

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Trifolium pratense*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
28	CALCIUM	Flower	2358.0	13100.0	2.0277064932464137	--
6	IRON	Shoot	10.0	1850.0	1.8092404799960726	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
4	TIN	Flower	5.0	25.0	1.4368424162141988	--
15	FIBER	Shoot	77000.0	301000.0	1.3664226044856718	--
24	BENZALDEHYDE	Flower		12.0	1.0000000000000004	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
5	METHYL-CINNAMATE	Flower		15.0	1.0000000000000002	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
14	MANGANESE	Hay	25.0	464.0	1.0000000000000002	--
65	MAGNESIUM	Hay	2400.0	8100.0	1.0	--
2	(E)-2-HEXENAL	Flower		20.0	1.0	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
32	BIOCHANIN-A	Root		31.0	1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	HEXANOL	Flower		27.0	0.9999999999999998	Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agrc.Food Chem.44:1827-8
5	ALUMINUM	Flower	25.0	137.0	0.6800025424215751	--
28	CALCIUM	Shoot	4800.0	22900.0	0.5954625659846638	--
4	PHOSPHORUS	Shoot	900.0	4500.0	0.5039172570812402	--
65	MAGNESIUM	Flower	628.0	3490.0	0.4898420957878223	--
39	NIACIN	Flower	23.0	125.0	0.30027617080224206	--
14	POTASSIUM	Shoot	5400.0	26700.0	0.19972594147646744	--
24	CHROMIUM	Flower	0.6	3.2	0.1253191187222141	--
112	ASCORBIC-ACID	Flower	534.0	2966.0	0.07833639670796254	--
14	POTASSIUM	Flower	3600.0	20000.0	0.07485647549902923	--
4	PHOSPHORUS	Flower	580.0	3220.0	-0.2058307284109949	--
31	THIAMIN	Flower		4.2	-0.32448493232300896	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
14	MANGANESE	Flower	1.0	5.9	-0.37185317533053636	--
60	SELENIUM	Leaf		0.024	-0.3807027917986485	--
15	FIBER	Flower		99000.0	-0.39855791142456015	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
60	SELENIUM	Stem		0.018	-0.4284717031857897	--
53	BETA-CAROTENE	Flower	2.0	12.0	-0.43685333121665465	--
2	COBALT	Flower	0.3	1.8	-0.45121303121454254	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
35	GERANIOL	Flower		3.0	-0.5150688773064958	Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agric.Food Chem.44:1827-8
1	SODIUM	Flower	29.0	160.0	-0.5257596176552087	--
7	LINALYL-ACETATE	Flower		14.0	-0.52919258398599	Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agric.Food Chem.44:1827-8
53	LINALOOL	Flower		70.0	-0.5766567688779776	Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agric.Food Chem.44:1827-8
60	LIMONENE	Flower		27.0	-0.6377062548200526	Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agric.Food Chem.44:1827-8
4	SILICON	Flower	0.2	1.2	-0.6385118061807831	--
15	RIBOFLAVIN	Flower	0.6	3.3	-0.6828377956128976	--
16	FORMONONETIN	Root		94.0	-0.6868766457286021	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
60	SELENIUM	Flower	0.1	0.8	-0.7014229662505338	--
2	MOLYBDENUM	Stem	0.12	0.15	-0.7462339475150717	--
2	ONONIN	Root		49.0	-0.7559178162475134	--
9	BENZYL-ALCOHOL	Flower		15.0	-0.7590932524068246	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
81	GENISTEIN	Leaf	22.0	23.0	-0.9500496298711887	--
32	DAIDZEIN	Leaf		349.0	-1.0	--
81	GENISTEIN	Root		10.0	-1.0	--
32	DAIDZEIN	Stem		334.0	-1.0	--
2	ETHYL-CINNAMATE	Flower		25.0	-1.0	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
4	BORON	Leaf		23.0	-1.0421614129310122	--
4	BORON	Stem		16.0	-1.0978789041988413	--
9	BENZYL-ACETATE	Flower		22.0	-1.1788033227009656	Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8
18	OLEIC-ACID	Pollen Or Spore				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
25	P-COUMARIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
4	IRILONE	Root				--
2	TRIFOLIRHIZIN	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
20	CHOLINE	Plant				--
2	TRANS-BETA-FARNESENE	Fruit				--
30	HYPEROSIDE	Leaf				--
13	MEDICARPIN	Leaf Diffusate	10.0	45.0		--
6	MALVIDIN	Flower				--
9	BENZYL-ALCOHOL	Root				--
2	6-ALPHA-HYDROXYMAACKIAIN	Leaf Diffusate		46.0		--
22	ISOQUERCITRIN	Flower				--
1	MYRISTIC-ACID-ETHYL-ESTER	Root				--
6	IRON	Flower				--
1	MYRISTOLEIC-ACID	Pollen Or Spore				--
9	OXALIC-ACID	Plant				--
76	EUGENOL	Flower				--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf Diffusate		75.0		--
77	CHLOROGENIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
5	EUGENOL-METHYL-ETHER	Root				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	MALTOL	Flower		140.0		Buchnauer,G.,Jirovetz,L.,Nikiforov,A. 1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agrc.Food Chem.44:1827-8
3	PSEUDOBAPTIGENIN	Plant				--
3	GENISTIN	Leaf				--
2	MALTOSE	Leaf				--
1	BEHENIC-ACID	Pollen Or Spore				--
3	PSEUDOBAPTIGENIN	Root				--
30	HYPEROSIDE	Flower				--
6	MYRISTIC-ACID	Pollen Or Spore				--
1	HOMOSERINE	Plant				--
9	BENZYL-ALCOHOL	Plant				--
44	QUERCITRIN	Flower				--
1	MELILOTIC-ACID	Plant		7060.0		--
2	ONONIN	Plant				--
9	DELPHINIDIN	Plant				--
3	GENISTIN	Root				--
4	THREONINE	Plant				--
2	CAMPESTEROL	Plant				--
1	PRATENSEIN	Flower				--
102	CAFFEIC-ACID	Leaf				--
31	CARYOPHYLLENE	Fruit				--
3	MEDICAGOL	Sprout Seedling				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	GLUCOSE	Plant				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf				--
2	HOMOPISATIN	Plant				--
9	BENZYL-ACETATE	Plant				--
12	ARACHIDONIC-ACID	Pollen Or Spore				--
3	PSEUDOBAPTIGENIN	Leaf				--
27	LINOLEIC-ACID	Pollen Or Spore				--
4	DAIDZEN	Plant				--
81	GENISTEIN	Flower		19.0		--
32	DAIDZEIN	Plant				--
4	3-METHYLQUERCETIN	Flower				--
31	CARYOPHYLLENE	Flower				--
2	MAACKIAIN	Leaf Diffusate	8.0	42.0		--
3	GENISTIN	Flower				--
2	4-METHOXYMEDICARPIN	Root				--
7	HISTIDINE	Plant				--
6	ACETOPHENONE	Fruit				--
34	MYRICETIN	Seed				--
32	DAIDZEIN	Flower		461.0		--
16	FORMONONETIN	Stem		280.0		--
2	PRUNETIN	Leaf				--
32	DAIDZEIN	Shoot				--
31	CARYOPHYLLENE	Leaf				--
2	MAACKIAIN	Plant				--
5	PISATIN	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	MAACKIAIN	Root				--
8	GLUTAMIC-ACID	Plant				--
14	ARGININE	Plant				--
16	ACETIC-ACID	Fruit				--
16	FORMONONETIN	Shoot				--
7	CYANIDIN	Plant				--
10	DAIDZIN	Leaf				--
2	PRUNETIN	Flower				--
13	COUMESTROL	Shoot				--
4	GLUCURONIC-ACID	Plant				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
2	TRIFOLIRHIZIN	Root				--
4	LYSINE	Plant				--
102	CAFFEIC-ACID	Flower				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.
13	MEDICARPIN	Plant				--
10	DAIDZIN	Flower				--
2	PIPECOLIC-ACID	Plant				--
1	LAURIC-ACID-ETHYL-ESTER	Root				--
81	GENISTEIN	Plant				--
16	ACETIC-ACID	Root				--
16	FORMONONETIN	Sprout Seedling				--
21	METHYL-SALICYLATE	Flower				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	COUMESTROL	Flower				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.
7	LAURIC-ACID	Pollen Or Spore				--
1	SERINE	Plant				--
2	ONONIN	Leaf				--
5	CITRULLINE	Shoot				--
3	XYLOSE	Plant				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
32	ALPHA-TOCOPHEROL	Plant				--
2	LEUCINE	Plant				--
77	ZINC	Flower				--
2	TRANS-BETA-FARNESENE	Leaf				--
32	ALPHA-TOCOPHEROL	Inflorescence	126.0	400.0		--
2	TRIFOLIN	Leaf				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
12	ESTRAGOLE	Root				--
15	METHIONINE	Plant				--
57	COUMARIN	Flower		22.0		Buchnauer, G., Jirovetz, L., Nikiforov, A. 1996. Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection, Gas Chromatography-Mass Spectrometry, and Gas Chrom.-Olfactometry. J. Agrc. Food Chem. 44:1827-8

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	HYPEROSIDE	Plant				--
13	COUMESTROL	Leaf				--
75	KAEMPFEROL	Flower				--
1	CAPROIC-ACID	Root				--
3	CINNAMIC-ALCOHOL	Flower		22.0		Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agrc.Food Chem.44:1827-8
176	QUERCETIN	Flower				--
8	STEARIC-ACID	Pollen Or Spore				--
11	ISORHAMNETIN	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
1	PRATENSEIN	Leaf	13.0	153.0		--
16	FORMONONETIN	Plant	800.0	7000.0		--
12	ALLANTOIN	Sprout Seedling				--
4	SLAFRAMINE	Flower				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	VALINE	Plant				--
1	DECYL-ACETATE	Fruit				--
3	MEDICAGOL	Flower				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.
12	COPPER	Hay	7.0	18.0		--
81	GENISTEIN	Stem		62.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
32	BIOCHANIN-A	Stem		68.0		--
22	ISOQUERCITRIN	Leaf				--
3	PSEUDOBAPTIGENIN	Flower				--
1	PENTADECANOIC-ACID	Pollen Or Spore				--
11	ISORHAMNETIN	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
32	BIOCHANIN-A	Plant		8000.0		--
5	PINITOL	Shoot				--
7	PHENYLALANINE	Plant				--
16	FORMONONETIN	Flower		391.0		--
6	6-ALPHA-HYDROXYMEDICARPIN	Plant				--
75	KAEMPFEROL	Leaf				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
8	TYROSINE	Plant				--
81	GENISTEIN	Shoot				--
26	PHENOL	Flower		49.0		Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agric.Food Chem.44:1827-8
4	IRILONE	Leaf				--
1	(-)-MAACKIAIN-3-O-GLUCOSIDE	Root				--
32	BIOCHANIN-A	Leaf	310.0	3250.0		--
2	PECTOLINARIGENIN	Flower				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	PALMITIC-ACID	Pollen Or Spore				--
3	ISOLEUCINE	Plant				--
32	BIOCHANIN-A	Flower		338.0		--
2	ONONIN	Stem		31.0		--
2	PECTOLINARIN	Flower				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.
2	6-ALPHA-HYDROXYMAACKIAIN	Plant				--
3	IROLONE	Plant				Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
29	TRYPTOPHAN	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
16	FORMONONETIN	Leaf	270.0	2470.0		--
2	OCIMENE	Flower		12.0		Buchnauer,G.,Jirovetz,L.,Nikiforov,A.1996.Comparative Investigation of Essential Clover Flower Oils from Austria Using Gas Chromatography-Flame Ionization Detection,Gas Chromatography-Mass Spectrometry,and Gas Chrom.-Olfactometry.J.Agrc.Food Chem.44:1827-8
34	SALICYLIC-ACID	Flower				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
4	IRILONE	Flower				--
13	MEDICARPIN	Root				--
32	BIOCHANIN-A	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
6	ACETOPHENONE	Flower		41.0		--
2	ONONIN	Flower				--
47	BETA-SITOSTEROL	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.