

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Trifolium pratense*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	(-)-MAACKIIN-3-O-GLUCOSIDE	Root				--
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.Agric.Food Chem.44:1827-8
4	3-METHYLQUERCETIN	Flower				--
2	4-METHOXYMEDICARPIN	Root				--
2	6-ALPHA-HYDROXYMAACKIIN	Plant				--
2	6-ALPHA-HYDROXYMAACKIIN	Leaf Diffusate		46.0		--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf				--
6	6-ALPHA-HYDROXYMEDICARPIN	Plant				--
6	6-ALPHA-HYDROXYMEDICARPIN	Leaf Diffusate		75.0		--
16	ACETIC-ACID	Fruit				--
16	ACETIC-ACID	Root				--
6	ACETOPHENONE	Fruit				--
6	ACETOPHENONE	Flower		41.0		--
12	ALLANTOIN	Sprout Seedling				--
32	ALPHA-TOCOPHEROL	Inflorescence	126.0	400.0		--
32	ALPHA-TOCOPHEROL	Plant				--
5	ALUMINUM	Flower	25.0	137.0	0.6800025424215751	--
12	ARACHIDONIC-ACID	Pollen Or Spore				--
14	ARGININE	Plant				--
112	ASCORBIC-ACID	Flower	534.0	2966.0	0.07833639670796254	--
1	BEHENIC-ACID	Pollen Or Spore				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
9	BENZYL-ACETATE	Plant				--
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
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
9	BENZYL-ALCOHOL	Plant				--
9	BENZYL-ALCOHOL	Root				--
53	BETA-CAROTENE	Flower	2.0	12.0	-0.43685333121665465	--
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	Plant		8000.0		--
32	BIOCHANIN-A	Stem		68.0		--
32	BIOCHANIN-A	Flower		338.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
32	BIOCHANIN-A	Root		31.0	1.0	--
32	BIOCHANIN-A	Leaf	310.0	3250.0		--
32	BIOCHANIN-A	Shoot				--
4	BORON	Stem		16.0	-1.0978789041988413	--
4	BORON	Leaf		23.0	-1.0421614129310122	--
102	CAFFEIC-ACID	Leaf				--
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.
28	CALCIUM	Shoot	4800.0	22900.0	0.5954625659846638	--
28	CALCIUM	Flower	2358.0	13100.0	2.0277064932464137	--
2	CAMPESTEROL	Plant				--
1	CAPROIC-ACID	Root				--
31	CARYOPHYLLENE	Fruit				--
31	CARYOPHYLLENE	Flower				--
31	CARYOPHYLLENE	Leaf				--
77	CHLOROGENIC-ACID	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
20	CHOLINE	Plant				--
24	CHROMIUM	Flower	0.6	3.2	0.1253191187222141	--
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
5	CITRULLINE	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	COBALT	Flower	0.3	1.8	-0.45121303121454254	--
12	COPPER	Hay	7.0	18.0		--
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. Agr. Food Chem. 44:1827-8
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.
13	COUMESTROL	Shoot				--
13	COUMESTROL	Leaf				--
7	CYANIDIN	Plant				--
32	DAIDZEIN	Leaf		349.0	-1.0	--
32	DAIDZEIN	Flower		461.0		--
32	DAIDZEIN	Plant				--
32	DAIDZEIN	Shoot				--
32	DAIDZEIN	Stem		334.0	-1.0	--
4	DAIDZEN	Plant				--
10	DAIDZIN	Leaf				--
10	DAIDZIN	Flower				--
1	DECYL-ACETATE	Fruit				--
9	DELPHINIDIN	Plant				--
12	ESTRAGOLE	Root				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
76	EUGENOL	Flower				--
5	EUGENOL-METHYL-ETHER	Root				--
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.
16	FORMONONETIN	Stem		280.0		--
16	FORMONONETIN	Root		94.0	-0.6868766457286021	--
16	FORMONONETIN	Shoot				--
16	FORMONONETIN	Plant	800.0	7000.0		--
16	FORMONONETIN	Sprout Seedling				--
16	FORMONONETIN	Flower		391.0		--
16	FORMONONETIN	Leaf	270.0	2470.0		--
81	GENISTEIN	Flower		19.0		--
81	GENISTEIN	Plant				--
81	GENISTEIN	Root		10.0	-1.0	--
81	GENISTEIN	Leaf	22.0	23.0	-0.9500496298711887	--
81	GENISTEIN	Stem		62.0		--
81	GENISTEIN	Shoot				--
3	GENISTIN	Leaf				--
3	GENISTIN	Root				--
3	GENISTIN	Flower				--

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
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.
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.
8	GLUTAMIC-ACID	Plant				--
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
7	HISTIDINE	Plant				--
2	HOMOPISATIN	Plant				--
1	HOMOSERINE	Plant				--
30	HYPEROSIDE	Flower				--
30	HYPEROSIDE	Plant				--
30	HYPEROSIDE	Leaf				--
4	IRILONE	Leaf				--
4	IRILONE	Flower				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	IRILONE	Root				--
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.
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.
6	IRON	Flower				--
3	ISOLEUCINE	Plant				--
22	ISOQUERCITRIN	Leaf				--
22	ISOQUERCITRIN	Flower				--
11	ISORHAMNETIN	Plant				J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
11	ISORHAMNETIN	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
75	KAEMPFEROL	Flower				--
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.
7	LAURIC-ACID	Pollen Or Spore				--
1	LAURIC-ACID-ETHYL-ESTER	Root				--
2	LEUCINE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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
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
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. Agrc. Food Chem. 44:1827-8
27	LINOLEIC-ACID	Pollen Or Spore				--
4	LYSINE	Plant				--
2	MAACKIAIN	Leaf Diffusate	8.0	42.0		--
2	MAACKIAIN	Plant				--
2	MAACKIAIN	Root				--
65	MAGNESIUM	Flower	628.0	3490.0	0.4898420957878223	--
65	MAGNESIUM	Hay	2400.0	8100.0	1.0	--



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
2	MALTOSE	Leaf				--
6	MALVIDIN	Flower				--
14	MANGANESE	Hay	25.0	464.0	1.0000000000000002	--
14	MANGANESE	Flower	1.0	5.9	-0.37185317533053636	--
3	MEDICAGOL	Sprout Seedling				--
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.
13	MEDICARPIN	Plant				--
13	MEDICARPIN	Root				--
13	MEDICARPIN	Leaf Diffusate	10.0	45.0		--
1	MELILOTIC-ACID	Plant		7060.0		--
15	METHIONINE	Plant				--
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
21	METHYL-SALICYLATE	Flower				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	MOLYBDENUM	Stem	0.12	0.15	-0.7462339475150717	--
34	MYRICETIN	Seed				--
6	MYRISTIC-ACID	Pollen Or Spore				--
1	MYRISTIC-ACID-ETHYL-ESTER	Root				--
1	MYRISTOLEIC-ACID	Pollen Or Spore				--
39	NIACIN	Flower	23.0	125.0	0.30027617080224206	--
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. Agr. Food Chem. 44:1827-8
18	OLEIC-ACID	Pollen Or Spore				--
2	ONONIN	Plant				--
2	ONONIN	Leaf				--
2	ONONIN	Root		49.0	-0.7559178162475134	--
2	ONONIN	Stem		31.0		--
2	ONONIN	Flower				--
9	OXALIC-ACID	Plant				--
25	P-COUMARIC-ACID	Plant				J.S. Glasby Dict. Pls Containing 2ndary Metabolite. 1991.
13	PALMITIC-ACID	Pollen Or Spore				--
2	PECTOLINARIGENIN	Flower				--
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.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	PENTADECANOIC-ACID	Pollen Or Spore				--
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
7	PHENYLALANINE	Plant				--
4	PHOSPHORUS	Shoot	900.0	4500.0	0.5039172570812402	--
4	PHOSPHORUS	Flower	580.0	3220.0	-0.2058307284109949	--
5	PINITOL	Shoot				--
2	PIPECOLIC-ACID	Plant				--
5	PISATIN	Leaf				--
14	POTASSIUM	Shoot	5400.0	26700.0	0.19972594147646744	--
14	POTASSIUM	Flower	3600.0	20000.0	0.07485647549902923	--
1	PRATENSEIN	Flower				--
1	PRATENSEIN	Leaf	13.0	153.0		--
2	PRUNETIN	Leaf				--
2	PRUNETIN	Flower				--
3	PSEUDOBAPTIGENIN	Leaf				--
3	PSEUDOBAPTIGENIN	Flower				--
3	PSEUDOBAPTIGENIN	Plant				--
3	PSEUDOBAPTIGENIN	Root				--
176	QUERCETIN	Flower				--
44	QUERCITRIN	Flower				--
15	RIBOFLAVIN	Flower	0.6	3.3	-0.6828377956128976	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.
60	SELENIUM	Stem		0.018	-0.4284717031857897	--
60	SELENIUM	Leaf		0.024	-0.3807027917986485	--
60	SELENIUM	Flower	0.1	0.8	-0.7014229662505338	--
1	SERINE	Plant				--
4	SILICON	Flower	0.2	1.2	-0.6385118061807831	--
4	SLAFRAMINE	Flower				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
1	SODIUM	Flower	29.0	160.0	-0.5257596176552087	--
8	STEARIC-ACID	Pollen Or Spore				--
31	THIAMIN	Flower		4.2	-0.32448493232300896	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
4	THREONINE	Plant				--
4	TIN	Flower	5.0	25.0	1.4368424162141988	--
2	TRANS-BETA-FARNESENE	Leaf				--
2	TRANS-BETA-FARNESENE	Fruit				--
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.
2	TRIFOLIRHIZIN	Root				--
2	TRIFOLIRHIZIN	Flower				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
29	TRYPTOPHAN	Plant				J.S. Glasby Dict.Plis Containing 2ndary Metabolite. 1991.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	TYROSINE	Plant				--
3	VALINE	Plant				--
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.
77	ZINC	Flower				--