

# 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>	Plant	--	--		*
<i>Angelica archangelica</i>	Root	2.0	14.0	1.0	*
<i>Aniba rosaeodora</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>Artemisia salsoloides</i> Willd. from Ladakh, Flavour and Fragrance journal, Vol.7, 299-305.
<i>Artemisia herba-alba</i>	Plant	--	--		*
<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>	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>Cannabis sativa</i>	Essential Oil	--	--		*
<i>Chrysanthemum x morifolium</i>	Plant	20.0	75.0	0.5	Wealth of India.
<i>Cinnamomum verum</i>	Leaf Essent. Oil	--	--		*
<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>Citrus paradisi</i>	Pericarp	--	--		*
<i>Citrus sinensis</i>	Fruit	1.0	2.0	-0.91	*
<i>Citrus reticulata</i>	Fruit	1.0	2.0	-0.91	*
<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 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>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. Zitt. 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 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>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. &amp; Fragr. J.</i> 10(3): 199-202.
<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 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. &amp; 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 vulgare</i>	Shoot Essent. Oil	200.0	9700.0		*
<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 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.

Origanum vulgare	Plant	--	--	-0.68	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four Origanum vulgare Subspecies of Anatolian Origin. J. Ess. Oil Res., 5: 425-431.
Origanum vulgare	Plant	--	--	-0.68	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four Origanum vulgare Subspecies of Anatolian Origin. J. Ess. Oil Res., 5: 425-431.
Origanum vulgare	Plant	--	7.0	-0.57	Sezik, E., Tumen, G., Kirimer, N., Ozek, T., and Baser, K.H.C. 1993. Essential Oil Composition of Four Origanum vulgare Subspecies of Anatolian Origin. J. Ess. Oil Res., 5: 425-431.
Panax ginseng	Flower Essent. Oil	--	--		*
Pelargonium graveolens	Essential Oil	--	--		*
Petroselinum crispum	Leaf	--	--		*
Pimenta dioica	Fruit	--	51.0	-0.08	*
Pimenta dioica	Leaf	--	50.0	0.07	*
Pimenta racemosa	Leaf	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
Pinus sylvestris	Leaf Essent. Oil	--	2500.0	-0.63	*
Pinus sylvestris	Resin, Exudate, Sap	--	--		List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Pinus sylvestris	Essential Oil	--	--		*
Pinus sylvestris	Wood	--	--		*
Piper nigrum	Fruit	--	--		*
Piper nigrum	Fruit Essent. Oil	--	--		*
Rheum palmatum	Rhizome	--	0.5		*
Rosmarinus officinalis	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 Rosmarinus officinalis L. from Egypt. Flavour and Fragrance J. 9: 29-33.
Rosmarinus officinalis	Resin, Exudate, Sap	--	--		*
Rosmarinus officinalis	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 Rosmarinus officinalis L. from Egypt. Flavour and Fragrance J. 9: 29-33.
Rosmarinus officinalis	Plant	--	--		*
Rosmarinus officinalis	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 Rosmarinus officinalis L. from Egypt. Flavour and Fragrance J. 9: 29-33.
Salvia officinalis	Plant	2.0	14.0	-0.46	*
Salvia officinalis	Leaf Essent. Oil	--	--		*
Salvia gilliesii	Shoot	--	36.0	-0.15	Velasco-Negueruela, A. et al. 1993. The Essential Oil of Salvia gilliesii Benth. J. Ess. Oil Res. 5: 319-320.
Salvia dorisiana	Shoot	5.0	5.6	-0.22	Tucker, A.O. & Maciarelo, M.J. 1994. The Essential Oil of Salvia dorisiana Standley. J. Ess. Oil Res. 6: 97-8.
Sassafras albidum	Leaf	0.3	5.0	-0.43	*
Satureja thymbra	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. Z. Lebensm Unters Forsch 197: 20-23.
Satureja montana	Plant	3.0	70.0	0.43	*
Scutellaria parvula	Plant	--	9.0	-0.54	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
Sideritis pauli	Shoot	--	6.0	-0.22	Burzaco, A., Velasco-Negueruela, A. and Perez-Alonso, M.J. 1992. Essential Oil Analysis of Sideritis pauli Pau. FFJ7: 47-8. 1992.
Stevia rebaudiana	Leaf	--	35.0	-0.09	Kinghorn, A. D. (Ed.) 2002. Medicinal and Aromatic Plants - Industrial Profiles. Stevia. The genus Stevia. Taylor & Francis. New York, NY. 211 pp.
Stevia rebaudiana	Flower	--	80.0		Kinghorn, A. D. (Ed.) 2002. Medicinal and Aromatic Plants - Industrial Profiles. Stevia. The genus Stevia. Taylor & Francis. New York, NY. 211 pp.
Syzygium aromaticum	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 &amp; Fragrance</i> , 12(1): 47-52.
<i>Tamarindus indica</i>	Fruit Essent. Oil	--	4000.0		*
<i>Tanacetum vulgare</i>	Plant	--	--		*
<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 kotschyianum</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 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 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>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 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 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 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 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>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. &amp; Fragr. J.</i> 10(6): 379-383.
<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 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. &amp; Fragr. J.</i> 10(6): 379-383.
<i>Thymus riararum</i>	Shoot	--	25.0	-0.18	Iglesias, J., Vila, R., Canigueral, 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 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. &amp; Frag. J.</i> 8: 331-7.
<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.
--------------------	------	----	-----	-------	---