

Dr. Duke's Phytochemical and Ethnobotanical Databases

List of Plants for GAMMA-CADINENE

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|----------------------------|------------------|---------|----------|----------------------|---|
| Achillea millefolium | Leaf | | | | -- |
| Agastache rugosa | Tissue Culture | | | | Jim Duke's personal files. |
| Ageratum conyzoides | Shoot | | 2520.0 | 5.377506816867179 | R. Vera, (1993); Chemical composition of the essential oil Ageratum conyzoides L. (Asteraceae) from Reunion, Flavour Fragr. J., Vol.8, 257-260. |
| Aloysia citrodora | Plant | 2.0 | 14.0 | -0.45984857009077795 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Alpinia officinarum | Rhizome | | | | Wealth of India. |
| Angelica archangelica | Root | 2.0 | 14.0 | 1.0 | -- |
| Angelica archangelica | Plant | | | | -- |
| Aniba rosaeodora | Plant | | | | -- |
| Artemisia herba-alba | Plant | | | | -- |
| Artemisia salsoloides | Shoot | | 50.0 | -0.1218975256470905 | V. Kaul, P. Weyerstahl, H. Wahlberg, H. Marschall, (1992); Volatile constituents of the essential oil and the absolute of Aremisia salsoloides Willd. from Ladakh, Flavour and Fragrance journal, Vol.7, 299-305. |
| Boswellia sacra | Essential Oil | | | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Callicarpa americana | Leaf | | 3.0 | -0.4545809267588206 | -- |
| Cananga odorata | Flower | | | | -- |
| Cannabis sativa | Essential Oil | | | | -- |
| Cannabis sativa | Plant | | | | Turner, C. E., El Sohly, M. A., Boeren, E. G. 1980. Constituents of Cannabis sativa L. XVII. A Review of the Natural Constituents. J Natural Products, 432: 169-234. |
| Chrysanthemum x morifolium | Plant | 20.0 | 75.0 | 0.5048602026128912 | Wealth of India. |
| Cinnamomum verum | Leaf | | 24.0 | -0.2185114629097392 | 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. |
| Cinnamomum verum | Leaf Essent. Oil | | | | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|------------------------|-------------------|---------|----------|----------------------|--|
| Citrus sinensis | Fruit | 1.0 | 2.0 | -0.9084313290424243 | -- |
| Citrus reticulata | Fruit | 1.0 | 2.0 | -0.9084313290424243 | -- |
| Citrus paradisi | Pericarp | | | | -- |
| Copaifera spp | Gum | | | | -- |
| Coridothymus capitatus | Shoot | | 0.1 | -0.23299885224282407 | 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. |
| Cymbopogon winterianus | Plant | 40.0 | 158.0 | 1.8174967294064082 | Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952. |
| Elsholtzia polystachya | Leaf | | 10.0 | -0.37589110547579346 | 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 Elsholtzia polystachya from Two Different Locations in India. Planta Medica 58: 376-379. |
| Elsholtzia pilosa | Shoot | | 36.0 | -0.15306823851964102 | -- |
| Elsholtzia polystachya | Leaf | | 10.0 | -0.37589110547579346 | 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 Elsholtzia polystachya from Two Different Locations in India. Planta Medica 58: 376-379. |
| Eucalyptus globulus | Fruit Essent. Oil | | | | -- |
| Eucalyptus globulus | Leaf Essent. Oil | | 1000.0 | -0.7812021248174129 | -- |
| Humulus lupulus | Fruit | | 60.0 | 0.07091843089178781 | -- |
| Hyssopus officinalis | Plant | | | | -- |
| Juniperus communis | Fruit | 16.0 | 164.0 | 1.8269938624979614 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Laurus nobilis | Leaf | | | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|--------------------------|------------------|---------|----------|----------------------|---|
| Lavandula angustifolia | Flower | | | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Levisticum officinale | Root | 0.0 | 5.0 | -1.0 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Lindera benzoin | Leaf | | 3.0 | -0.4545809267588206 | -- |
| Lycopus uniflorus | Plant | | 8.0 | -0.5547379575698274 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Melissa officinalis | Shoot | 1.0 | 25.0 | -0.17755951291950214 | Deutsche Apot. Ziti. 129(4):155-163. W. Schulze et al. Die Melisse. |
| Mentha spicata | Leaf | 2.0 | 33.0 | -0.11733883554584716 | -- |
| Mentha longifolia | Shoot | 1.0 | 75.0 | -0.06623553837467899 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Metrosideros sclerocarpa | Leaf | 53.0 | 212.0 | 1.894872308691561 | -- |
| Micromeria varia | Shoot | | 24.0 | -0.1797859924103986 | Pedro, L.G., et al. 1995. Composition of the Essential oil of Micromeria varia Benth. ssp. thymoides (Sol. ex Lowe) Perez var. thymoides, and endemic species of the Madeira Archipelago. flav. & Fragr. J. 10(3): 199-202. |
| Micromeria croatica | Leaf | | 360.0 | 3.5585999586755634 | Kirimer, N., Ozek, T., and Baser, K.H.C. 1991. Composition of the Essential Oil of Micromeria congesta. J. Ess. Oil Res., 3: 387-393. |
| Micromeria varia | Shoot | | 15.0 | -0.19982430782846677 | -- |
| Murraya koenigii | Leaf | | 0.0 | -0.4883051358801179 | -- |
| Ocimum basilicum | Plant | | | | Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705. |
| Ocimum basilicum | Essential Oil | | | | -- |
| Ocimum basilicum | Leaf Essent. Oil | | 22800.0 | 1.411528302781677 | -- |
| Opopanax chironium | Essential Oil | | | | -- |
| Origanum vulgare | Plant | | 0.0 | -0.6812571408752266 | 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. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|------------------------|--------------------|---------|----------|----------------------|--|
| Origanum vulgare | Plant | 50.0 | 200.0 | 2.481722441759754 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Origanum vulgare | Plant | | 7.0 | -0.5705528554830023 | 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 onites | Shoot | | 75.0 | -0.06623553837467899 | Biondi, D., Cianci, P., Geraci, C. and Ruberto, G. 1993. Antimicrobial Activity and Chemical Composition of Essential Oils from Sicilian Aromatic Plants. Flav. & Frag. J. 8: 331-7. |
| Origanum vulgare | Plant | | 0.0 | -0.6812571408752266 | 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 | Shoot | | 0.0 | -0.23322150019191376 | 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. |
| Origanum onites | Shoot | | 0.0 | -0.23322150019191376 | 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. |
| Origanum vulgare | Shoot Essent. Oil | 200.0 | 9700.0 | | -- |
| Origanum vulgare | Plant | | 0.0 | -0.6812571408752266 | 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 | -0.08104963530490027 | -- |
| Pimenta racemosa | Leaf | | | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|------------------------|---------------------|---------|----------|----------------------|--|
| Pimenta dioica | Leaf | | 50.0 | 0.07376501614150445 | -- |
| Pinus sylvestris | Leaf Essent. Oil | | 2500.0 | -0.6303261779642645 | -- |
| Pinus sylvestris | Essential Oil | | | | -- |
| Pinus sylvestris | Wood | | | | -- |
| 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. |
| Piper nigrum | Fruit | | | | -- |
| Piper nigrum | Fruit Essent. Oil | | | | -- |
| Rheum palmatum | Rhizome | | 0.5 | | -- |
| Rosmarinus officinalis | Leaf | | 5.0 | -0.4320981206779557 | Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaid, 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 | Leaf | | 1.0 | -0.4770637328396855 | Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaid, 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 | -0.4770637328396855 | Soliman, F.M., El-Kashoury, M.M., Fathy, M.M. and Gonaid, 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 | | | | -- |
| Salvia officinalis | Leaf Essent. Oil | | | | -- |
| Salvia dorisiana | Shoot | 5.0 | 5.6 | -0.2207532150428935 | Tucker, A.O. & Maciarelo, M.J. 1994. The Essential Oil of Salvia dorisiana Standley. J. Ess. Oil Res. 6: 97-8. |
| Salvia officinalis | Plant | 2.0 | 14.0 | -0.45984857009077795 | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------|-------------------|---------|----------|----------------------|--|
| Salvia gilliesii | Shoot | | 36.0 | -0.15306823851964102 | Velasco-Negueruela, A. et al. 1993. The Essential Oil of Salvia gilliesii Benth. J. Ess. Oil Res. 5: 319-320. |
| Sassafras albidum | Leaf | 0.3 | 5.0 | -0.4320981206779557 | -- |
| Satureja montana | Plant | 3.0 | 70.0 | 0.42578571304701673 | -- |
| Satureja thymbra | Shoot | | 37.0 | -0.15084175902874455 | 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. |
| Scutellaria parvula | Plant | | 9.0 | -0.5389230596566524 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Sideritis pauli | Shoot | | 6.0 | -0.21986262324653497 | Burzaco, A., Velasco-Negueruela, A. and Perez-Alonso, M.J. 1992. Essential Oil Analysis of Sideritis pauli Pau. FFJ7: 47-8. 1992. |
| 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. |
| Stevia rebaudiana | Leaf | | 35.0 | -0.09485602946498227 | 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 | | | | -- |
| Syzygium aromaticum | Leaf | 25.0 | 160.0 | 1.3103193505890738 | Charalambous, G. (Ed.). 1994. Spices, Herbs and Edible Fungi. Elsevier Science B. V. Amsterdam. 764 pp. |
| Tagetes lucida | Shoot | | 30.0 | -0.16642711546501981 | Bicchi, C., Fresia, M., Rubiolo, P., Monti, D., Franz, C., Goehler, I. 1997. Constituents of Tagetes lucida Cav. ssp. lucida essential oil. Flavor & Fragrance, 12(1): 47-52. |
| Tamarindus indica | Fruit Essent. Oil | | 4000.0 | | -- |
| Tanacetum vulgare | Plant | | | | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------------|-------|---------|----------|----------------------|---|
| Teucrium pseudoscorodonia | Shoot | | 0.56 | -0.23197467167701175 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |
| Teucrium micropodioides | Leaf | | 0.0 | -0.4883051358801179 | Arnold, N., Bellomaria, B., Velentini G. and Rapaia, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113. |
| Teucrium divaricatum | Leaf | | 0.0 | -0.4883051358801179 | Arnold, N., Bellomaria, B., Velentini G. and Rapaia, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113. |
| Teucrium oxylepis | Shoot | | 0.99 | -0.23101728549592623 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |
| Teucrium arduini | Shoot | | 68.0 | -0.08182089481095425 | Blazevic, N., Kalodera, Z., Petric, J., and Plazibat, M. 1992. Essential Oil Content and Composition of Teucrium arduini L. <i>J. Ess. Oil Res.</i> 4: 223-225. |
| Teucrium kotschyannum | Leaf | | 0.0 | -0.4883051358801179 | Arnold, N., Bellomaria, B., Velentini G. and Rapaia, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113. |
| Teucrium cyprum | Leaf | | 0.0 | -0.4883051358801179 | Arnold, N., Bellomaria, B., Velentini G. and Rapaia, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. <i>J. Ethnopharm.</i> 35: 105-113. |
| Teucrium scorodonia | Shoot | | 1.22 | -0.23050519521302001 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |
| Teucrium oxylepis | Shoot | | 7.9 | -0.21563231221383175 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|----------------------|-------|---------|----------|----------------------|--|
| Teucrium salviastrum | Shoot | | 1.9 | -0.22899118915921052 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |
| Teucrium gnaphalodes | Shoot | | 1.5 | -0.22988178095556908 | Perez-Alonso, M.J. Velasco-Negueruela, A. and Lopez-Saez, J.A. 1993. The Essential Oils of Two Iberian Teucrium Species. <i>J. Ess. Oil Res.</i> 5: 397-402. |
| Teucrium asiaticum | Shoot | | 0.1 | -0.23299885224282407 | Velasco-Negueruela, A. and Perez-Alonso, M.J. 1990. The Volatiles of Six Teucrium Species from the Iberian Peninsula and the Balearic Islands. <i>Phytochemistry</i> 29(4): 1165-9. |
| Teucrium polium | Shoot | | 0.5 | -0.23210826044646554 | Perez-Alonso, M.J. Velasco-Negueruela, A. and Lopez-Saez, J.A. 1993. The Essential Oils of Two Iberian Teucrium Species. <i>J. Ess. Oil Res.</i> 5: 397-402. |
| Teucrium arduini | Shoot | | 68.0 | -0.08182089481095425 | Blazevic, N., Kalodera, Z., Petricic, J., and Plazibat, M. 1992. Essential Oil Content and Composition of Teucrium arduini L. <i>J. Ess. Oil Res.</i> 4: 223-225. |
| Thymus mastichina | Plant | | 5.0 | -0.6021826513093521 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Thymus capitatus | Shoot | | 0.1 | -0.23299885224282407 | 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. |
| Thymus funkii | Shoot | | 16.0 | -0.1975978283375703 | Vila, R., et al. 1995. Composition and study of the variability of the essential oil of Thymus funkii Cousson. <i>Flav. & Fragr. J.</i> 10(6): 379-383. |
| Thymus riatarum | Shoot | | 25.0 | -0.17755951291950214 | Iglesias, J., Vila, R., Canigual, S., Bellakdhar, and Il Idrissi, A. 1991. Analysis of the Essential Oil of Thymus riatarum. <i>J. Ess. Oil Res.</i> 3: 43-4. |
| Thymus funkii | Shoot | | 16.0 | -0.1975978283375703 | Vila, R., et al. 1995. Composition and study of the variability of the essential oil of Thymus funkii Cousson. <i>Flav. & Fragr. J.</i> 10(6): 379-383. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|-----------------------|------|---------|----------|---------------------|---|
| Turnera diffusa | Leaf | | | | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979. |
| Valeriana officinalis | Root | | | | -- |
| Vitex agnus-castus | Leaf | | 0.2 | -0.4860568552720314 | 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. |