

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Trifolium pratense*

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				--
5	PISATIN	Leaf				--
10	DAIDZIN	Leaf				--
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				--
1	SERINE	Plant				--
2	ONONIN	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
16	FORMONONETIN	Sprout Seedling				--
21	METHYL-SALICYLATE	Flower				--
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				--
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				--
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.
77	ZINC	Flower				--
2	TRANS-BETA-FARNESENE	Leaf				--
13	COUMESTROL	Leaf				--
75	KAEMPFEROL	Flower				--
12	ESTRAGOLE	Root				--
15	METHIONINE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
30	HYPEROSIDE	Plant				--
176	QUERCETIN	Flower				--
8	STEARIC-ACID	Pollen Or Spore				--
11	ISORHAMNETIN	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
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
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	PRATENSEIN	Leaf	13.0	153.0		--
32	BIOCHANIN-A	Stem		68.0		--
22	ISOQUERCITRIN	Leaf				--
1	DECYL-ACETATE	Fruit				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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		--
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		--
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				--
5	PINITOL	Shoot				--
7	PHENYLALANINE	Plant				--
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
4	IRILONE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	(-)-MAACKIAIN-3-O-GLUCOSIDE	Root				--
81	GENISTEIN	Shoot				--
2	PECTOLINARIGENIN	Flower				--
13	PALMITIC-ACID	Pollen Or Spore				--
3	ISOLEUCINE	Plant				--
32	BIOCHANIN-A	Flower		338.0		--
32	BIOCHANIN-A	Leaf	310.0	3250.0		--
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.Plis Containing 2ndary Metabolite. 1991.
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	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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	IRILONE	Flower				--
13	MEDICARPIN	Root				--
16	FORMONONETIN	Leaf	270.0	2470.0		--
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.
32	BIOCHANIN-A	Shoot				--
6	ACETOPHENONE	Flower		41.0		--
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.
30	HYPEROSIDE	Leaf				--
13	MEDICARPIN	Leaf Diffusate	10.0	45.0		--
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				--
2	6-ALPHA-HYDROXYMAACKIAIN	Leaf Diffusate		46.0		--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf Diffusate		75.0		--
1	MYRISTOLEIC-ACID	Pollen Or Spore				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	OXALIC-ACID	Plant				--
76	EUGENOL	Flower				--
3	PSEUDOBAPTIGENIN	Plant				--
3	GENISTIN	Leaf				--
2	MALTOSE	Leaf				--
77	CHLOROGENIC-ACID	Plant				J.S. Glasby Dict.Plis Containing 2ndary Metabolite. 1991.
5	EUGENOL-METHYL-ETHER	Root				--
11	MALTOL	Flower		140.0		Buchnauer,G.,Jirovetz,L.,Nikif orov,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
6	MYRISTIC-ACID	Pollen Or Spore				--
1	HOMOSERINE	Plant				--
9	BENZYL-ALCOHOL	Plant				--
1	BEHENIC-ACID	Pollen Or Spore				--
3	PSEUDOBAPTIGENIN	Root				--
30	HYPEROSIDE	Flower				--
3	GENISTIN	Root				--
4	THREONINE	Plant				--
44	QUERCITRIN	Flower				--
1	MELILOTIC-ACID	Plant		7060.0		--
2	ONONIN	Plant				--
9	DELPHINIDIN	Plant				--
1	PRATENSEIN	Flower				--
102	CAFFEIC-ACID	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
31	CARYOPHYLLENE	Fruit				--
2	CAMPESTEROL	Plant				--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf				--
2	HOMOISATIN	Plant				--
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.
81	GENISTEIN	Flower		19.0		--
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				--
2	MAACKIAIN	Leaf Diffusate	8.0	42.0		--
3	GENISTIN	Flower				--
16	FORMONONETIN	Stem		280.0		--
2	PRUNETIN	Leaf				--
34	MYRICETIN	Seed				--
32	DAIDZEIN	Flower		461.0		--
31	CARYOPHYLLENE	Leaf				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	MAACKIAIN	Plant				--
32	DAIDZEIN	Shoot				--
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
4	BORON	Stem		16.0	-1.0978789041988413	--
4	BORON	Leaf		23.0	-1.0421614129310122	--
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
32	DAIDZEIN	Leaf		349.0	-1.0	--
81	GENISTEIN	Root		10.0	-1.0	--
81	GENISTEIN	Leaf	22.0	23.0	-0.9500496298711887	--
9	BENZYL-ALCOHOL	Flower		15.0	-0.75909332524068246	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	ONONIN	Root		49.0	-0.7559178162475134	--
2	MOLYBDENUM	Stem	0.12	0.15	-0.7462339475150717	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
60	SELENIUM	Flower	0.1	0.8	-0.7014229662505338	--
16	FORMONONETIN	Root		94.0	-0.6868766457286021	--
15	RIBOFLAVIN	Flower	0.6	3.3	-0.6828377956128976	--
4	SILICON	Flower	0.2	1.2	-0.6385118061807831	--
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
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
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
1	SODIUM	Flower	29.0	160.0	-0.5257596176552087	--

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.Agrc.Food Chem.44:1827-8
2	COBALT	Flower	0.3	1.8	-0.45121303121454254	--
53	BETA-CAROTENE	Flower	2.0	12.0	-0.43685333121665465	--
60	SELENIUM	Stem		0.018	-0.4284717031857897	--
15	FIBER	Flower		99000.0	-0.39855791142456015	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
60	SELENIUM	Leaf		0.024	-0.3807027917986485	--
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.
4	PHOSPHORUS	Flower	580.0	3220.0	-0.2058307284109949	--
14	POTASSIUM	Flower	3600.0	20000.0	0.07485647549902923	--
112	ASCORBIC-ACID	Flower	534.0	2966.0	0.07833639670796254	--
24	CHROMIUM	Flower	0.6	3.2	0.1253191187222141	--
14	POTASSIUM	Shoot	5400.0	26700.0	0.19972594147646744	--
39	NIACIN	Flower	23.0	125.0	0.30027617080224206	--
65	MAGNESIUM	Flower	628.0	3490.0	0.4898420957878223	--
4	PHOSPHORUS	Shoot	900.0	4500.0	0.5039172570812402	--
28	CALCIUM	Shoot	4800.0	22900.0	0.5954625659846638	--
5	ALUMINUM	Flower	25.0	137.0	0.6800025424215751	--

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
32	BIOCHANIN-A	Root		31.0	1.0	--
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
14	MANGANESE	Hay	25.0	464.0	1.0000000000000002	--
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
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
15	FIBER	Shoot	77000.0	301000.0	1.3664226044856718	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	TIN	Flower	5.0	25.0	1.4368424162141988	--
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.
28	CALCIUM	Flower	2358.0	13100.0	2.0277064932464137	--