

Chemid

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*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 |
|-----------------------|------------------|---------|----------|----------------------|--|
| Aeolanthus myriantha | Flower | -- | -- | | Wealth of India. |
| Agathosma betulina | Leaf Essent. Oil | -- | -- | | -- |
| Aloysia citrodora | Plant | 52 | 364 | -0.20710755808907458 | -- |
| Artemisia dracunculus | Shoot | 670 | 6700 | 3.4616488061589012 | -- |
| Artemisia dracunculus | Leaf Essent. Oil | -- | 670000 | 1 | -- |
| Artemisia vulgaris | Plant | -- | -- | | 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. |
| Bursera delpechiana | Wood | -- | -- | | -- |
| Camellia sinensis | Leaf | -- | -- | | -- |
| Cananga odorata | Flower | -- | -- | | -- |
| Centella asiatica | Shoot | -- | -- | | Jim Duke's personal files. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------|----------------------|---------|----------|---------------------|---|
| Cinnamomum camphora | Leaf | -- | -- | | -- |
| Cinnamomum verum | Plant | -- | -- | | -- |
| Cinnamomum verum | Leaf | -- | 120 | 0.11698444324247205 | 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 | -- | -- | | -- |
| Cinnamomum verum | Stem Bark | -- | -- | | -- |
| Cistus ladaniferus | Leaf | 22 | 1540 | 5.043056359759002 | -- |
| Citrus aurantium | Leaf | 100 | 150 | 0.2210563851407086 | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979. |
| Citrus aurantium | Plant | -- | -- | | -- |
| Citrus limon | Leaf Essent. Oil | 8000 | 76000 | -1 | Jim Duke's personal files. |
| Citrus limon | Pericarp | -- | -- | | Jim Duke's personal files. |
| Citrus limon | Pericarp Essent. Oil | -- | -- | | Jim Duke's personal files. |
| Citrus limon | Petiole | -- | 41 | | -- |
| Citrus paradisi | Pericarp | -- | 3 | | -- |
| Citrus reticulata | Fruit | 0.4 | 0.8 | -0.5635185349637161 | -- |
| Citrus sinensis | Fruit | 0.7 | 1 | -0.5477997473775594 | -- |
| Coriandrum sativum | Fruit | -- | -- | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|------------------------|------------------|---------|----------|-----------------------|---|
| Coriandrum sativum | Seed Essent. Oil | -- | 6150 | 1 | -- |
| Coriandrum sativum | Essential Oil | -- | -- | | -- |
| Cymbopogon citratus | Plant | -- | -- | | Guenther, E., The Essential Oils, 6 volumes, D. van Nostrand, New York, 1948-1952. |
| Cymbopogon nardus | Plant | -- | -- | | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979. |
| Cymbopogon parkeri | Plant | 2059 | 6189 | 3.5540819224062026 | Rizk, A.F.M., The Phytochemistry of the Flora of Qatar, Scientific and Applied Research Centre, University of Qatar, Kingprint, Richmond, UK, 1986. |
| Cymbopogon winterianus | Plant | 308 | 539 | -0.09411044923299343 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Elettaria cardamomum | Fruit | 10 | 30 | 1.7314244526151554 | Duke, J. A. and duCellier, J. L. 1993. CRC Handbook of Alternative Cash Crops. CRC Press. Boca Raton, FL 33431. 536 pp. US \$312.50. |
| Elettaria cardamomum | Seed Essent. Oil | -- | 3000 | -1 | -- |
| Elsholtzia eriostachya | Shoot | 11 | 11 | -0.3120717669820309 | Pant, A.K., Dev, V., Parihar, R., Mathela, C.S., Rauscher, J., Vostrowsky, O. and Bestmann, H.J. 1992. The Essential Oil from Elsholtzia eriostachya var. pusilla. J. Ess. Oil Res. 4: 547-549. |
| Elsholtzia pilosa | Shoot | 1 | 1 | -0.3177134482096298 | -- |
| Eucalyptus behriana | Leaf | 85 | 85 | -0.004432822305470601 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|-------------------------|------|---------|----------|----------------------|---|
| Eucalyptus cuprea | Leaf | 6.4 | 6.4 | -0.27710131007885047 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus desquamata | Leaf | 0 | 15 | -0.2472673534013559 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus fasciculosa | Leaf | 0 | 1.3 | -0.2947935402015505 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus intertexta | Leaf | 5.5 | 5.5 | -0.2802234683357975 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus lansdowneana | Leaf | 9 | 9 | -0.2680817417810032 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus largisparsa | Leaf | 4.6 | 4.6 | -0.2833456265927445 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus leucoxydon | Leaf | 0 | 5.5 | -0.2802234683357975 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|-------------------------|------|---------|----------|----------------------|---|
| Eucalyptus melanophloia | Leaf | 0 | 0.8 | -0.29652807256652114 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus ochrophloia | Leaf | 0.5 | 0.5 | -0.29756879198550357 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus odorata | Leaf | 4.4 | 4.4 | -0.2840394395387329 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus populnea | Leaf | 5 | 5 | -0.2819580007007681 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus porosa | Leaf | 10 | 10 | -0.264612677051062 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus sparsa | Leaf | 25 | 25 | -0.2125767061019437 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |
| Eucalyptus viridis | Leaf | 0 | 0.5 | -0.29756879198550357 | Bignell, C.M., Dunlop, P.J., Brophy, J.J., and Jackson, J.F. 1995. Volatile Leaf Oils of Some South-western and Southern Australian Species of the Genus Eucalyptus. Part VI. Subgenus Symphyomyrtus, Section Adnataria. Flavour and Fragrance J. 10(6):359-364 |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------------|-------------------|---------|----------|---------------------|--|
| Helichrysum angustifolium | Plant | 225 | 1000 | 0.2035562203821693 | -- |
| Humulus lupulus | Fruit | -- | -- | | CRC Handbook of Medicinal Herbs and/or CRC Handbook of Proximate Analyses |
| Humulus lupulus | Essential Oil | -- | -- | | -- |
| Hypericum perforatum | Plant | 1 | 18 | -0.4305189847416696 | -- |
| Hyssopus officinalis | Flower | 0.8 | 8 | -1.1381482713893585 | Flavour and Fragrance Journal, 6: 72. |
| Hyssopus officinalis | Leaf | 0.8 | 9 | -0.2680817417810032 | Flavour and Fragrance Journal, 6: 72. |
| Jasminum officinale | Flower | -- | -- | | -- |
| Juniperus communis | Fruit | -- | -- | | -- |
| Juniperus communis | Fruit Essent. Oil | -- | -- | | -- |
| Laurus nobilis | Leaf | -- | -- | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Lavandula latifolia | Plant | 1 | 15 | -0.4324560780363453 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Lavandula x intermedia | Plant | -- | -- | | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Mangifera indica | Flower | -- | -- | | -- |
| Melaleuca alternifolia | Leaf | 0.001 | 0.001 | -0.2992998552857443 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Melia azedarach | Wood | -- | -- | | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------|-------------------|---------|----------|----------------------|---|
| Melissa officinalis | Shoot | 1 | 24 | -0.30473758138615226 | Deutsche Apot. Ztit. 129(4):155-163. W. Schulze et al. Die Melisse. |
| Mentha pulegium | Plant | 10 | 20 | -0.4292275892118858 | Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705. |
| Mentha pulegium | Essential Oil | -- | 1000 | -0.8213756657344466 | -- |
| Mentha x piperita | Tissue Culture | -- | -- | | -- |
| Monarda fistulosa | Plant | 15 | 310 | -0.24197523739323681 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| Myristica fragrans | Essential Oil | -- | -- | | -- |
| Myrtus communis | Plant | -- | -- | | -- |
| Nepeta cataria | Plant | -- | -- | | 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. |
| Nepeta cataria | Essential Oil | 276000 | 276000 | 1.407686585025154 | -- |
| Ocimum basilicum | Plant | 2.5 | 300 | -0.24843221504215574 | -- |
| Ocimum basilicum | Essential Oil | -- | 30000 | -0.586310919290707 | -- |
| Ocimum basilicum | Shoot Essent. Oil | -- | 700 | | -- |
| Ocimum tenuiflorum | Leaf | -- | -- | | =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 |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|------------------------|-----------------------|---------|----------|----------------------|---|
| Origanum vulgare | Plant | 0.9 | 0.9 | -0.4415604165213209 | 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 | 0.6 | 0.6 | -0.4417541258507886 | 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. |
| Pelargonium citrosum | Shoot | -- | 5 | -0.3154567757185902 | Matsuda, B. M., et al. 1996. Essential Oil Analysis and Field Evaluation of the Citrosum Plant 'Pelargonium citrosum' as a Repellent Against Populations of Aedes Mosquitoes. J. Am. Mosq. Contr. Assoc. 12(1):69-74. |
| Pelargonium roseum | Shoot | -- | 216 | -0.19641730181625255 | -- |
| Peumus boldus | Leaf | 0 | 12 | -0.2576745475911795 | -- |
| Pimenta racemosa | Leaf | 0 | 110 | 0.08229379594305986 | -- |
| Polianthes tuberosa | Flower | -- | -- | | -- |
| Robinia pseudoacacia | Flower | -- | -- | | -- |
| Rosa centifolia | Essential Oil | -- | -- | | -- |
| Rosa damascena | Essential Oil | -- | -- | | -- |
| Rosa gallica | Flower | 15 | 36 | -0.8503997242209429 | -- |
| Rosmarinus officinalis | Shoot | -- | 0 | -0.3182776163323897 | Tucker, A. O. and Maciarelo, M. J. 1998. The essential oils of some rosemary cultivars. Flavor and Fragrance Journal, 1: 137-142. 1986. |
| Salvia sclarea | Plant | 6 | 280 | -0.2613461703399936 | Flavour and Fragrance Journal, 6: 154. |
| Sambucus nigra | Flower Essent. Oil | -- | -- | | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|-----------------------|--------|---------|----------|-----------------------|--|
| Satureja hortensis | Plant | -- | -- | | List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979. |
| Satureja montana | Plant | 1 | 270 | -0.2678031479889125 | Stanic, G., Petricic, J., and Blazevic, N. 1991. Gas Chromatographic Investigations of Essential Oils of Satureja montana and Satureja subspicata from Yugoslavia. J. Ess. Oil Res., 3: 153-158. |
| Sideritis mugronensis | Flower | 160 | 220 | 1.0405193000286461 | Manez, S., Jimenez, A., and Villar, A. 1991. Volatiles of Sideritis mugronensis Flower and Leaf. J. Ess. Oil Res., 3: 395-397. |
| Sideritis mugronensis | Leaf | 55 | 80 | -0.021778145955176693 | Manez, S., Jimenez, A., and Villar, A. 1991. Volatiles of Sideritis mugronensis Flower and Leaf. J. Ess. Oil Res., 3: 395-397. |
| Sideritis scardica | Shoot | 65 | 65 | -0.28160668835299657 | Menkovic, N., et al. 1991. The Essential Oil of Sideritis scardica. Pl. Med. 57. Suppl. 2. pp. A137-A132. |
| Skimmia arborescens | Leaf | -- | -- | | ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes. |
| Tamarindus indica | Fruit | -- | -- | | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| Telosma cordata | Flower | 211 | 211 | 0.9480286955816554 | K. Furukawa, T. Arai, S. Hashimoto, (1993); Volatile components of Telosma cordata Merrill flowers, Flavour Fragr. J., Vol 8, 221-223. |
| Teucrium cyprium | Leaf | 50 | 50 | -0.12585008785341326 | Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. J. Ethnopharm. 35: 105-113. |
| Teucrium divaricatum | Leaf | 0 | 0 | -0.2993033243504742 | Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. J. Ethnopharm. 35: 105-113. |
| Teucrium kotschyianum | Leaf | 0 | 0 | -0.2993033243504742 | Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. J. Ethnopharm. 35: 105-113. |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|-------------------------|-------------|---------|----------|-----------------------|--|
| Teucrium micropodioides | Leaf | 80 | 80 | -0.021778145955176693 | Arnold, N., Bellomaria, B., Velentini G. and Rafaiani, S.M. 1991. Comparative Study on Essential Oil of Some Teucrium Species from Cyprus. J. Ethnopharm. 35: 105-113. |
| Thymus funkii | Shoot | 16 | 16 | -0.30925092636823137 | Vila, R., et al. 1995. Composition and study of the variability of the essential oil of Thymus funkii Cousson. Flav. & Fragr. J. 10(6): 379-383. |
| Thymus funkii | Shoot | -- | 16 | -0.30925092636823137 | Vila, R., et al. 1995. Composition and study of the variability of the essential oil of Thymus funkii Cousson. Flav. & Fragr. J. 10(6): 379-383. |
| Thymus longicaulis | Shoot | 140 | 140 | -0.2392940791460045 | Baser, K.H.C., Ozek, T., Kirimer, N. and Tumen, G. 1993. The Occurrence of Three Chemotypes of Thymus longicaulis C. Presl subsp. longicaulis in the same Population. J. Ess. Oil Res. 5: 291-5. |
| Thymus longicaulis | Shoot | -- | 0 | -0.3182776163323897 | Baser, K.H.C., Ozek, T., Kirimer, N. and Tumen, G. 1993. The Occurrence of Three Chemotypes of Thymus longicaulis C. Presl subsp. longicaulis in the same Population. J. Ess. Oil Res. 5: 291-5. |
| Thymus longicaulis | Shoot | -- | 140 | -0.2392940791460045 | Baser, K.H.C., Ozek, T., Kirimer, N. and Tumen, G. 1993. The Occurrence of Three Chemotypes of Thymus longicaulis C. Presl subsp. longicaulis in the same Population. J. Ess. Oil Res. 5: 291-5. |
| Thymus x citriodorus | Plant | 280 | 280 | -0.2613461703399936 | Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229. |
| Tilia sp. | Flower | -- | -- | | -- |
| Vaccinium corymbosum | Fruit | 0.02 | 0.08 | -0.62010617027388 | -- |
| Vaccinium myrtillus | Fruit Juice | 0.002 | 0.002 | | -- |
| Vitis vinifera | Leaf | -- | -- | | -- |
| Zingiber officinale | Rhizome | -- | -- | | -- |

| Plant | Part | Low PPM | High PPM | StdDev | Reference |
|---------------------|------------------------|----------------|-----------------|---------------|------------------|
| Zingiber officinale | Rhizome Essent. Oil | -- | -- | | -- |