

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in Citrus aurantiifolia

| Activities Count | Chemical   | Plant Part | Low PPM | High PPM | StdDev               | Reference Citation  |
|------------------|--|------------|---------|----------|----------------------|---|
| 0                | 1,4-CINEOLE  | Fruit      |         | 180.0    | -0.9430816794645105  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 67               | 1,8-CINEOLE  | Fruit      |         | 70.0     | -0.41945193577446593 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | 2,2-DIMETHYL-5(-1)-METHYL-1-PROPENYL)TETRAHYDROFURAN | Plant      |         | 30.0     |                      | --  |
| 0                | 2,6,6-TRIMETHYL-2-VINYL-TETRAHYDROPYRAN              | Fruit      |         | 16.0     |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | 5-GERANOXY-7-METHOXYCOUMARIN                         | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 10               | 5-METHOXY-PSORALEN                                   | Fruit      |         |          |                      | --  |
| 1                | 6,7-DIMETHOXYCOUMARIN                                | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | 8-GERAN-OXYPsorALEN                                  | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | ALPHA,ALPHA-P-TRIMETHYLBENZYL-ALCOHOL                | Fruit      |         | 60.0     |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | ALPHA-ALPHA-P-TRIMETHYL-BENZYL                       | Plant      |         |          |                      | --  |
| 0                | ALPHA-ALPHA-P-TRIMETHYL-BENZYL-ALCOHOL-ETHER         | Fruit      |         | 20.0     |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | ALPHA-BERGAMOTENE                                    | Fruit      | 50.0    | 250.0    | 1.0                  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | ALPHA-BISABOLENE                                     | Fruit      | 250.0   | 400.0    |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |

| Activities Count | Chemical                 | Plant Part | Low PPM | High PPM | StdDev                | Reference Citation   |
|------------------|--------------------------|------------|---------|----------|-----------------------|--|
| 15               | ALPHA-LINOLENIC-ACID     | Fruit      | 190.0   | 1615.0   | -0.42109633411209685  | USDA's Ag Handbook 8 and sequelae)   |
| 0                | ALPHA-P-DIMETHYL-STYRENE | Fruit      |         | 50.0     | 1.2787240261820119    | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 11               | ALPHA-PHELLANDRENE       | Fruit      |         | 20.0     | -0.5665622033948856   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 28               | ALPHA-PINENE             | Fruit      | 80.0    | 240.0    | -0.6561241736048067   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 13               | ALPHA-TERPINENE          | Fruit      |         | 80.0     | -0.0127221438562562   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 23               | ALPHA-TERPINEOL          | Fruit      | 30.0    | 590.0    | 0.0769717277948267    | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 0                | ALPHA-THUJENE            | Fruit      |         | 40.0     | -0.5594757607508909   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 112              | ASCORBIC-ACID            | Fruit      | 291.0   | 4444.0   | -0.008174449784343766 | --   |
| 0                | ASH                      | Fruit      | 2000.0  | 3800.0   | -1.3689254367339239   | --   |
| 2                | BERGAMOTTIN              | Fruit      |         |          |                       | --   |
| 26               | BERGAPTEN                | Fruit      |         |          |                       | --   |
| 6                | BETA-BISABOLENE          | Fruit      |         | 90.0     | -0.8555004504472944   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 53               | BETA-CAROTENE            | Fruit      | 0.0     | 2.0      | -0.14693466516508752  | --   |
| 3                | BETA-PHELLANDRENE        | Fruit      |         | 90.0     | -0.45703003116030555  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 13               | BETA-PINENE              | Fruit      | 90.0    | 1190.0   | -0.2597183887550868   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 3                | BETA-TERPINEOL           | Fruit      |         | 70.0     | 1.0                   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |

| Activities Count | Chemical          | Plant Part | Low PPM | High PPM | StdDev               | Reference Citation  |
|------------------|-------------------|------------|---------|----------|----------------------|---|
| 35               | BORNEOL           | Fruit      |         | 60.0     | -0.7063054263490658  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 28               | CALCIUM           | Fruit      | 90.0    | 3084.0   | -0.17821309971085345 | --  |
| 9                | CAMPHENE          | Fruit      | 50.0    | 80.0     | -0.3186300658171268  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | CARBOHYDRATES     | Fruit      | 59000.0 | 895900.0 | 0.6043670496771566   | --  |
| 31               | CARYOPHYLLENE     | Fruit      | 30.0    | 250.0    | -0.3885919789508993  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 53               | CITRAL            | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 23               | CITRIC-ACID       | Fruit      |         | 800.0    | -0.6385696610504172  | --  |
| 20               | CITRONELLAL       | Fruit      |         | 140.0    | 0.8579977788182253   | --  |
| 12               | COPPER            | Fruit      | 1.0     | 6.0      | -0.5307153602504487  | USDA's Ag Handbook 8 and sequelae)  |
| 0                | DECANAL           | Fruit      | 9.0     | 10.0     | -0.798910393394575   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 2                | DECANOL           | Fruit      |         | 6.0      | 1.0                  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 1                | DECYL-ACETATE     | Fruit      |         | 10.0     | 1.0                  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | DIMETHOXYCOUMARIN | Fruit      |         |          |                      | --  |
| 2                | DODECANAL         | Fruit      |         | 1.0      | -1.3678940092779692  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | EO                | Plant      | 3000.0  | 10000.0  | 0.019853678703787233 | --  |
| 0                | EO                | Pt         |         | 3100.0   | -1.0                 | --  |
| 0                | FAT               | Fruit      | 2000.0  | 26700.0  | -0.4373196374673332  | --  |

| Activities Count | Chemical        | Plant Part | Low PPM | High PPM | StdDev               | Reference Citation  |
|------------------|-----------------|------------|---------|----------|----------------------|---|
| 0                | FENCHOL         | Fruit      |         | 120.0    |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 15               | FIBER           | Fruit      | 3000.0  | 67000.0  | -0.7046822298607128  | --  |
| 0                | FOLUENE         | Plant      |         |          |                      | --  |
| 6                | FURFURAL        | Fruit      | 0.0     | 1.0      | -0.7089815020862192  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | GAMMA-SELINENE  | Fruit      |         | 20.0     | 1.0                  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 11               | GAMMA-TERPINENE | Fruit      | 60.0    | 2170.0   | -0.25199677041945456 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 13               | GERANIAL        | Fruit      | 10.0    | 680.0    | 0.9705306013879492   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 5                | GERANYL-ACETATE | Fruit      | 30.0    | 310.0    | -0.4216405420735619  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | GERMACRENE-B    | Fruit      |         | 3500.0   | 1.0                  | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 25               | IMPERATORIN     | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 6                | IRON            | Fruit      | 0.0     | 67.0     | -0.26171724059735857 | --  |
| 8                | ISOIMPERATORIN  | Fruit      |         |          |                      | --  |
| 15               | ISOPIMPINELLIN  | Fruit      |         |          |                      | --  |
| 0                | LIMETTIN        | Fruit      |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 60               | LIMONENE        | Fruit      | 4700.0  | 7500.0   | 0.3254224854124864   | --  |
| 0                | LINALOL         | Fruit      | 9.0     | 20.0     | -0.636217155719963   | --  |

| Activities Count | Chemical         | Plant Part | Low PPM | High PPM | StdDev               | Reference Citation   |
|------------------|------------------|------------|---------|----------|----------------------|--|
| 53               | LINALOOL         | Fruit      | 9.0     | 20.0     | -0.5801815825068863  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 27               | LINOLEIC-ACID    | Fruit      | 360.0   | 3060.0   | -0.31222791202233824 | USDA's Ag Handbook 8 and sequelae)   |
| 4                | LYSINE           | Fruit      | 140.0   | 1190.0   | -0.7574189341525978  | USDA's Ag Handbook 8 and sequelae)   |
| 15               | MALIC-ACID       | Fruit      |         | 2000.0   | -0.8215787018847368  | --   |
| 1                | MALONIC-ACID     | Fruit      |         |          |                      | --   |
| 15               | METHIONINE       | Fruit      | 20.0    | 170.0    | -0.9710077785150063  | USDA's Ag Handbook 8 and sequelae)   |
| 0                | METHYL-HEPTENONE | Fruit      |         | 1.0      |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 22               | MYRCENE          | Fruit      | 70.0    | 1030.0   | -0.22373470605849002 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 6                | MYRISTIC-ACID    | Fruit      | 10.0    | 85.0     | -0.26513375553502133 | USDA's Ag Handbook 8 and sequelae)   |
| 4                | NERAL            | Fruit      | 40.0    | 460.0    | 1.5487945633363407   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 5                | NERYL-ACETATE    | Fruit      | 1.0     | 310.0    | 1.7013381797018676   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 2                | NERYL-FORMATE    | Fruit      |         | 20.0     | 1.0                  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 39               | NIACIN           | Fruit      | 1.0     | 29.0     | -0.4237487633855353  | --   |
| 0                | NONANAL          | Fruit      |         | 20.0     | 0.043299578832457684 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 0                | NONANE           | Fruit      |         | 6.0      |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 0                | NONANOL          | Fruit      | 1.0     | 10.0     |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |

| Activities Count | Chemical              | Plant Part | Low PPM | High PPM | StdDev                | Reference Citation  |
|------------------|-----------------------|------------|---------|----------|-----------------------|---|
| 3                | NOOTKATONE            | Fruit      |         | 1.0      |                       | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | OCTANAL               | Fruit      | 30.0    | 80.0     | 1.4102204808154215    | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 5                | OCTANOIC-ACID         | Fruit      |         | 2.0      | -0.5716518444101517   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 0                | OCTANOL               | Fruit      |         | 1.0      | 1.4142135623730945    | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 18               | OLEIC-ACID            | Plant      | 160.0   | 1360.0   | -0.6725782785123336   | --  |
| 9                | OXALIC-ACID           | Fruit      |         |          |                       | --  |
| 2                | OXYPEUCEDANIN-HYDRATE | Fruit      |         |          |                       | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 16               | P-CYMENE              | Fruit      | 50.0    | 1160.0   | -0.4262066202868709   | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.                                  |
| 13               | PALMITIC-ACID         | Fruit      | 10.0    | 85.0     | -0.36421233986648255  | USDA's Ag Handbook 8 and sequelae)  |
| 2                | PALMITOLEIC-ACID      | Fruit      | 30.0    | 255.0    | -0.2988244533847072   | USDA's Ag Handbook 8 and sequelae)  |
| 11               | PANTOTHENIC-ACID      | Fruit      | 2.0     | 18.0     | -0.006662132557618176 | USDA's Ag Handbook 8 and sequelae)  |
| 11               | PERILLALDEHYDE        | Fruit      |         |          |                       | --  |
| 2                | PHELLOPTERIN          | Fruit      |         |          |                       | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | PHLOBOTANNIN          | Fruit      |         |          |                       | --  |
| 4                | PHOSPHORUS            | Fruit      | 110.0   | 2000.0   | -0.3693459584082821   | --  |
| 0                | POLYHYDROXYPHLOBAN    | Fruit      |         |          |                       | --  |
| 14               | POTASSIUM             | Fruit      | 820.0   | 9533.0   | -0.7417192681764139   | --  |
| 0                | PROTEIN               | Fruit      | 4000.0  | 65000.0  | -0.5965222785125606   | --  |

| Activities Count | Chemical            | Plant Part | Low PPM  | High PPM | StdDev               | Reference Citation   |
|------------------|---------------------|------------|----------|----------|----------------------|--|
| 1                | QUINIC-ACID         | Fruit      |          |          |                      | --   |
| 15               | RIBOFLAVIN          | Fruit      | 0.0      | 2.0      | -0.6444915447424321  | --   |
| 5                | SABINENE            | Fruit      |          | 160.0    | -0.4853487568252894  | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 1                | SODIUM              | Fruit      | 10.0     | 222.0    | -0.16289877578023426 | --   |
| 8                | STEARIC-ACID        | Fruit      | 10.0     | 85.0     | -0.2735844169584349  | --   |
| 7                | SUCCINIC-ACID       | Fruit      |          |          |                      | --   |
| 0                | SUGARS              | Fruit      | 0.0      | 17400.0  | -0.8123734149384401  | --   |
| 0                | TERPINEN-1-OL       | Fruit      |          | 70.0     |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 23               | TERPINEN-4-OL       | Fruit      |          | 166.0    | -0.33320430132175255 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 9                | TERPINOLENE         | Fruit      | 60.0     | 120.0    | 0.047285066012756526 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 31               | THIAMIN             | Fruit      | 0.0      | 3.0      | -0.29859918253223444 | --   |
| 0                | THYMYL-METHYL-ETHER | Fruit      |          | 2.0      | -1.0                 | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 0                | TRIDECANE           | Fruit      |          | 2.0      |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 29               | TRYPTOPHAN          | Fruit      | 30.0     | 255.0    | -0.8356780113999882  | USDA's Ag Handbook 8 and sequelae)   |
| 0                | UNDECANE            | Fruit      |          | 3.0      |                      | Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980. |
| 0                | WATER               | Fruit      | 877000.0 | 911000.0 | 0.6105778416650238   | --   |
| 0                | XANTHOPHYLLS        | Fruit      | 11.0     | 19.0     | -1.0                 | --   |

| Activities Count | Chemical    | Plant Part | Low PPM | High PPM | StdDev              | Reference Citation   |
|------------------|-------------|------------|---------|----------|---------------------|--|
| 1                | XANTHYLETIN | Plant      |         |          |                     | Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp. |
| 77               | ZINC        | Fruit      | 1.0     | 9.0      | -0.6408757503171868 | USDA's Ag Handbook 8 and sequelae)   |