

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Borago officinalis*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(-)-BORNESITOL	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	7-ACETYL-INTERMEDINE	Leaf	0.1	0.1		--
0	7-ACETYL-LYCOPSAMINE	Leaf	0.1	3.0		--
16	ACETIC-ACID	Plant				--
16	ACETIC-ACID	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
1	ACETYLINTERMEDINE	Shoot				Jim Duke's personal files.
1	ACETYLLYCOPSAMINE	Shoot				Jim Duke's personal files.
3	ALANINE	Leaf				Jim Duke's personal files.
0	ALKALOIDS	Leaf	2.0	8.0	-0.6091138813378191	--
0	ALKALOIDS	Plant	2.0	98.0	-0.4383926585856858	--
0	ALKALOIDS	Seed		300.0	-0.8008331835428224	--
12	ALLANTOIN	Root		49.0	-0.7051198369303746	Jim Duke's personal files.
12	ALLANTOIN	Sprout Seedling				--
12	ALLANTOIN	Leaf		61.0	-1.0	Jim Duke's personal files.
12	ALLANTOIN	Rhizome				Jim Duke's personal files.
12	ALLANTOIN	Embryo				Jim Duke's personal files.
12	ALLANTOIN	Seed		423.0	-1.0	Jim Duke's personal files.
15	ALPHA-LINOLENIC-ACID	Seed Essent. Oil				Jim Duke's personal files.
1	AMABILINE	Seed		20.0		Jim Duke's personal files.
1	AMABILINE	Shoot				Jim Duke's personal files.
1	AMABILINE	Leaf	0.1	3.0		--
0	ARABINOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
112	ASCORBIC-ACID	Shoot		39.0	-0.3692514552082671	Jim Duke's personal files.
112	ASCORBIC-ACID	Leaf	30.0	5005.0	0.020480126257650957	--
3	ASPARTIC-ACID	Leaf				Jim Duke's personal files.
53	BETA-CAROTENE	Leaf	25.0	360.0	0.42984159542352385	USDA's Ag Handbook 8 and sequelae)
0	BORAGO-TRIACYLGLYCEROLS	Seed Oil				Jim Duke's personal files.
0	BORNESITOL	Plant				--
28	CALCIUM	Leaf	930.0	5005.0	-0.9177892759006925	USDA's Ag Handbook 8 and sequelae)
0	CARBOHYDRATES	Leaf	30600.0	437580.0	-1.3858995814533719	USDA's Ag Handbook 8 and sequelae)
20	CHOLINE	Leaf				--
2	COBALT	Plant				--
7	CYANIDIN	Plant				Jim Duke's personal files.
0	CYANOGENS	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	CYNAUSTINE	Shoot				Jim Duke's personal files.
9	DELPHINIDIN	Plant				Jim Duke's personal files.
1	DHURRIN	Plant	35.0	350.0		--
2	ERUCIC-ACID	Seed	2500.0	7390.0	-0.7373722556756456	Heredity 65: 249-257. 1990.
0	FAT	Seed	130000.0	383000.0	0.6195066267978355	--
0	FAT	Leaf	7000.0	100000.0	0.8675702877100614	--
15	FIBER	Leaf	9200.0	131560.0	-0.3706742625139754	USDA's Ag Handbook 8 and sequelae)
8	FRUCTOSE	Leaf				Jim Duke's personal files.
1	GALACTOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	GAMMA-LINOLENIC-ACID	Seed Essent. Oil		190000.0	0.9057529185791032	Jim Duke's personal files.
20	GAMMA-LINOLENIC-ACID	Fruit Essent. Oil	185000.0	240000.0		Jim Duke's personal files.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
20	GAMMA-LINOLENIC-ACID	Leaf				Jim Duke's personal files.
20	GAMMA-LINOLENIC-ACID	Seed Oil		249000.0	-1.0	Jim Duke's personal files.
20	GAMMA-LINOLENIC-ACID	Seed	26000.0	84260.0	1.2128075738135886	J. Pharm. Belg. 43:359-363. 1988.
7	GLUCOSE	Leaf				Jim Duke's personal files.
7	GLUCOSE	Plant				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
12	GLYCINE	Leaf				Jim Duke's personal files.
9	HCN	Plant		15.0		--
1	HYDROXYPROLINE	Seed				List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
1	INTERMEDINE	Leaf		0.1		--
1	INTERMEDINE	Shoot				Jim Duke's personal files.
6	IRON	Leaf	33.0	472.0	0.2758179706263857	USDA's Ag Handbook 8 and sequela)
75	KAEMPFEROL	Plant				Jim Duke's personal files.
8	LACTIC-ACID	Plant				--
8	LACTIC-ACID	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
2	LEUCINE	Leaf				Jim Duke's personal files.
27	LINOLEIC-ACID	Seed Essent. Oil		360000.0	-0.9883274356612421	Jim Duke's personal files.
27	LINOLEIC-ACID	Seed	45500.0	149370.0	0.36198337357431687	--
0	LINOLENIC-ACID	Seed	25000.0	73000.0	0.6945369520909026	Wealth of India.
1	LYCOPSAMINE	Leaf	1.0	3.0		--
1	LYCOPSAMINE	Shoot				Jim Duke's personal files.
65	MAGNESIUM	Leaf	520.0	7436.0	1.2782028442421007	USDA's Ag Handbook 8 and sequela)

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15	MALIC-ACID	Leaf				Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
15	MALIC-ACID	Plant				--
3	MUCILAGE	Shoot				Jim Duke's personal files.
3	MUCILAGE	Plant	110000.0	300000.0	1.7081599483402181	--
13	MUFA	Seed	74750.0	220225.0	0.8015642841623266	J. Pharm. Belg. 43:359-363. 1988.
39	NIACIN	Leaf	9.0	129.0	0.3831437055740252	USDA's Ag Handbook 8 and sequelae)
0	OCTADECA-6,9,12,15-TETRAENOIC-ACID	Seed				Jim Duke's personal files.
0	OCTADECADIENOIC-ACID	Seed				Jim Duke's personal files.
0	OCTADECATETRA-6,9,12,15-ENOIC-ACID	Seed				Jim Duke's personal files.
0	OCTADECATRIENOIC-ACID	Seed				Jim Duke's personal files.
0	OCTADECENOIC-ACID	Seed				Jim Duke's personal files.
18	OLEIC-ACID	Seed Essent. Oil		200000.0	1.4142135623730951	Jim Duke's personal files.
18	OLEIC-ACID	Seed	22100.0	100000.0	-0.1570414967328784	--
13	PALMITIC-ACID	Seed	15600.0	46600.0	0.26190815437347253	--
4	PHOSPHORUS	Leaf	530.0	7579.0	0.47975440555798987	USDA's Ag Handbook 8 and sequelae)
14	POTASSIUM	Leaf	4700.0	67210.0	1.6279167435353101	USDA's Ag Handbook 8 and sequelae)
0	PROTEIN	Seed		209000.0	-0.22057386196586456	--
0	PROTEIN	Leaf	18000.0	257400.0	0.4544546487699197	USDA's Ag Handbook 8 and sequelae)
4	PUFA	Seed	27300.0	80430.0	-0.19333848445579574	J. Pharm. Belg. 43:359-363. 1988.
0	PYRROLIZIDINES	Plant	2.0	100.0		--
176	QUERCETIN	Plant				Jim Duke's personal files.
0	RESIN	Plant				--
15	RIBOFLAVIN	Leaf	1.0	21.0	-0.07942432526480918	USDA's Ag Handbook 8 and sequelae)
57	ROSMARINIC-ACID	Plant	500.0	7000.0	-1.2991752308715747	Fitoterapia No.62: 166.

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57	ROSMARINIC-ACID	Shoot		500.0	-0.8320524588716441	Jim Duke's personal files.
57	ROSMARINIC-ACID	Inflorescence				Jim Duke's personal files.
5	SAPONINS	Leaf				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
1	SERINE	Sprout Seedling				Jim Duke's personal files.
1	SERINE	Leaf				Jim Duke's personal files.
0	SFA	Seed	21710.0	63960.0	0.05001349654521198	J. Pharm. Belg. 43:359-363. 1988.
1	SILICIC-ACID	Plant	15000.0	22000.0	-1.0451241158585747	--
1	SODIUM	Plant	800.0	11440.0	0.3291979572172995	--
8	STEARIC-ACID	Seed	6110.0	18000.0	-0.17485116289238925	--
0	STERIDONIC-ACID	Leaf				Jim Duke's personal files.
0	SUPINIDINE?	Leaf				--
4	SUPININE	Shoot				Jim Duke's personal files.
4	SUPININE	Leaf	0.1	3.0		--
0	SUPININE-VIRIDIFLORATE	Leaf				Wealth of India.
0	SUPININE-VIRIDIFLORATE	Plant				--
35	TANNIN	Plant		30000.0	-0.783056468120132	--
0	THESININE	Seed		200.0		--
0	THESININE	Seed Oil				Jim Duke's personal files.
0	THESININE	Flower				Jim Duke's personal files.
31	THIAMIN	Leaf	1.0	9.0	0.144911649453059	USDA's Ag Handbook 8 and sequelae)
3	VALINE	Leaf				Jim Duke's personal files.
0	WATER	Herb	0.0	930000.0	-1.412953309430929	USDA's Ag Handbook 8 and sequelae)
77	ZINC	Plant				Abstract (See species file)