

# P Echinacea angustifolia

## Common Name(s)

Echinacea, Narrow Leaf Echinacea, Narrow Leaf Purple-Coneflower

## How Used

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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	Root	8000	10000 -1	Jim Duke's personal files.
0	3,4-EPOXY-TRIDECA-1,5-DIENE-7,9,11-TRIYNE	Flower	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	3,4-EPOXY-TRIDECA-1,5-DIENE-7,9,11-TRIYNE	Stem	--	100	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-PENTADECA-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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
14	BETAINE	Root	--	1000	-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.
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	CARYOPHYLLENE	Shoot	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
6	CARYOPHYLLENE-EPOXIDE	Shoot	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	CEROTIC-ACID	Root	--	--	
0	CHICHORIC-ACID	Leaf	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID	Root	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID	Flower	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID	Stem	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-DIMETHYL-ETHER	Leaf	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-DIMETHYL-ETHER	Flower	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-DIMETHYL-ETHER	Root	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-DIMETHYL-ETHER	Stem	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-MONOMETHYL-ETHER	Flower	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-MONOMETHYL-ETHER	Root	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-MONOMETHYL-ETHER	Stem	--	--	Jim Duke's personal files.
0	CHICHORIC-ACID-MONOMETHYL-ETHER	Leaf	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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.
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	Root	--	--	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	Shoot	--	--	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.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	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.
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	Root	--	--	Jim Duke's personal files.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
0 DODECA-2-TRANS-4-TRANS-DIENOIC-ACID-ISOBUTYLAMIDE	Shoot	--	--		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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	ECHINACEA-POLYSACCHARIDE	Tissue Culture	--	--		Jim Duke's personal files.
3	ECHINACEIN	Root	4	100	0.7071067811865475	
1	ECHINACIN-B	Root	--	--		Jim Duke's personal files.
10	ECHINACOSIDE	Root	3000	13000	-1.414213562373095	
10	ECHINACOSIDE	Flower	1000	10000		Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0	ECHINACOSIDE-1	Root	--	--		Jim Duke's personal files.
0	ECHINACOSIDE-2	Root	--	--		Jim Duke's personal files.
2	ECHINOLONE	Root	--	3		Jim Duke's personal files.
0	EO	Root	400	13000	-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.



Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference	Citation
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	Flower	--	8050	-1	Jim Duke's personal files.
0	GLYCINE-BETAINE	Root	--	3100	-1	Jim Duke's personal files.
0	GLYCINE-BETAINE	Leaf	--	1130	-1	Jim Duke's personal files.
0	GLYCINE-BETAINE	Stem	--	4900	-1	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	90000	-0.9004071864868817	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	ISOBUTYLAMIDES	Root	90	1510	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
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	60	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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 Essent. Oil	--	--	Jim Duke's personal files.
0	PENTADEC-1-ENE	Root	--	--	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	PENTADEC-8-EN-2-ONE	Root	3600	4000	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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
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.
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	-0.5583180295224436	Jim Duke's personal files.
0	TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE	Root	3	9000	0.6386915774792771	Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
0	TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE	Flower	--	800	-1	Jim Duke's personal files.
0	TRIDEC-1-ENE-3-5-7-9-11-PENTAYNE	Stem	--	500	1	Jim Duke's personal files.
0	TRIDECA-1,3-DIENE-5,7,9,11-TETRAYNE	Root	--	100		Jim Duke's personal files.
0	TRIDECA-1-11-DIENE-3-5-7-9-TETRAYNE	Root	--	100	-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	200	-1	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	60		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-METHYL-BUTYLAMIDE	Root	--	--		Jim Duke's personal files.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
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.
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		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	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.