

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Trifolium pratense*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
15	FIBER	Shoot	77000.0	301000.0	1.3664226044856718	--
15	FIBER	Flower		99000.0	-0.39855791142456015	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
14	POTASSIUM	Shoot	5400.0	26700.0	0.19972594147646744	--
28	CALCIUM	Shoot	4800.0	22900.0	0.5954625659846638	--
14	POTASSIUM	Flower	3600.0	20000.0	0.07485647549902923	--
28	CALCIUM	Flower	2358.0	13100.0	2.0277064932464137	--
65	MAGNESIUM	Hay	2400.0	8100.0	1.0	--
32	BIOCHANIN-A	Plant		8000.0		--
1	MELILODIC-ACID	Plant		7060.0		--
16	FORMONONETIN	Plant	800.0	7000.0		--
4	PHOSPHORUS	Shoot	900.0	4500.0	0.5039172570812402	--
65	MAGNESIUM	Flower	628.0	3490.0	0.4898420957878223	--
32	BIOCHANIN-A	Leaf	310.0	3250.0		--
4	PHOSPHORUS	Flower	580.0	3220.0	-0.2058307284109949	--
112	ASCORBIC-ACID	Flower	534.0	2966.0	0.07833639670796254	--
16	FORMONONETIN	Leaf	270.0	2470.0		--
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.
14	MANGANESE	Hay	25.0	464.0	1.0000000000000002	--
32	DAIDZEIN	Flower		461.0		--
32	ALPHA-TOCOPHEROL	Inflorescence	126.0	400.0		--
16	FORMONONETIN	Flower		391.0		--
32	DAIDZEIN	Leaf		349.0	-1.0	--
32	BIOCHANIN-A	Flower		338.0		--
32	DAIDZEIN	Stem		334.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
16	FORMONONETIN	Stem		280.0		--
1	SODIUM	Flower	29.0	160.0	-0.5257596176552087	--
1	PRATENSEIN	Leaf	13.0	153.0		--
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
5	ALUMINUM	Flower	25.0	137.0	0.6800025424215751	--
39	NIACIN	Flower	23.0	125.0	0.30027617080224206	--
16	FORMONONETIN	Root		94.0	-0.6868766457286021	--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf Diffusate		75.0		--
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. Agrc. Food Chem. 44:1827-8
32	BIOCHANIN-A	Stem		68.0		--
81	GENISTEIN	Stem		62.0		--
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. Agrc. Food Chem. 44:1827-8

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	ONONIN	Root		49.0	-0.7559178162475134	--
2	6-ALPHA-HYDROXYMAACKIAIN	Leaf Diffusate		46.0		--
13	MEDICARPIN	Leaf Diffusate	10.0	45.0		--
2	MAACKIAIN	Leaf Diffusate	8.0	42.0		--
6	ACETOPHENONE	Flower		41.0		--
32	BIOCHANIN-A	Root		31.0	1.0	--
2	ONONIN	Stem		31.0		--
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
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.Agrc.Food Chem.44:1827-8
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	TIN	Flower	5.0	25.0	1.4368424162141988	--
81	GENISTEIN	Leaf	22.0	23.0	-0.9500496298711887	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	BORON	Leaf		23.0	-1.0421614129310122	--
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
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
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
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
81	GENISTEIN	Flower		19.0		--
12	COPPER	Hay	7.0	18.0		--
4	BORON	Stem		16.0	-1.0978789041988413	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.Agric.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.Agric.Food Chem.44:1827-8
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
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.Agric.Food Chem.44:1827-8

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
53	BETA-CAROTENE	Flower	2.0	12.0	-0.43685333121665465	--
81	GENISTEIN	Root		10.0	-1.0	--
14	MANGANESE	Flower	1.0	5.9	-0.37185317533053636	--
31	THIAMIN	Flower		4.2	-0.32448493232300896	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
15	RIBOFLAVIN	Flower	0.6	3.3	-0.6828377956128976	--
24	CHROMIUM	Flower	0.6	3.2	0.1253191187222141	--
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.Agrc.Food Chem.44:1827-8
2	COBALT	Flower	0.3	1.8	-0.45121303121454254	--
4	SILICON	Flower	0.2	1.2	-0.6385118061807831	--
60	SELENIUM	Flower	0.1	0.8	-0.7014229662505338	--
2	MOLYBDENUM	Stem	0.12	0.15	-0.7462339475150717	--
60	SELENIUM	Leaf		0.024	-0.3807027917986485	--
60	SELENIUM	Stem		0.018	-0.4284717031857897	--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf				--
2	HOMOPISATIN	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	BENZYL-ACETATE	Plant				--
12	ARACHIDONIC-ACID	Pollen Or Spore				--
3	MEDICAGOL	Sprout Seedling				--
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.
3	PSEUDOBAPTIGENIN	Leaf				--
27	LINOLEIC-ACID	Pollen Or Spore				--
4	DAIDZEN	Plant				--
4	3-METHYLQUERCETIN	Flower				--
31	CARYOPHYLLENE	Flower				--
32	DAIDZEIN	Plant				--
2	4-METHOXYMEDICARPIN	Root				--
7	HISTIDINE	Plant				--
6	ACETOPHENONE	Fruit				--
3	GENISTIN	Flower				--
2	PRUNETIN	Leaf				--
34	MYRICETIN	Seed				--
31	CARYOPHYLLENE	Leaf				--
2	MAACKIAIN	Plant				--
32	DAIDZEIN	Shoot				--
5	PISATIN	Leaf				--
2	MAACKIAIN	Root				--
8	GLUTAMIC-ACID	Plant				--
14	ARGININE	Plant				--
16	ACETIC-ACID	Fruit				--
10	DAIDZIN	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	PRUNETIN	Flower				--
16	FORMONONETIN	Shoot				--
7	CYANIDIN	Plant				--
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	COUMESTROL	Shoot				--
1	LAURIC-ACID-ETHYL-ESTER	Root				--
81	GENISTEIN	Plant				--
16	ACETIC-ACID	Root				--
13	MEDICARPIN	Plant				--
10	DAIDZIN	Flower				--
2	PIPECOLIC-ACID	Plant				--
7	LAURIC-ACID	Pollen Or Spore				--
1	SERINE	Plant				--
2	ONONIN	Leaf				--
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.
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				--
5	CITRULLINE	Shoot				--
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.
77	ZINC	Flower				--
2	TRANS-BETA-FARNESENE	Leaf				--
13	COUMESTROL	Leaf				--
75	KAEMPFEROL	Flower				--
12	ESTRAGOLE	Root				--
15	METHIONINE	Plant				--
30	HYPEROSIDE	Plant				--
176	QUERCETIN	Flower				--
8	STEARIC-ACID	Pollen Or Spore				--
11	ISORHAMNETIN	Plant				J.S. Glasby Dict.Plis Containing 2ndary Metabolite. 1991.
1	CAPROIC-ACID	Root				--
12	ALLANTOIN	Sprout Seedling				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	SLAFRAMINE	Flower				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	VALINE	Plant				--
22	ISOQUERCITRIN	Leaf				--
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.
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.
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				--
5	PINITOL	Shoot				--
7	PHENYLALANINE	Plant				--
4	IRILONE	Leaf				--
1	(-)-MAACKIAIN-3-O-GLUCOSIDE	Root				--
81	GENISTEIN	Shoot				--
2	PECTOLINARIGENIN	Flower				--
13	PALMITIC-ACID	Pollen Or Spore				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	ISOLEUCINE	Plant				--
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.
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.
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				--
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.
32	BIOCHANIN-A	Shoot				--
4	IRILONE	Root				--
2	TRIFOLIRHIZIN	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
18	OLEIC-ACID	Pollen Or Spore				--
25	P-COUMARIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
30	HYPEROSIDE	Leaf				--
6	MALVIDIN	Flower				--
20	CHOLINE	Plant				--
2	TRANS-BETA-FARNESENE	Fruit				--
22	ISOQUERCITRIN	Flower				--
1	MYRISTIC-ACID-ETHYL-ESTER	Root				--
6	IRON	Flower				--
9	BENZYL-ALCOHOL	Root				--
1	MYRISTOLEIC-ACID	Pollen Or Spore				--
9	OXALIC-ACID	Plant				--
76	EUGENOL	Flower				--
3	PSEUDOBAPTIGENIN	Plant				--
3	GENISTIN	Leaf				--
2	MALTOSE	Leaf				--
77	CHLOROGENIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
5	EUGENOL-METHYL-ETHER	Root				--
30	HYPEROSIDE	Flower				--
6	MYRISTIC-ACID	Pollen Or Spore				--
1	HOMOSERINE	Plant				--
9	BENZYL-ALCOHOL	Plant				--
1	BEHENIC-ACID	Pollen Or Spore				--
3	PSEUDOBAPTIGENIN	Root				--
3	GENISTIN	Root				--
4	THREONINE	Plant				--
44	QUERCITRIN	Flower				--
2	ONONIN	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
9	DELPHINIDIN	Plant				--
1	PRATENSEIN	Flower				--
102	CAFFEIC-ACID	Leaf				--
31	CARYOPHYLLENE	Fruit				--
2	CAMPESTEROL	Plant				--