba	Bark	1	6.6	-0.6324201124151596	--
Salvia miltiorrhiza	Root	23	23	-0.27123195934439603	Chen, H.C. and Lin, S.M. 1988. Determination of Mineral Elements in Certain Crude Drugs (Part 1), Kaohsiung J. Med. Sci., 4: 259-272.
Salvia officinalis	Leaf	0.5	3	-0.4548985090553243	--
Sambucus nigra	Fruit	2	11	-0.3310049249023243	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Sassafras albidum	Leaf	23	1020	1.2358217471638944	--
Sassafras albidum	Stem	5	680	-0.6472776494710262	--
Satureja hortensis	Leaf	61	61	-0.3584759182384957	USDA's Ag Handbook 8 and sequelae)
Satureja montana	Plant	61	61	-0.25770658191676227	USDA's Ag Handbook 8 and sequelae)
Schisandra chinensis	Fruit	0.6	3.7	-0.37914017261936706	--
Schizonepeta tenuifolia	Plant	68	68	-0.2075362788835793	--
Scrophularia buergeriana	Root	18	18	-0.3309366135475302	--
Scutellaria baicalensis	Root	18	29	-0.19958637430063508	--
Scutellaria lateriflora	Plant	0.6	4.7	-0.6612191620265054	--
Secale cereale	Seed	25	30	-0.2929994032843147	USDA's Ag Handbook 8 and sequelae)
Senna alexandrina	Leaf	2	8	-0.4465862167435287	--
Senna obtusifolia	Seed	10	14	-0.49230742660565563	--
Senna occidentalis	Seed	42	42	-0.14351838579330892	--
Serenoa repens	Fruit	1.2	8.9	-0.3448520509579119	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Sesamum indicum	Seed	14	14	-0.49230742660565563	USDA's Ag Handbook 8 and sequelae)
Siegesbeckia orientalis	Plant	231	231	0.9607150631748239	--
Silybum marianum	Plant	147	14.7	-0.5895473005505297	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Silybum marianum	Leaf	3.2	14.7	-0.4354477450457226	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Simmondsia chinensis	Seed	21	21	-0.40511016640256897	--
Sinapis alba	Seed	21	41	-0.15597513725089274	--
Sinomenium acutum	Rhizome	21	21	-0.697696062459106	--
Smilax officinalis	Root	1.2	5.7	-0.47781006288724015	--
Smilax spp	Root	1.2	5.7	-0.47781006288724015	--
Solanum melongena	Fruit	1.4	40	-0.1397827079442096	--
Solanum tuberosum	Tuber	1.3	22	-0.4765138934461795	--
Sophora angustifolia	Root	28	42	-0.0443542733724863	--
Sophora subprostrata	Root	14	14	-0.3787003369100375	--
Sorbus aucubaria	Fruit	12	75	0.09100272631558402	--
Spinacia oleracea	Plant	3	485	2.7811803446646057	--
Spirulina spp.	Plant	--	16	-0.5802299585586528	--
Spondias dulcis	Fruit	1.2	1.2	-0.39562484649506663	--
Spondias tuberosa	Fruit	0.95	0.95	-0.3972733138826366	--
Stachys officinalis	Plant	3.2	19	-0.5587284001158601	--
Stellaria media	Plant	0.4	5.3	-0.6569188503379467	--
Stevia rebaudiana	Leaf	147	147	-0.2155044904756119	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Symphoricarpos orbiculatus	Stem	19	2640	1.0606709140227961	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Symphytum officinale	Root	67	67	0.2541689976431844	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Symphytum officinale	Leaf	0.6	5.8	-0.4502436253607189	--
Syzygium aromaticum	Flower	100	1200	3.8497155611333613	--
Syzygium aromaticum	Fruit	100	1200	7.509105970380378	--
Tabebuia heptaphylla	Bark	0.5	2.7	-0.6585123204031375	--
Tanacetum parthenium	Plant	--	8.1	-0.6368507291246737	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Taraxacum mongolicum	Plant	178	178	0.5808541973521528	--
Taraxacum officinale	Plant	100	130	0.23682926226746964	--
Taraxacum officinale	Root	1	6.8	-0.4646750389625507	--
Taraxacum officinale	Leaf	14	130	-0.1174194411964242	--
Tephrosia candida	Plant	38	38	-0.4225518633115063	--
Tetrapanax papyrifera	Pith	43	43	-1	--
Thymus vulgaris	Leaf	1	6.4	-0.44924615028330334	--
Trachyspermum ammi	Fruit	33.1	33.1	-0.1852804078411404	--
Tragopogon porrifolius	Root	12	12	-0.40258219859129113	--
Trifolium pratense	Flower	1	5.9	-0.37185317533053636	--
Trifolium pratense	Hay	25	464	1.0000000000000002	--
Trigonella foenum-graecum	Seed	0.3	2.1	-0.640542768950903	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Triticum aestivum	Plant	0	105	0.057649608577530674	--
Triticum aestivum	Seed	0	86	0.40457867834037875	--
Turnera diffusa	Leaf	1.1	5.4	-0.45090860874566246	--
Tussilago farfara	Flower	25	25	-0.30432787354135576	--
Ulmus rubra	Bark	0.3	1.9	-0.6638645681955431	--
Urtica dioica	Leaf	2	7.8	-0.4469187084360006	--
Urtica dioica	Root	--	7	-0.4622868527944253	--
Urtica dioica	Seed	--	12	-0.5172209295208232	--
Vaccinium corymbosum	Fruit	3	20	-0.271660098949806	--
Vaccinium macrocarpon	Fruit	0.6	5	-0.37056814220400325	--
Vaccinium myrtillus	Fruit	7	91	0.1965046391200611	--
Vaccinium myrtillus	Leaf	2500	2500	3.6962602714553836	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Vaccinium vitis-idaea	Fruit	28	250	1.2449298976145524	--
Vaccinium vitis-idaea	Leaf	2500	2500	3.6962602714553836	--
Valeriana officinalis	Root	0.7	5.6	-0.4790041559713029	--
Valerianella locusta	Plant	179	201	0.7456994787468969	--
Valerianella radicata	Plant	27.1	28.6	-0.4899234130989235	--
Verbascum thapsus	Leaf	5.3	12	-0.43993638289409226	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Viburnum opulus	Bark	49	49	-0.34875097941765754	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Vigna aconitifolia	Seed	18	20	-0.41756691786015276	--
Vigna angularis	Seed	17	20	-0.41756691786015276	--
Vigna radiata	Seed	9.6	12.2	-0.5147295792293065	USDA's Ag Handbook 8 and sequelae)
Vigna radiata	Sprout Seedling	1.4	25	0.5619514869490164	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Seed	16	17	-0.4549371722329042	USDA's Ag Handbook 8 and sequelae)
Vigna unguiculata	Seed	5.6	240	2.322918402808286	--
Viscum album	Leaf	159	159	-0.19555498892730255	--
Vitis vinifera	Fruit	0.5	54	-0.047468534240292154	--
Vitis vinifera	Stem	986	986	-0.3806285370071949	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
Xanthosoma sagittifolium	Root	1.7	11.3	-0.41094085017973	--
Yucca baccata	Root	0.1	0.6	-0.5387088101744371	--
Zea mays	Seed	0.84	63	0.11807339481595111	--
Zea mays	Silk Stigma Style	34	34	-1	--
Zingiber officinale	Rhizome	106	350	1.4980699854714286	--
Zingiber officinale	Root	2.4	33.8	-0.14226990626562633	--
Zizyphus jujuba	Fruit	10	10	-0.33759879445260416	--