

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Echinacea angustifolia*

| Activities Count | Chemical  | Plant Part | Low PPM | High PPM | StdDev              | Reference Citation  |
|------------------|---|------------|---------|----------|---------------------|---|
| 1                | 1-PENTADECENE                                   | Root       |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | 2-METHYLTETRADECA-5,12-DIENE                    | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | 2-METHYLTETRADECA-6,12-DIENE                    | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | 3,4-EPOXY-TRIDECA-1,5-DIENE-7,9,11-TRIYNE       | Stem       |         | 100.0    |                     | Jim Duke's personal files.  |
| 0                | 3,4-EPOXY-TRIDECA-1,5-DIENE-7,9,11-TRIYNE       | Flower     |         |          |                     | Jim Duke's personal files.  |
| 0                | 3,4-EPOXY-TRIDECA-1,5-DIENE-7,9,11-TRIYNE       | Root       | 8000.0  | 10000.0  | -1.0                | Jim Duke's personal files.  |
| 0                | 8-HYDROXY-PENTADEC-TRANS-9-ENE-11,13-DIYN-2-ONE | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | 8-HYDROXY-PENTADEC-TRANS-9-EN-11,13-DIYN-2-ONE  | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | ALKANES(C10-C33)                                | Leaf       |         |          |                     | Jim Duke's personal files.  |
| 0                | ALKYLAMIDES                                     | Root       |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 101              | APIGENIN  | Leaf       |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | BEHENIC-ACID-ETHYL-ESTER                        | Root       |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 47               | BETA-SITOSTEROL                                 | Root       |         |          |                     | --  |
| 14               | BETAINE   | Root       |         | 1000.0   | -0.2884566503805383 | Jim Duke's personal files.  |
| 35               | BORNEOL   | Shoot      |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |

| Activities Count | Chemical                        | Plant Part | Low PPM | High PPM | StdDev | Reference Citation  |
|------------------|---------------------------------|------------|---------|----------|--------|---|
| 12               | BORNYL-ACETATE                  | Shoot      |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 3                | CAFTARIC-ACID                   | Root       |         |          |        | Jim Duke's personal files.  |
| 31               | CARYOPHYLENE                    | Shoot      |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 6                | CARYOPHYLENE-EPOXIDE            | Shoot      |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | CEROTIC-ACID                    | Root       |         |          |        | --  |
| 0                | CHICHORIC-ACID                  | Flower     |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID                  | Leaf       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID                  | Stem       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID                  | Root       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-DIMETHYL-ETHER   | Flower     |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-DIMETHYL-ETHER   | Leaf       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-DIMETHYL-ETHER   | Stem       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-DIMETHYL-ETHER   | Root       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-MONOMETHYL-ETHER | Flower     |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-MONOMETHYL-ETHER | Leaf       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-MONOMETHYL-ETHER | Stem       |         |          |        | Jim Duke's personal files.  |
| 0                | CHICHORIC-ACID-MONOMETHYL-ETHER | Root       |         |          |        | Jim Duke's personal files.  |
| 10               | CHICORIC-ACID                   | Root       |         |          |        | Jim Duke's personal files.  |
| 77               | CHLOROGENIC-ACID                | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |

| Activities Count | Chemical  | Plant Part | Low PPM | High PPM | StdDev             | Reference Citation  |
|------------------|---|------------|---------|----------|--------------------|---|
| 14               | CICHORIC-ACID   | Root       |         |          |                    | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 23               | CYNARIN   | Root       |         |          |                    | --  |
| 0                | DOCECA-2E,4E,8Z,10E/Z-TETRAENOIC-ACID-ISOBUTYLAMIDES                | Shoot      |         |          |                    | Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.                         |
| 0                | DOCECA-2E,4E,8Z,10E/Z-TETRAENOIC-ACID-ISOBUTYLAMIDES                | Root       |         |          |                    | Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.                         |
| 0                | DODECA-2,4,8,10-TETRAEN-1-OIC-ACID-ISOBUTYLAMIDE                    | Root       |         | 298.5    | 0.9999999999999996 | Jim Duke's personal files.  |
| 0                | DODECA-2,4-DIEN-1-YL-ISOVALERATE                                    | Root       |         |          |                    | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | DODECA-2-TRANS-4-CIS-10-CIS-TRIEN-8-YNOIC-ACID-ISOBUTYLAMIDE        | Root       |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-CIS-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE          | Shoot      |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-CIS-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE          | Root       |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-TRANS-10-CIS-TRIEN-8-YNOIC-ACID-ISOBUTYLAMIDE      | Shoot      |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-TRANS-8-CIS-10-CIS-TETRAENOIC-ACID-ISOBUTYLAMIDE   | Shoot      |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-TRANS-8-CIS-10-CIS-TETRAENOIC-ACID-ISOBUTYLAMIDE   | Root       |         |          |                    | Jim Duke's personal files.  |
| 0                | DODECA-2-TRANS-4-TRANS-8-CIS-10-TRANS-TETRAENOIC-ACID-ISOBUTYLAMIDE | Shoot      |         |          |                    | Jim Duke's personal files.  |

| Activities Count | Chemical  | Plant Part     | Low PPM | High PPM | StdDev             | Reference Citation         |
|------------------|---|----------------|---------|----------|--------------------|----------------------------|
| 0                | DODECA-2-TRANS-4-TRANS-8-CIS-10-TRANS-TETRAENOIC-ACID-ISOBUTYLAMIDE | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-2-TRANS-4-TRANS-8-CIS-TRIENOIC-ACID-ISOBUTYLAMIDE            | Shoot          |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-2-TRANS-4-TRANS-DIENOIC-ACID-ISOBUTYLAMIDE                   | Shoot          |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-2-TRANS-4-TRANS-DIENOIC-ACID-ISOBUTYLAMIDE                   | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-2-TRANS-ENE-8,10-DIYNOIC-ACID-2-METHYL-BUTYLAMIDE            | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-2-TRANS-ENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE                  | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-CIS-2-TRANS-4-DIENE-8,10-DIYN-1-OIC-ACID-ISOBUTYLAMIDE       | Root           |         | 298.5    | 0.9999999999999996 | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-CIS-4-CIS-10-TRIEN-8-YNOIC-ACID-ISOBUTYLAMIDE        | Root           |         | 13.7     |                    | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-CIS-4-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE          | Root           |         | 6.8      | 1.0000000000000002 | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-ENE-8,10-DIYNOIC-ACID-2-METHYL-BUTYLAMIDE            | Root           |         | 6.8      |                    | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-ENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE                  | Root           |         | 241.3    |                    | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-TRANS-4-CIS-8-CIS-10-TETRAENOIC-ACID-ISOBUTYLAMIDE   | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-TRANS-4-CIS-8-TRANS-10-TETRAENOIC-ACID-ISOBUTYLAMIDE | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | DODECA-TRANS-2-TRANS-4-DIENOIC-ACID-ISOBUTYLAMIDE                   | Root           |         | 103.4    |                    | Jim Duke's personal files. |
| 0                | ECHINACEA-FACTOR-A  | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | ECHINACEA-FACTOR-B  | Root           |         |          |                    | Jim Duke's personal files. |
| 0                | ECHINACEA-POLYSACCHARIDE  | Tissue Culture |         |          |                    | Jim Duke's personal files. |

| Activities Count | Chemical  | Plant Part       | Low PPM | High PPM | StdDev               | Reference Citation  |
|------------------|---|------------------|---------|----------|----------------------|---|
| 3                | ECHINACEIN  | Root             | 4.0     | 100.0    | 0.7071067811865475   | --  |
| 1                | ECHINACIN-B   | Root             |         |          |                      | Jim Duke's personal files.  |
| 10               | ECHINACOSIDE  | Flower           | 1000.0  | 10000.0  |                      | Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.                         |
| 10               | ECHINACOSIDE  | Root             | 3000.0  | 13000.0  | -1.414213562373095   | --  |
| 0                | ECHINACOSIDE-1  | Root             |         |          |                      | Jim Duke's personal files.  |
| 0                | ECHINACOSIDE-2  | Root             |         |          |                      | Jim Duke's personal files.  |
| 2                | ECHINOLONE  | Root             |         | 3.0      |                      | Jim Duke's personal files.  |
| 0                | EO  | Root             | 400.0   | 13000.0  | -0.04245829959638836 | --  |
| 0                | FRUCTANS  | Root             |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 2                | GERMACRENE-D  | Shoot            |         |          |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | GLYCINE-BETAINE   | Leaf             |         | 1130.0   | -1.0                 | Jim Duke's personal files.  |
| 0                | GLYCINE-BETAINE   | Flower           |         | 8050.0   | -1.0                 | Jim Duke's personal files.  |
| 0                | GLYCINE-BETAINE   | Root             |         | 3100.0   | -1.0                 | Jim Duke's personal files.  |
| 0                | GLYCINE-BETAINE   | Stem             |         | 4900.0   | -1.0                 | Jim Duke's personal files.  |
| 0                | HEXADECA-2-TRANS-9-CIS-DIENE-12,14-DIYNOIC-ACID-ISOBUTYLAMIDE | Root             |         |          |                      | Jim Duke's personal files.  |
| 0                | HEXADECA-TRANS-2-CIS-9-DIENE-12,14-DIYNOIC-ACID-ISOBUTYLAMIDE | Root             |         | 6.8      |                      | Jim Duke's personal files.  |
| 0                | HYDROCARBONS  | Root Essent. Oil |         |          |                      | Jim Duke's personal files.  |
| 19               | INULIN  | Root             | 50000.0 | 90000.0  | -0.9004071864868817  | --  |
| 0                | ISOBUTYLAMIDES  | Root             | 90.0    | 1510.0   |                      | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |

| Activities Count | Chemical             | Plant Part | Low PPM | High PPM | StdDev | Reference Citation  |
|------------------|----------------------|------------|---------|----------|--------|---|
| 4                | ISOCHLOROGENIC-ACID  | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 11               | ISORHAMNETIN         | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | ISOTUSSILAGIN        | Plant      |         |          |        | Jim Duke's personal files.  |
| 0                | ISOTUSSILAGINE       | Root       | 15.0    | 60.0     |        | Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.                         |
| 75               | KAEMPFEROL           | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | KAEMPFEROL-GLUCOSIDE | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 27               | LINOLEIC-ACID        | Root       |         |          |        | --  |
| 0                | LINOLENIC-ACID       | Root       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 78               | LUTEOLIN             | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 7                | LUTEOLIN-7-GLUCOSIDE | Leaf       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 6                | MYRISTIC-ACID        | Root       |         |          |        | --  |
| 0                | N-TRIACONTANOL       | Root       |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 18               | OLEIC-ACID           | Root       |         |          |        | --  |

| Activities Count | Chemical   | Plant Part       | Low PPM | High PPM | StdDev | Reference Citation  |
|------------------|--|------------------|---------|----------|--------|---|
| 13               | PALMITIC-ACID  | Root             |         |          |        | --  |
| 0                | PENTA-(1,8Z)-DIENE   | Root             |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | PENTADEC-1-ENE   | Root             |         |          |        | Jim Duke's personal files.  |
| 0                | PENTADEC-1-ENE   | Root Essent. Oil |         |          |        | Jim Duke's personal files.  |
| 0                | PENTADEC-8-EN-2-ONE  | Root             | 3600.0  | 4000.0   |        | Jim Duke's personal files.  |
| 0                | PENTADECA-1-CIS-8-DIENE  | Root Essent. Oil |         |          |        | Jim Duke's personal files.  |
| 0                | PENTADECA-2-TRANS-9-CIS-DIENE-12,14-DIYNOIC-ACID-ISOBUTYLAMIDE | Root             |         |          |        | Jim Duke's personal files.  |
| 0                | PENTADECA-8-EN-2-ONE   | Shoot            |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | PENTADECA-TRANS-2-CIS-9-DIENE-12,14-DIYNOIC-ACID-ISOBUTYLAMIDE | Root             |         | 13.7     |        | Jim Duke's personal files.  |
| 0                | PENTADECA-TRANS-9-CIS-13-DIEN-11-YN                            | Root             |         |          |        | Jim Duke's personal files.  |
| 0                | QUERCETAGETIN-7-GLUCOSIDE                                      | Leaf             |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 176              | QUERCETIN  | Leaf             |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 4                | RUTOSIDE   | Leaf             |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 0                | SITOSTEROL-3-O-BETA-D-GLUCOSIDE                                | Leaf             |         |          |        | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |

| Activities Count | Chemical   | Plant Part | Low PPM | High PPM | StdDev              | Reference Citation  |
|------------------|--|------------|---------|----------|---------------------|---|
| 12               | STIGMASTEROL   | Root       |         |          |                     | Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp. |
| 14               | SUCROSE  | Root       |         | 69200.0  | -0.5583180295224436 | Jim Duke's personal files.  |
| 0                | TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE                             | Stem       |         | 500.0    | 1.0                 | Jim Duke's personal files.  |
| 0                | TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE                             | Flower     |         | 800.0    | -1.0                | Jim Duke's personal files.  |
| 0                | TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE                             | Root       | 3.0     | 9000.0   | 0.6386915774792771  | Jim Duke's personal files.  |
| 0                | TRIDECA-1,3-DIENE-5,7,9,11-TETRAYNE                          | Root       |         | 100.0    |                     | Jim Duke's personal files.  |
| 0                | TRIDECA-1-11-DIENE-3-5-7-9-TETRAYNE                          | Root       |         | 100.0    | -0.5513525242543177 | Jim Duke's personal files.  |
| 0                | TRIDECA-2-TRANS-7-CIS-DIENE-10,12-DIYNOIC-ACID-ISOBUTYLAMINE | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | TRIDECA-8,10,12-TRIENE-2,4,6-TRIYNE                          | Flower     |         |          |                     | Jim Duke's personal files.  |
| 0                | TRIDECA-8,10,12-TRIENE-2,4,6-TRIYNE                          | Root       | 100.0   | 200.0    | -1.0                | Jim Duke's personal files.  |
| 0                | TRIDECA-TRANS-2-CIS-7-DIENE-10,12-DIYNOIC-ACID-ISOBUTYLAMIDE | Root       |         | 6.8      | 1.0000000000000007  | Jim Duke's personal files.  |
| 0                | TUSSILAGIN   | Plant      |         |          |                     | Jim Duke's personal files.  |
| 1                | TUSSILAGINE  | Root       | 15.0    | 60.0     |                     | Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.                         |
| 0                | UNDECA-2-CIS-4-TRANS-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE   | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | UNDECA-2-CIS-ENE-8,10-DIYNOIC-ACID-2-METHYLBUTYLAMIDE        | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | UNDECA-2-CIS-ENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE             | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | UNDECA-2-TRANS-4-CIS-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE         | Root       |         |          |                     | Jim Duke's personal files.  |
| 0                | UNDECA-2-TRANS-4-CIS-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE   | Shoot      |         |          |                     | Jim Duke's personal files.  |



| Activities Count | Chemical   | Plant Part | Low PPM | High PPM | StdDev             | Refernce Citation          |
|------------------|--|------------|---------|----------|--------------------|----------------------------|
| 0                | UNDECA-2-TRANS-ENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE           | Root       |         |          |                    | Jim Duke's personal files. |
| 0                | UNDECA-CIS-2,8,10-DIYNOIC-ACID-ISOBUTYLAMIDE                 | Root       |         | 31.0     |                    | Jim Duke's personal files. |
| 0                | UNDECA-CIS-2-ENE-8,10-DIYNOIC-ACID-2-METHYL-BUTYLAMIDE       | Root       |         | 6.8      |                    | Jim Duke's personal files. |
| 0                | UNDECA-CIS-2-ENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE             | Root       |         | 103.4    |                    | Jim Duke's personal files. |
| 0                | UNDECA-CIS-2-TRANS-4-DIENE-2,4-DIYN-1-OIC-ACID-ISOBUTYLAMIDE | Root       |         | 298.5    | 0.9999999999999996 | Jim Duke's personal files. |
| 0                | UNDECA-CIS-2-TRANS-4-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE   | Root       |         | 13.7     | 1.0                | Jim Duke's personal files. |
| 0                | UNDECA-TRANS-2-CIS-4-DIENE-8,10-DIYNOIC-ACID-ISOBUTYLAMIDE   | Root       |         | 10.3     | 1.0000000000000004 | Jim Duke's personal files. |