

## Chemid

CITRAL

\*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	--	--		Wealth of India.
Abelmoschus esculentus	Leaf	--	--		Wealth of India.
Aegle marmelos	Leaf	--	--		Morton, J.F., Major Medicinal Plants. 1977. Atlas of Medicinal Plants of Middle America. Bahamas to Yucatan. 1981.
Allium sativum var. sativum	Bulb	--	--		Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
Aloysia citrodora	Plant	180	1820	-0.4767698048882568	--
Aniba rosaeodora	Essential Oil	1500	1500	-0.7836319327122078	--
Anisomeles malabarica	Plant	--	--		Wealth of India.
Artemisia dracuncululus	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
Citrullus colocynthis	Petiole	--	--		--
Citrus aurantiifolia	Fruit	--	--		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	Plant	--	--		--
Citrus limon	Essential Oil	250	300	-0.7878308981922465	--
Citrus limon	Fruit Essent. Oil	--	6000		Jim Duke's personal files.
Citrus limon	Pericarp	--	--		--
Citrus medica	Pericarp	--	--		--
Citrus paradisi	Fruit	--	--		Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
Cnicus benedictus	Essential Oil	--	--		Wichtl, M. 1984. Teedrogen. Ein Handbuch für Apotheker und Ärzte. Wissenschaftliche Verlagsgesellschaft. mbH Stuttgart. 393 pp.
Cnicus benedictus	Shoot	--	--		Jim Duke's personal files.
Conyza canadensis	Plant	--	--		--
Cymbopogon citratus	Plant	1080	3480	1.934185258029397	--
Cymbopogon flexuosus	Leaf	250	4250	-1	Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
Cymbopogon winterianus	Plant	8	14	-0.7643479318484829	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
Daucus carota	Seed	200	200		--
Elsholtzia nipponica	Plant	--	--		Hegnauer, R. 1962-1997. Chemotaxonomie der Pflanzen, Bde 1-11. Birkhauser Verlag Basel, Boston, Berlin.
Eucalyptus citriodora	Leaf	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
Eucalyptus globulus	Fruit Essent. Oil	--	--		--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Foeniculum vulgare	Seed Essent. Oil	--	--		Jim Duke's personal files.
Fragaria spp	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Helianthus annuus	Flower	--	--		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.
Humulus lupulus	Fruit	--	--		CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses
Humulus lupulus	Essential Oil	--	--		--
Lantana camara	Leaf	--	--		--
Laurus nobilis	Leaf	--	--		--
Laurus nobilis	Fruit Essent. Oil	--	--		--
Lippia alba	Plant	--	--		Grenand, P., Moretti, C., and Jacquemin, H. 1987. Pharmacopees Traditionnelles en Guyane. l'ORSTROM, Paris. 569 pp.
Lycopersicon esculentum	Fruit	--	--		--
Magnolia fargesii	Flower	--	--		--
Magnolia kobus	Leaf Essent. Oil	--	--		--
Melaleuca viridiflora	Leaf	--	--		Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.
Melissa officinalis	Shoot	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Mentha x rotundifolia	Shoot	9	150	1	--

Plant	Part	Low PPM	High PPM	StdDev	Reference
Monarda citriodora	Plant	--	--		--
Nepeta cataria	Plant	--	--		--
Ocimum basilicum	Plant	560	7000	-0.02464955373944787	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
Ocimum basilicum	Essential Oil	--	700000	1.6605158904602735	--
Ocimum canum	Shoot	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Ocimum gratissimum	Plant	--	--		Tramil
Ocimum tenuiflorum	Plant	--	--		--
Origanum majorana	Plant	--	--		--
Panax ginseng	Root Essent. Oil	--	--		--
Panax ginseng	Root	--	--		Wichtl, M. 1984. Teedrogen. Ein Handbuch für Apotheker und Ärzte. Wissenschaftliche Verlagsgesellschaft. mbH Stuttgart. 393 pp.
Pelargonium graveolens	Essential Oil	--	--		--
Perilla frutescens	Plant	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
Perilla frutescens	Essential Oil	--	200000	-0.0890530595558191	--
Pimenta racemosa	Leaf	8000	31200	1	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Pinus sylvestris	Leaf	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
Piper nigrum	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Psidium guajava	Fruit	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Rosa centifolia	Essential Oil	--	--		--
Rosa gallica	Flower	--	--		--
Salvia officinalis	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
Salvia sclarea	Plant	75	920	-0.6684179675532087	Flavour and Fragrance Journal, 6: 154.
Sassafras albidum	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Satureja obovata	Shoot	60	110	-1	Fitoterapia No.60: 277.
Schisandra chinensis	Essential Oil	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
Skimmia arborescens	Leaf	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
Stachytarpheta cayennensis	Plant	--	--		--
Tagetes filifolia	Essential Oil	--	--		Fester, G. A., Gargallo, M. A., Martinuzzi, E. A. 1947. Some Volatile Essential Oils From San Luis y Cordoba. An Soc Cient Argent 144: 457-471. Fac Quim Ind + Agr Santa Fe Argentina
Tagetes minuta	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Tagetes minuta	Essential Oil	--	--		--
Thymus serpyllum	Plant	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Thymus vulgaris	Plant	--	--		Stitt, Paul. Why George should eat broccoli.

Plant	Part	Low PPM	High PPM	StdDev	Reference
Urtica dioica	Plant	--	--		Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin.
Verbena officinalis	Plant	--	--		--
Zanthoxylum alatum	Fruit	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
Zingiber officinale	Rhizome	0	13500		--
Zingiber officinale	Root	0	13500		--
Zingiber officinale	Rhizome Essent. Oil	--	130000		--