

List of Plants

GAMMA-CADINENE

Chemid

GAMMACADINENE

*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
<i>Achillea millefolium</i>	Leaf	--	--		*
<i>Agastache rugosa</i>	Tissue Culture	--	--		Jim Duke's personal files.
<i>Ageratum conyzoides</i>	Shoot	--	2520.0	5.38	R. Vera, (1993); Chemical composition of the essential oil <i>Ageratum conyzoides</i> L. (Asteraceae) from Reunion, Flavour Fragr. J., Vol.8, 257-260.
<i>Aloysia citrodora</i>	Plant	2.0	14.0	-0.46	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Alpinia officinarum</i>	Rhizome	--	--		Wealth of India.
<i>Angelica archangelica</i>	Root	2.0	14.0	1.0	*
<i>Angelica archangelica</i>	Plant	--	--		*
<i>Aniba rosaeodora</i>	Plant	--	--		*
<i>Artemisia herba-alba</i>	Plant	--	--		*
<i>Artemisia salsoloides</i>	Shoot	--	50.0	-0.12	V. Kaul, P. Weyerstahl, H. Wahlberg, H. Marschall, (1992); Volatile constituents of the essential oil and the absolute of <i>Aremisia salsoloides</i> Willd. from Ladakh, Flavour and Fragrance journal, Vol.7, 299-305.
<i>Boswellia sacra</i>	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Callicarpa americana</i>	Leaf	--	3.0	-0.45	*
<i>Cananga odorata</i>	Flower	--	--		*
<i>Cannabis sativa</i>	Essential Oil	--	--		*
<i>Cannabis sativa</i>	Plant	--	--		Turner, C. E., El Sohly, M. A., Boeren, E. G. 1980. Constituents of <i>Cannabis sativa</i> L. XVII. A Review of the Natural Constituents. J Natural Products, 432: 169-234.
<i>Chrysanthemum x morifolium</i>	Plant	20.0	75.0	0.5	Wealth of India.
<i>Cinnamomum verum</i>	Leaf	--	24.0	-0.22	Mallavarupu, G. R. et al. 1995. Investigation of the essential oil of cinnamon leaf grown at Bangalore and Hyderabad. Flav. & Fragr. J., 10: 239-242.
<i>Cinnamomum verum</i>	Leaf Essent. Oil	--	--		*
<i>Citrus sinensis</i>	Fruit	1.0	2.0	-0.91	*
<i>Citrus reticulata</i>	Fruit	1.0	2.0	-0.91	*
<i>Citrus paradisi</i>	Pericarp	--	--		*
<i>Copaifera</i> spp	Gum	--	--		*
<i>Coridothymus capitatus</i>	Shoot	--	0.1	-0.23	Lagouri, V., Blekas, G., Tsimidou, M., Kokkini, S., and Boskou, D. 1993. Composition and Antioxidant Activity of Essential Oils from Oregano Plants Grown Wild in Greece. Z. Lebensm Unters Forsch 197: 20-23.
<i>Cymbopogon winterianus</i>	Plant	40.0	158.0	1.82	Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952.

<i>Elsholtzia polystachya</i>	Leaf	--	10.0	-0.38	Mathela,C.S., Melkani,A.B., Bisht,J.C., Pant,A.K., Bestmann,H.J., Erler,J., Kobold,U., Rauscher,J. and Vostrowsky,O. 1992. Chemical Varieties of Essential Oils from <i>Elsholtzia polystachya</i> from Two Different Locations in India. <i>Planta Medica</i> 58: 376-379.
<i>Elsholtzia pilosa</i>	Shoot	--	36.0	-0.15	*
<i>Elsholtzia polystachya</i>	Leaf	--	10.0	-0.38	Mathela,C.S., Melkani,A.B., Bisht,J.C., Pant,A.K., Bestmann,H.J., Erler,J., Kobold,U., Rauscher,J. and Vostrowsky,O. 1992. Chemical Varieties of Essential Oils from <i>Elsholtzia polystachya</i> from Two Different Locations in India. <i>Planta Medica</i> 58: 376-379.
<i>Eucalyptus globulus</i>	Fruit Essent. Oil	--	--		*
<i>Eucalyptus globulus</i>	Leaf Essent. Oil	--	1000.0	-0.78	*
<i>Humulus lupulus</i>	Fruit	--	60.0	0.07	*
<i>Hyssopus officinalis</i>	Plant	--	--		*
<i>Juniperus communis</i>	Fruit	16.0	164.0	1.83	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Laurus nobilis</i>	Leaf	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Lavandula angustifolia</i>	Flower	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Levisticum officinale</i>	Root	--	5.0	-1.0	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Lindera benzoin</i>	Leaf	--	3.0	-0.45	*
<i>Lycopus uniflorus</i>	Plant	--	8.0	-0.55	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Melissa officinalis</i>	Shoot	1.0	25.0	-0.18	Deutsche Apot. Ztit. 129(4):155-163. W. Schulze et al. Die Melisse.
<i>Mentha spicata</i>	Leaf	2.0	33.0	-0.12	*
<i>Mentha longifolia</i>	Shoot	1.0	75.0	-0.07	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Metrosideros sclerocarpa</i>	Leaf	53.0	212.0	1.89	*
<i>Micromeria varia</i>	Shoot	--	24.0	-0.18	Pedro, L.G., et al. 1995. Composition of the Essential oil of <i>Micromeria varia</i> Benth. ssp. <i>thymoides</i> (Sol. ex Lowe) Perez var. <i>thymoides</i> , and endemic species of the Madeira Archipelago. <i>flav. & Fragr. J.</i> 10(3): 199-202.
<i>Micromeria croatica</i>	Leaf	--	360.0	3.56	Kirimer, N., Ozek, T., and Baser, K.H.C. 1991. Composition of the Essential Oil of <i>Micromeria congesta</i> . <i>J. Ess. Oil Res.</i> , 3: 387-393.
<i>Micromeria varia</i>	Shoot	--	15.0	-0.2	*
<i>Murraya koenigii</i>	Leaf	--	--	-0.49	*
<i>Ocimum basilicum</i>	Plant	--	--		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
<i>Ocimum basilicum</i>	Essential Oil	--	--		*
<i>Ocimum basilicum</i>	Leaf Essent. Oil	--	22800.0	1.41	*
<i>Opopanax chironium</i>	Essential Oil	--	--		*
<i>Origanum vulgare</i>	Plant	--	--	-0.68	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four <i>Origanum vulgare</i> Subspecies of Anatolian Origin. <i>J. Ess. Oil Res.</i> , 5: 425-431.
<i>Origanum vulgare</i>	Plant	50.0	200.0	2.48	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Origanum vulgare</i>	Plant	--	7.0	-0.57	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four <i>Origanum vulgare</i> Subspecies of Anatolian Origin. <i>J. Ess. Oil Res.</i> , 5: 425-431.
<i>Origanum onites</i>	Shoot	--	75.0	-0.07	Biondi, D., Cianci, P., Geraci, C. and Ruberto, G. 1993. Antimicrobial Activity and Chemical Composition of Essential Oils from Sicilian Aromatic Plants. <i>Flav. & Fragr. J.</i> 8: 331-7.
<i>Origanum vulgare</i>	Plant	--	--	-0.68	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four <i>Origanum vulgare</i> Subspecies of Anatolian Origin. <i>J. Ess. Oil Res.</i> , 5: 425-431.

<i>Origanum vulgare</i>	Shoot	--	--	-0.23	Lagouri, V., Blekas, G., Tsimidou, M., Kokkini, S., and Boskou, D. 1993. Composition and Antioxidant Activity of Essential Oils from Oregano Plants Grown Wild in Greece. <i>Z. Lebensm Unters Forsch</i> 197: 20-23.
<i>Origanum onites</i>	Shoot	--	--	-0.23	Lagouri, V., Blekas, G., Tsimidou, M., Kokkini, S., and Boskou, D. 1993. Composition and Antioxidant Activity of Essential Oils from Oregano Plants Grown Wild in Greece. <i>Z. Lebensm Unters Forsch</i> 197: 20-23.
<i>Origanum vulgare</i>	Shoot Essent. Oil	200.0	9700.0		*
<i>Origanum vulgare</i>	Plant	--	--	-0.68	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four <i>Origanum vulgare</i> Subspecies of Anatolian Origin. <i>J. Ess. Oil Res.</i> , 5: 425-431.
<i>Panax ginseng</i>	Flower Essent. Oil	--	--		*
<i>Pelargonium graveolens</i>	Essential Oil	--	--		*
<i>Petroselinum crispum</i>	Leaf	--	--		*
<i>Pimenta dioica</i>	Fruit	--	51.0	-0.08	*
<i>Pimenta dioica</i>	Leaf	--	50.0	0.07	*
<i>Pimenta racemosa</i>	Leaf	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Pinus sylvestris</i>	Leaf Essent. Oil	--	2500.0	-0.63	*
<i>Pinus sylvestris</i>	Essential Oil	--	--		*
<i>Pinus sylvestris</i>	Wood	--	--		*
<i>Pinus sylvestris</i>	Resin, Exudate, Sap	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
<i>Piper nigrum</i>	Fruit	--	--		*
<i>Piper nigrum</i>	Fruit Essent. Oil	--	--		*
<i>Rheum palmatum</i>	Rhizome	--	0.5		*
<i>Rosmarinus officinalis</i>	Leaf	--	5.0	-0.43	Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaïd, M.H. 1994. Analysis and Biological Activity of the Essential Oil of <i>Rosmarinus officinalis</i> L. from Egypt. <i>Flavour and Fragrance J.</i> 9: 29-33.
<i>Rosmarinus officinalis</i>	Leaf	--	1.0	-0.48	Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaïd, M.H. 1994. Analysis and Biological Activity of the Essential Oil of <i>Rosmarinus officinalis</i> L. from Egypt. <i>Flavour and Fragrance J.</i> 9: 29-33.
<i>Rosmarinus officinalis</i>	Plant	--	--		*
<i>Rosmarinus officinalis</i>	Resin, Exudate, Sap	--	--		*
<i>Rosmarinus officinalis</i>	Leaf	--	1.0	-0.48	Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaïd, M.H. 1994. Analysis and Biological Activity of the Essential Oil of <i>Rosmarinus officinalis</i> L. from Egypt. <i>Flavour and Fragrance J.</i> 9: 29-33.
<i>Salvia officinalis</i>	Leaf Essent. Oil	--	--		*
<i>Salvia dorisiana</i>	Shoot	5.0	5.6	-0.22	Tucker, A.O. & Maciarelo, M.J. 1994. The Essential Oil of <i>Salvia dorisiana</i> Standley. <i>J. Ess. Oil Res.</i> 6: 97-8.
<i>Salvia officinalis</i>	Plant	2.0	14.0	-0.46	*
<i>Salvia gilliesii</i>	Shoot	--	36.0	-0.15	Velasco-Negueruela, A. et al. 1993. The Essential Oil of <i>Salvia gilliesii</i> Benth. <i>J. Ess. Oil Res.</i> 5: 319-320.
<i>Sassafras albidum</i>	Leaf	0.3	5.0	-0.43	*
<i>Satureja montana</i>	Plant	3.0	70.0	0.43	*
<i>Satureja thymbra</i>	Shoot	--	37.0	-0.15	Lagouri, V., Blekas, G., Tsimidou, M., Kokkini, S., and Boskou, D. 1993. Composition and Antioxidant Activity of Essential Oils from Oregano Plants Grown Wild in Greece. <i>Z. Lebensm Unters Forsch</i> 197: 20-23.
<i>Scutellaria parvula</i>	Plant	--	9.0	-0.54	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Sideritis pauli</i>	Shoot	--	6.0	-0.22	Burzaco, A., Velasco-Negueruela, A. and Perez-Alonso, M.J. 1992. Essential Oil Analysis of <i>Sideritis pauli</i> Pau. <i>FFJ7</i> : 47-8. 1992.
<i>Stevia rebaudiana</i>	Flower	--	80.0		Kinghorn, A. D. (Ed.) 2002. Medicinal and Aromatic Plants - Industrial Profiles. <i>Stevia. The genus Stevia.</i> Taylor & Francis. New York, NY. 211 pp.
<i>Stevia rebaudiana</i>	Leaf	--	35.0	-0.09	Kinghorn, A. D. (Ed.) 2002. Medicinal and Aromatic Plants - Industrial Profiles. <i>Stevia. The genus Stevia.</i> Taylor & Francis. New York, NY. 211 pp.

<i>Syzygium aromaticum</i>	Fruit	--	--		*
<i>Syzygium aromaticum</i>	Leaf	25.0	160.0	1.31	Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp.
<i>Tagetes lucida</i>	Shoot	--	30.0	-0.17	Bicchi, C., Fresia, M., Rubiolo, P., Monti, D., Franz, C., Goehler, I. 1997. Constituents of <i>Tagetes lucida</i> Cav. ssp. <i>lucida</i> essential oil. <i>Flavor & Fragrance</i> , 12(1): 47-52.
<i>Tamarindus indica</i>	Fruit Essent. Oil	--	4000.0		*
<i>Tanacetum vulgare</i>	Plant	--	--		*
<i>Teucrium pseudoscorodonia</i>	Shoot	--	0.56	-0.23	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium micropodioides</i>	Leaf	--	--	-0.49	Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some <i>Teucrium</i> Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113.
<i>Teucrium divaricatum</i>	Leaf	--	--	-0.49	Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some <i>Teucrium</i> Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113.
<i>Teucrium oxylepis</i>	Shoot	--	0.99	-0.23	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium arduini</i>	Shoot	--	68.0	-0.08	Blazevic, N., Kalodera, Z., Petricic, J., and Plazibat, M. 1992. Essential Oil Content and Composition of <i>Teucrium arduini</i> L. <i>J. Ess. Oil Res.</i> 4: 223-225.
<i>Teucrium kotschyannum</i>	Leaf	--	--	-0.49	Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some <i>Teucrium</i> Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113.
<i>Teucrium cyprium</i>	Leaf	--	--	-0.49	Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some <i>Teucrium</i> Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113.
<i>Teucrium scorodonia</i>	Shoot	--	1.22	-0.23	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium oxylepis</i>	Shoot	--	7.9	-0.22	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium salviastrum</i>	Shoot	--	1.9	-0.23	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium gnaphalodes</i>	Shoot	--	1.5	-0.23	Perez-Alonso, M.J. Velasco-Negueruela, A. and Lopez-Saez, J.A. 1993. The Essential Oils of Two Iberian <i>Teucrium</i> Species. <i>J. Ess. Oil Res.</i> 5: 397-402.
<i>Teucrium asiaticum</i>	Shoot	--	0.1	-0.23	Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six <i>Teucrium</i> Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9.
<i>Teucrium polium</i>	Shoot	--	0.5	-0.23	Perez-Alonso, M.J. Velasco-Negueruela, A. and Lopez-Saez, J.A. 1993. The Essential Oils of Two Iberian <i>Teucrium</i> Species. <i>J. Ess. Oil Res.</i> 5: 397-402.
<i>Teucrium arduini</i>	Shoot	--	68.0	-0.08	Blazevic, N., Kalodera, Z., Petricic, J., and Plazibat, M. 1992. Essential Oil Content and Composition of <i>Teucrium arduini</i> L. <i>J. Ess. Oil Res.</i> 4: 223-225.
<i>Thymus mastichina</i>	Plant	--	5.0	-0.6	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
<i>Thymus capitatus</i>	Shoot	--	0.1	-0.23	Biondi, D., Cianci, P., Geraci, C. and Ruberto, G. 1993. Antimicrobial Activity and Chemical Composition of Essential Oils from Sicilian Aromatic Plants. <i>Flav. & Fragr. J.</i> 8: 331-7.
<i>Thymus funkii</i>	Shoot	--	16.0	-0.2	Vila, R., et al. 1995. Composition and study of the variability of the essential oil of <i>Thymus funkii</i> Cousson. <i>Flav. & Fragr. J.</i> 10(6): 379-383.
<i>Thymus riararum</i>	Shoot	--	25.0	-0.18	Iglesias, J., Vila, R., Canigual, S., Bellakdhar, and Idrissi, A. 1991. Analysis of the Essential Oil of <i>Thymus riararum</i> . <i>J. Ess. Oil Res.</i> 3: 43-4.
<i>Thymus funkii</i>	Shoot	--	16.0	-0.2	Vila, R., et al. 1995. Composition and study of the variability of the essential oil of <i>Thymus funkii</i> Cousson. <i>Flav. & Fragr. J.</i> 10(6): 379-383.
<i>Turnera diffusa</i>	Leaf	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
<i>Valeriana officinalis</i>	Root	--	--		*

Vitex agnus-castus	Leaf	--	0.2	-0.49	Ekundayo, O., Laakso, I., Holopainen, M., Hiltunen, R., Oguntimein, B., and Kauppinen, V. 1990. The Chemical Composition and Antimicrobial Activity of the Leaf Oil of Vitex agnus-castus L. J. Essential Oil Research, 2: 115-119.
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