

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals found in *Zingiber officinale*

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	(+)-6-GINGEROL	Root				--
0	(+)-ALPHA-CURCUMENE	Essential Oil				--
0	(+)-ANGELICOIDENOL	Rhizome		14.0		--
0	(+)-BETA-PHELLANDRENE	Essential Oil				--
0	(+)-BORNEOL	Rhizome Essent. Oil				--
0	1,5-EPOXY-3-EPIHYDROXY-1-(3,4-DIHYDROXY-5-METHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome				--
0	1,5-EPOXY-3-HYDROXY-1-(3,4-DIHYDROXY-5-METHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome				--
0	1,5-EPOXY-3-HYDROXY-1-(4-HYDROXY-3,5-DIMETHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome				--
67	1,8-CINEOLE	Rhizome		490.0	-0.7528854377140122	--
67	1,8-CINEOLE	Rhizome Essent. Oil	26000.0	100000.0		--
0	1-(4-HYDROXY-3-METHOXYPHENYL)-3,5-DIACETOXYOCTANE	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
0	1-(4-HYDROXY-3-METHOXYPHENYL)-3,5-DIACETOXYOCTANE	Rhizome				--
0	1-(4-HYDROXY-3-METHOXYPHENYL)-3,5-OCTANEDIOL	Rhizome				--
0	1-(4-HYDROXY-3-METHOXYPHENYL)-3,5-OCTANEDIOL	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
0	1-(4-O-BETA-D-GLUCOPYRANOSYL-3-METHOXYPHENYL)-3,5-DIHYDROXYDECANE	Rhizome		2.0		--
0	1-7-BIS-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE-3(S)-DIOL	Rhizome		4.0		--
3	10-DEHYDROGINGERDIONE	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	10-DIHYDROGINGERDIONE	Rhizome		6.3		--
0	10-EPIZONARENE	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	10-GINGEDIOL	Rhizome				--
2	10-GINGERDIONE	Rhizome		11.0		--
2	10-GINGERDIONE	Root				--
3	10-GINGEROL	Rhizome	2.6	1862.0		--
3	10-GINGEROL	Root				--
0	10-SHOGAOL	Rhizome		74.0		--
0	10-SHOGOAL	Rhizome				--
0	12-GINGEDIOL	Rhizome				--
0	12-GINGEROL	Rhizome				--
0	14-GINGEROL	Rhizome				--
0	16-GINGEROL	Rhizome				--
0	2(R)-5(S)-DIHYDROXY-1-7-BIS-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome		5.6		--
0	2,2,4-TRIMETHYL-HEPTANE	Rhizome Essent. Oil				--
0	2,2,4-TRIMETHYL-HEPTANE	Rhizome				--
0	2-(2'-3'-EPOXY-3-METHYL-BUTYL)-3-METHYL-FURAN	Rhizome				--
0	2-(3'-METHYL-2'-BUTENYL)-3-METHYL-FURAN	Rhizome				--
0	2-6-DIMETHYL-HEPT-5-EN-1-AL	Rhizome				--
0	2-6-DIMETHYL-OCTA-2-6-DIENE-1-8-DIOL	Rhizome				--
0	2-6-DIMETHYL-OCTA-3-7-DIENE-1-6-DIOL	Rhizome				--
0	3(R)-5(S)-DIACETOXY-1-(3-4-DIMETHOXY-PHENYL)-DECANE	Rhizome		14.9		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3(R)-5(S)-DIACETOXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECANE	Rhizome		41.8		--
0	3(R)-ACETOXY-5(S)-DHYDROXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECANE	Rhizome		15.8		--
0	3(S)-5(S)-DIACETOXY-1-(4'-HYDROXY-3'-5'-DIMETHOXY-PHENYL)-7-(4'-HYDROXY-3'-METHOXY-PHENYL)-HEPTANE	Rhizome		20.0		--
0	3(S)-5(S)-DIACETOXY-1-7-BIS-(3-4-DIHYDROXY-PHENYL)-HEPTANE	Rhizome		15.7		--
0	3(S)-5(S)-DIHYDROXY-1-(4'-HYDROXY-3'-5'-DIMETHOXY-PHENYL)-7-(4'-HYDROXY-3'-METHOXY-PHENYL)-HEPTANE	Rhizome		2.0		--
0	3(S)-5(S)-DIHYDROXY-1-7-BIS-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome		5.3		--
0	3-5-DIACETOXY-1-(4-HYDROXY-3-5-DIMETHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome		30.3		--
0	3-5-DIACETOXY-7-(3-4-DIHYDROXY-PHENYL)-1-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome		3.5		--
0	3-6-EPOXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECA-3-5-DIENE	Rhizome				--
0	3-7-DIMETHYL-OCTA-3-CIS-6-DIEN-1-AL	Rhizome				--
0	3-7-DIMETHYL-OCTA-3-TRANS-6-DIEN-1-AL	Rhizome				--
0	3-ACETOXY-1,5-EPOXY-1-(3,4-DIHYDROXY-5-METHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome				--
0	3-EPIACETOXY-1,5-EPOXY-1-(3,4-DIHYDROXY-5-METHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3-PHENYL-BENZALDEHYDE	Rhizome Essent. Oil				--
0	3-PHENYL-BENZALDEHYDE	Rhizome				--
0	4-GINGEROL	Rhizome Essent. Oil				--
0	4-GINGEROL	Rhizome				--
0	4-PHENYL-BENZALDEHYDE	Rhizome				--
0	4-PHENYL-BENZALDEHYDE	Rhizome Essent. Oil				--
8	4-TERPINEOL	Rhizome				--
0	5(S)-3(R)-DIHYDROXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECANE	Rhizome		53.1		--
0	5(S)-ACETOXY-3(R)-HYDROXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECANE	Rhizome		15.8		--
0	5-HYDROXY-1-(4-HYDROXY-3-5-DIMETHOXY-PHENYL)-7-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTAN-3-ONE	Rhizome		0.52		--
0	5-HYDROXY-7-(4-HYDROXY-3-5-DIMETHOXY-PHENYL)-1-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTAN-3-ONE	Rhizome		0.52		--
0	5-HYDROXY-7-(4-HYDROXY-PHENYL)-1-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTAN-3-ONE	Rhizome		2.09		--
0	5-O-BETA-D-GLUCOPYRANOSYL-3-HYDROXY-1-(4-HYDROXY-PHENYL)-DECANE	Rhizome		3.0		--
0	6,10-DEHYDROGINGERDIONE	Root				--
0	6,10-DEHYDROGINGERDIONE	Rhizome				--
0	6-10-GINGERDIONE	Root				--
2	6-DEHYDROGINGERDIONE	Rhizome				--
0	6-DIHYDROGINGERDIONE	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	6-GINGEDIOL	Rhizome	21.0	30.0		--
0	6-GINGEDIOL-ACETATE	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	6-GINGEDIOL-ACETATE-METHYL-ETHER	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	6-GINGEDIOL-DIACETATE	Rhizome		3.3		--
0	6-GINGEDIOL-DIACETATE-METHYL-ETHER	Rhizome				--
0	6-GINGEDIOL-METHYL-ETHER	Rhizome				--
1	6-GINGERDIOL	Rhizome				--
2	6-GINGERDIONE	Rhizome	3.3	10.0		--
28	6-GINGEROL	Rhizome Essent. Oil				--
28	6-GINGEROL	Root Essent. Oil				--
28	6-GINGEROL	Root				--
28	6-GINGEROL	Essential Oil				--
28	6-GINGEROL	Rhizome	130.0	7138.0		--
1	6-GINGESULFONIC-ACID	Rhizome		13.0		--
0	6-METHYL-HEPT-5-EN-2-OL	Rhizome				--
0	6-METHYL-HEPT-5-EN-2-ONE	Rhizome Essent. Oil				--
0	6-METHYL-HEPT-5-EN-2-ONE	Rhizome	2.0	50.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	6-METHYLGINGEDIACETATE	Rhizome				--
0	6-METHYLGINGEDIACETATE	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
0	6-METHYLGINGEDIOL	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
0	6-METHYLGINGEDIOL	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	6-PARADOL	Rhizome		9.0		--
32	6-SHOGAOL	Rhizome	40.0	330.0		--
0	7-(3-4-DIHYDROXY-PHENYL)-1-(4-HYDROXY-3-METHOXY-PHENYL)-HEPT-4-EN-3-ONE	Rhizome		1.4		--
0	7-GINGEROL	Rhizome				--
1	8-BETA-17-EPOXY-LABD-TRANS-12-ENE-15,16-DIAL	Rhizome		400.0		--
0	8-GINGEDIOL	Rhizome				--
5	8-GINGEROL	Rhizome Essent. Oil				--
5	8-GINGEROL	Root				--
5	8-GINGEROL	Rhizome	110.0	1069.0		--
2	8-SHOGAOL	Rhizome	48.0	130.0		--
0	9-GINGEROL	Rhizome				--
2	9-OXO-NEROLIDOL	Rhizome Essent. Oil				--
2	9-OXO-NEROLIDOL	Rhizome				--
6	ACETALDEHYDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
6	ACETALDEHYDE	Rhizome				--
16	ACETIC-ACID	Rhizome				--
16	ACETIC-ACID	Rhizome Essent. Oil				--
3	ACETONE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
3	ACETONE	Rhizome				--
0	AFRAMODIAL	Seed		400.0	1.0	--
3	ALANINE	Root	310.0	1793.0	-0.8118285216311718	USDA's Ag Handbook 8 and sequelae)
3	ALANINE	Rhizome	310.0	1793.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALBUMIN	Root	4984.0	45924.0		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	ALBUMIN	Rhizome	4984.0	45924.0		--
0	ALLO-AROMADENDRENE	Rhizome Essent. Oil		1400.0		--
0	ALLO-AROMADENDRINE	Rhizome	1.0	70.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ALPHA-CADINENE	Rhizome				--
0	ALPHA-CADINENE	Rhizome Essent. Oil				--
3	ALPHA-CADINOL	Rhizome Essent. Oil				--
3	ALPHA-CADINOL	Rhizome				--
0	ALPHA-CEDROL	Rhizome Essent. Oil				--
0	ALPHA-COPAENE	Rhizome Essent. Oil				--
0	ALPHA-COPAENE	Rhizome				--
0	ALPHA-CUBEBENE	Rhizome Essent. Oil				--
3	ALPHA-CURCUMENE	Rhizome		280.0		--
3	ALPHA-CURCUMENE	Rhizome Essent. Oil		19400.0		--
0	ALPHA-FARNESENE	Rhizome	20.0	1250.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ALPHA-FARNESENE	Root Essent. Oil				--
0	ALPHA-FARNESENE	Rhizome Essent. Oil		25000.0		--
15	ALPHA-LINOLENIC-ACID	Root	340.0	3190.0	1.9620665358845129	USDA's Ag Handbook 8 and sequelae)
15	ALPHA-LINOLENIC-ACID	Rhizome	340.0	3190.0		--
0	ALPHA-MUUROLENE	Rhizome				--
0	ALPHA-MUUROLENE	Rhizome Essent. Oil				--
11	ALPHA-PHELLANDRENE	Rhizome Essent. Oil		4000.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	ALPHA-PHELLANDRENE	Rhizome	3.0	200.0	-1.0	--
28	ALPHA-PINENE	Rhizome		720.0	1.111167799007431	--
28	ALPHA-PINENE	Rhizome Essent. Oil		39000.0	1.392186073629917	--
3	ALPHA-SELINENE	Rhizome Essent. Oil				--
3	ALPHA-SELINENE	Rhizome				--
13	ALPHA-TERPINENE	Rhizome Essent. Oil		700.0		--
13	ALPHA-TERPINENE	Rhizome	0.5	35.0	1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
23	ALPHA-TERPINEOL	Rhizome	8.0	500.0	-0.26863716905966795	--
23	ALPHA-TERPINEOL	Rhizome Essent. Oil		10000.0		--
0	ALPHA-YLANGENE	Rhizome				--
1	ALPHA-ZINGIBERENE	Rhizome Essent. Oil		442600.0		--
1	ALPHA-ZINGIBERENE	Rhizome	74.0	4600.0	1.0	--
1	ALPHA-ZINGIBERENE	Rhizome		200.0	-1.0	--
5	ALUMINUM	Root	46.0	663.0	0.04325697966835661	--
5	ALUMINUM	Rhizome		663.0		--
0	ANGELICOIDENOL-2-O-BETA-D-GLUCOPYRANOSIDE	Rhizome		14.0		--
0	ANTI-METHYL-10-SHOGAOL	Rhizome				--
0	ANTI-METHYL-10-SHOGOAL	Rhizome				--
0	ANTI-METHYL-6-SHOGAOL	Rhizome				--
0	ANTI-METHYL-8-SHOGAOL	Rhizome				--
3	AR-CURCUMENE	Rhizome	20.0	9520.0	1.0	--
3	AR-CURCUMENE	Rhizome Essent. Oil		25000.0		--
3	AR-CURCUMENE	Root Essent. Oil				--
3	AR-CURCUMENE	Root				--
14	ARGININE	Rhizome	430.0	2486.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	ARGININE	Tuber				--
14	ARGININE	Root	430.0	2486.0	-0.41425783754112155	USDA's Ag Handbook 8 and sequelae)
3	AROMADENDRENE	Rhizome Essent. Oil				--
0	AROMADENDRINE	Rhizome				--
112	ASCORBIC-ACID	Rhizome	0.0	317.0	-0.3087839350199982	--
112	ASCORBIC-ACID	Root	20.0	288.0	-0.48133996980232785	--
0	ASH	Rhizome	7700.0	200000.0	1.829986028498204	--
0	ASH	Root	2450.0	35000.0	-0.9297321702301228	--
2	ASPARAGINE	Rhizome		500.0	-0.734470603058131	--
3	ASPARTIC-ACID	Tuber				--
3	ASPARTIC-ACID	Rhizome	2080.0	11990.0	-1.0	--
3	ASPARTIC-ACID	Shoot				--
3	ASPARTIC-ACID	Root	2080.0	11990.0	0.26543138626572105	USDA's Ag Handbook 8 and sequelae)
24	BENZALDEHYDE	Rhizome				--
6	BETA-BISABOLENE	Rhizome Essent. Oil	25000.0	105100.0	1.0	--
6	BETA-BISABOLENE	Rhizome	5.0	3600.0	-1.0	--
0	BETA-BISABOLOL	Rhizome Essent. Oil		5900.0		--
0	BETA-BISABOLOL	Rhizome	5.0	295.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
53	BETA-CAROTENE	Rhizome	0.0	4.0	-0.6667259338283312	--
53	BETA-CAROTENE	Root	0.1	1.0	-0.43002798118623115	--
0	BETA-CARYOPHYLLENE	Rhizome	0.7	45.0	-1.0	--
0	BETA-CARYOPHYLLENE	Rhizome Essent. Oil		900.0	-1.0	--
5	BETA-ELEMENE	Rhizome	2.0	500.0	0.26691736651361464	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
5	BETA-ELEMENE	Rhizome Essent. Oil		3000.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
13	BETA-EUDESOL	Rhizome Essent. Oil		9300.0		--
13	BETA-EUDESOL	Rhizome	7.0	465.0	1.0	--
0	BETA-FARNESENE	Root Essent. Oil				--
0	BETA-HIMACHALENE	Rhizome Essent. Oil				--
0	BETA-HIMACHALENE	Rhizome				--
13	BETA-IONONE	Rhizome Essent. Oil				--
13	BETA-IONONE	Rhizome				--
2	BETA-MYRCENE	Rhizome Essent. Oil				--
2	BETA-MYRCENE	Rhizome		330.0		--
2	BETA-MYRCENE	Rf	2.0	950.0		--
3	BETA-PHELLANDRENE	Rhizome	32.0	2850.0		--
3	BETA-PHELLANDRENE	Rhizome Essent. Oil	57000.0	106700.0		--
13	BETA-PINENE	Rhizome		100.0	0.1867718419094071	--
13	BETA-PINENE	Rhizome Essent. Oil		5300.0	1.248959633610851	--
2	BETA-SANTALOL	Rhizome Essent. Oil		162000.0		--
3	BETA-SELINENE	Rhizome				--
3	BETA-SELINENE	Rhizome Essent. Oil				--
5	BETA-SESQUIPELLANDRENE	Root Essent. Oil				--
5	BETA-SESQUIPELLANDRENE	Rhizome		460.0		--
5	BETA-SESQUIPELLANDRENE	Rhizome Essent. Oil		43000.0		--
0	BETA-SESQUIPELLANDROL	Rhizome				--
47	BETA-SITOSTEROL	Root	100.0	500.0	-0.26375908041164936	--
47	BETA-SITOSTEROL	Plant				--
5	BETA-THUJONE	Rhizome				--
5	BETA-THUJONE	Rhizome Essent. Oil				--

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0	BETA-ZINGIBERENE	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BISABOLENE	Root Essent. Oil				--
0	BISABOLENE	Root				--
0	BISABOLENE	Rhizome				--
0	BISABOLENE	Essential Oil				--
35	BORNEOL	Rhizome		180.0		--
35	BORNEOL	Rhizome Essent. Oil		18000.0		--
0	BORNEOL-ACETATE	Rhizome Essent. Oil		2100.0		--
0	BORNEOL-METHYL-ETHER	Rhizome				--
12	BORNYL-ACETATE	Root	2.0	105.0	-0.5636066792773037	--
12	BORNYL-ACETATE	Rhizome	2.0	105.0		--
4	BORON	Root	1.0	4.0	-0.7413065903382969	Betting on Boron, Unpublished draft by J. A. Duke on file at USDA, draft and papers relating to boron percentages. Includes Internat. Z. Vit. Ern. Forschung 43:1973 (boron).
4	BORON	Rhizome	1.0	4.0		--
102	CAFFEIC-ACID	Rhizome				--
0	CALAMENEN	Rhizome				--
0	CALAMENENE	Rhizome Essent. Oil				--
28	CALCIUM	Root	116.0	1650.0	-0.6300358799835268	--
28	CALCIUM	Rhizome	150.0	3458.0	-0.7549394061569589	--
2	CAMPESTEROL	Root	10.0	100.0	-0.2945736885682078	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
9	CAMPHENE	Rhizome Essent. Oil		126000.0		--
9	CAMPHENE	Rhizome		3080.0	1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	CAMPHENE	Essential Oil				--
0	CAMPHENE-HYDRATE	Rhizome				--
0	CAMPHENE-HYDRATE	Rhizome Essent. Oil				--
41	CAMPHOR	Rhizome	1.0	60.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
41	CAMPHOR	Rhizome Essent. Oil		1200.0	1.0	--
3	CAPRIC-ACID	Root	1800.0	1980.0		USDA's Ag Handbook 8 and sequelae)
3	CAPRIC-ACID	Rhizome	1800.0	1980.0		--
5	CAPRYLIC-ACID	Root	70.0	380.0		USDA's Ag Handbook 8 and sequelae)
5	CAPRYLIC-ACID	Rhizome	70.0	380.0		--
5	CAPRYLIC-ACID	Rhizome Essent. Oil				--
44	CAPSAICIN	Plant				Stitt, Paul. Why George should eat broccoli.
44	CAPSAICIN	Rhizome				--
0	CAR-3-ENE	Rhizome				--
0	CAR-3-ENE	Rhizome Essent. Oil				--
0	CARBOHYDRATES	Rhizome	92000.0	823240.0	0.675882053937855	--
0	CARBOHYDRATES	Root	47390.0	677000.0	-1.9641525828914683	--
31	CARYOPHYLLENE	Essential Oil				--
0	CEDOROL	Rhizome Essent. Oil				--
0	CEDOROL	Rhizome				--
3	CHAVICOL	Rhizome Essent. Oil				--
3	CHAVICOL	Rhizome				--
77	CHLOROGENIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
24	CHROMIUM	Rhizome	6.0	20.0	1.0	--
24	CHROMIUM	Root		0.6	-0.44035111981195524	--
0	CHRYSANTHEMIN	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CINEOLE	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	CIS-1-2-BIS-(TRANS-3-4-DIMETHOXY-STYRYL)-CYCLOBUTANE	Rhizome		13.9		--
0	CIS-10-SHOGAOL	Rhizome				--
0	CIS-10-SHOGOAL	Rhizome				--
0	CIS-12-SHOGAOL	Rhizome				--
0	CIS-12-SHOGOAL	Rhizome				--
0	CIS-3-(3-4-DIMETHOXY-PHENYL)-4-(TRANS-3-4-DIMETHOXY-STYRYL)-CYCLOHEXENE	Rhizome		50.6		--
0	CIS-6-SHOGOAL	Rhizome		40.0		--
0	CIS-8-SHOGAOL	Rhizome		40.0		--
0	CIS-8-SHOGOAL	Rhizome		40.0		--
0	CIS-BETA-SESQUIPELLANDROL	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	CIS-BETA-SESQUIPELLANDROL	Rhizome Essent. Oil				--
0	CIS-GERANIC-ACID	Rhizome				--
0	CIS-HEXAN-3-OL	Rhizome Essent. Oil				--
0	CIS-HEXAN-3-OL	Rhizome				--
0	CIS-NEROLIDOL	Rhizome Essent. Oil				--
0	CIS-ROSE-OXIDE	Rhizome				--
0	CIS-SELINEN-4-OL	Rhizome				--
0	CIS-SESQUIABINENE-HYDRATE	Rhizome				--
0	CIS-SESQUISABINENE-HYDRATE	Rhizome				--
0	CIS-SESQUISABINENE-HYDRATE	Plant				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CIS-SESQUISABINENE-HYDRATE	Rhizome Essent. Oil				--
53	CITRAL	Root	0.0	13500.0		--
53	CITRAL	Rhizome	0.0	13500.0		--
53	CITRAL	Rhizome Essent. Oil		130000.0		--
20	CITRONELLAL	Rhizome		10.0		--
20	CITRONELLAL	Rhizome Essent. Oil		2900.0		--
15	CITRONELLOL	Rhizome	2.0	6500.0		--
15	CITRONELLOL	Rhizome Essent. Oil	3000.0	130000.0		--
0	CITRONELLOL-ACETATE	Rhizome				--
0	CITRONELLOL-ACETATE	Rhizome Essent. Oil				--
2	CITRONELLYL-ACETATE	Rhizome				--
2	CITRONELLYL-ACETATE	Rhizome Essent. Oil				--
2	COBALT	Rhizome	0.9	42.0	1.0	--
2	COBALT	Root	0.3	4.2	-0.454047411785451	--
12	COPPER	Rhizome	3.0	16.0	1.223047708525459	--
12	COPPER	Root	3.0	16.0	0.47378131766732856	--
1	CUMENE	Root		1.0		--
1	CUMENE	Rhizome		1.0		--
135	CURCUMIN	Rhizome				--
135	CURCUMIN	Plant				Stitt, Paul. Why George should eat broccoli.
5	CYANIN	Rhizome				--
13	CYSTEINE	Tuber				--
13	CYSTEINE	Shoot				--
2	CYSTINE	Root	80.0	462.0	-0.8891832694867765	USDA's Ag Handbook 8 and sequelae)
2	CYSTINE	Rhizome	80.0	462.0	-1.0	--
4	D-BORNEOL	Rhizome	14.0	1102.0	1.0	--
4	D-BORNEOL	Root	14.0	1102.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	DEC-TRANS-2-EN-1-AL	Rhizome				--
1	DECAN-1-AL	Rhizome				--
0	DECANAL	Plant	5.0	100.0	1.0	--
0	DECYL-ALDEHYDE	Rhizome				--
0	DECYL-ALDEHYDE	Root				--
9	DELPHINIDIN	Plant				Stitt, Paul. Why George should eat broccoli.
9	DELTA-CADINENE	Rhizome	1.0	65.0	-0.6681865179092669	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
9	DELTA-CADINENE	Rhizome Essent. Oil		1300.0		--
0	DELTA-CAR-3-ENE	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	DEMETHYL-HEXAHYDROCURCUMIN	Root				--
0	DEMETHYL-HEXAHYDROCURCUMIN	Rhizome				--
0	DIETHYLSULFIDE	Rhizome				--
0	DIETHYLSULFIDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	DIHYDROGINGEROL	Root Essent. Oil				--
0	DIHYDROGINGEROL	Rhizome				--
0	DODEC-TRANS-2-EN-1-AL	Rhizome				--
1	DODECANOIC-ACID	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	ELEMOL	Rhizome	3.0	190.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	ELEMOL	Rhizome Essent. Oil		3800.0		--
0	EO	Rhizome		10000.0	-0.5317116167359565	--
0	EO	Root	700.0	30000.0	0.7582862013339499	--
0	EO	Resin, Exudate, Sap		60000.0	-1.007598115442729	--
0	EO	Or	800.0	50000.0		--
6	ETHYL-ACETATE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
6	ETHYL-ACETATE	Rhizome				--
0	ETHYL-ISOPROPYL-SULFIDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	ETHYL-ISOPROPYL-SULFIDE	Rhizome				--
1	ETHYL-MYRISTATE	Rhizome				--
1	ETHYL-MYRISTATE	Rhizome Essent. Oil				--
76	EUGENOL	Rhizome Essent. Oil				--
2	FARNESAL	Rhizome	1.0	100.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	FARNESAL	Rhizome Essent. Oil		2000.0		--
2	FARNESENE	Rhizome	245.0	4910.0		--
2	FARNESENE	Essential Oil				--
17	FARNESOL	Rhizome Essent. Oil				--
17	FARNESOL	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
17	FARNESOL	Rhizome				--
0	FAT	Root	5040.0	72000.0	1.6380886391848568	--
0	FAT	Rhizome	7000.0	77000.0	0.7203322628500908	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
61	FERULIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
15	FIBER	Root	9000.0	171000.0	1.8408067359156413	--
15	FIBER	Rhizome	9000.0	171000.0	-0.07465068104411866	--
0	FIBER(CRUDE)	Root		171000.0	1.7664789948967667	--
0	FIBER(DIETARY)	Root		242000.0	-1.7083639629745593	--
3	FLUORIDE	Rhizome		7.9	1.0	--
0	FLUORINE	Root		2.0	1.3347186593784242	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	FLUORINE	Rhizome		2.0		--
8	FRUCTOSE	Root				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
8	FRUCTOSE	Rhizome				--
0	FURANOGERMENE	Rhizome				--
6	FURFURAL	Plant				--
6	FURFURAL	Rhizome Essent. Oil				--
0	GADOLEIC-ACID	Rhizome	70.0	380.0	1.0	--
0	GADOLEIC-ACID	Root	70.0	380.0		USDA's Ag Handbook 8 and sequelae)
4	GALANOLACTONE	Rhizome				--
4	GALANOLACTONE	Root				--
22	GAMMA-AMINOBUTYRIC-ACID	Rhizome				--
22	GAMMA-AMINOBUTYRIC-ACID	Root				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
2	GAMMA-BISABOLENE	Rhizome Essent. Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Refernce Citation
0	GAMMA-EUDESOL	Rhizome	2.0	115.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GAMMA-EUDESOL	Rhizome Essent. Oil		2300.0		--
0	GAMMA-MUUROLENE	Rhizome	7.0	455.0	1.0	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GAMMA-MUUROLENE	Rhizome Essent. Oil		9100.0		--
0	GAMMA-SELINENE	Root	35.0	700.0		--
0	GAMMA-SELINENE	Rhizome	35.0	700.0		--
11	GAMMA-TERPINENE	Rhizome Essent. Oil		500.0		--
11	GAMMA-TERPINENE	Rhizome		1230.0	1.0	--
13	GERANIAL	Rhizome Essent. Oil	159000.0	400000.0		--
13	GERANIAL	Rhizome		980.0		--
35	GERANIOL	Rhizome Essent. Oil		6900.0		--
35	GERANIOL	Rhizome	2.0	345.0		--
0	GERANIOL-ACETATE	Rhizome				--
0	GERANIOL-ACETATE	Rhizome Essent. Oil		2000.0		--
5	GERANYL-ACETATE	Rhizome Essent. Oil				--
5	GERANYL-ACETATE	Rhizome				--
0	GERMANIUM	Rhizome	87.0	169.0		--
0	GINGEDIACETATE	Rhizome				--
0	GINGEDIACETATE	Root				Chemical Constituents of Oriental Herbs (3 diff. books)
3	GINGERENONE-A	Rhizome	118.0	136.0		--
2	GINGERENONE-B	Rhizome		4.7		--
2	GINGERENONE-C	Rhizome		14.2		--
0	GINGERGLYCOLIPID-A	Rhizome		13.0		--
0	GINGERGLYCOLIPID-B	Rhizome	14.0	15.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GINGERGLYCOLIPID-C	Rhizome		14.0		--
27	GINGEROL	Root Essent. Oil				--
27	GINGEROL	Root				--
27	GINGEROL	Rhizome				--
0	GINGEROL-METHYL-ETHER	Rhizome				--
0	GINGEROLS	Rhizome		13200.0		--
0	GINGERONE	Root				--
0	GINGERONE	Rhizome				--
0	GLANOLACTONE	Rhizome		120.0		--
0	GLOBULIN	Root	2366.0	21801.0		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	GLOBULIN	Rhizome	2366.0	21801.0		--
7	GLUCOSE	Rhizome				--
7	GLUCOSE	Root				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
8	GLUTAMIC-ACID	Rhizome	1620.0	9328.0	1.0	--
8	GLUTAMIC-ACID	Root	1620.0	9328.0	-0.49975515668744586	USDA's Ag Handbook 8 and sequelae)
0	GLUTELIN	Rhizome	2506.0	23091.0		--
0	GLUTELIN	Root	2506.0	23091.0		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
12	GLYCINE	Tuber				--
12	GLYCINE	Root	430.0	2486.0	-0.22589147640123697	USDA's Ag Handbook 8 and sequelae)
12	GLYCINE	Shoot				--
12	GLYCINE	Rhizome	430.0	2486.0	-1.0	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GLYOXAL	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	GUAIL	Rhizome				--
3	GUAJOL	Rhizome Essent. Oil				--
1	HEPTADECANOIC-ACID	Rhizome				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	HEPTAN-2-OL	Rhizome Essent. Oil		2700.0		--
0	HEPTAN-2-OL	Rhizome	1.0	135.0		--
0	HEPTAN-2-ONE	Rhizome Essent. Oil				--
0	HEPTAN-2-ONE	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	HEXAHYDROCURCUMIN	Rhizome	21.3	25.1		--
2	HEXAHYDROCURCUMIN	Rhizome Essent. Oil				--
0	HEXAN-1-AL	Rhizome Essent. Oil	2.0	700.0		--
0	HEXAN-1-AL	Rhizome	2.0	35.0		--
0	HEXAN-1-OL	Rhizome				--
0	HEXAN-1-OL	Rhizome Essent. Oil				--
3	HEXANOL	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
7	HISTIDINE	Rhizome	300.0	1738.0	-1.0	--
7	HISTIDINE	Root	300.0	1738.0	-0.05270016889774364	USDA's Ag Handbook 8 and sequelae)
2	HUMULENE	Rhizome				--
2	HUMULENE	Root				--
0	HUMULENE-EPOXIDE-1	Rhizome				--
0	HUMULENE-EPOXIDE-2	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	IRON	Root	1.1	15.0	-0.4198613477374219	--
6	IRON	Rhizome	4.0	162.0	-0.5945282624931012	--
7	ISOBORNEOL	Rhizome				--
7	ISOBORNEOL	Rhizome Essent. Oil				--
16	ISOEUGENOL	Rhizome				--
0	ISOEUGENOL-METHYL-ETHER	Rhizome Essent. Oil		800.0		--
0	ISOEUGENOL-METHYL-ETHER	Rhizome	0.6	40.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	ISOGINGERENONE-B	Rhizome		4.7		--
3	ISOLEUCINE	Rhizome	510.0	2926.0	1.0	--
3	ISOLEUCINE	Root	510.0	2926.0	-0.2833451886291646	USDA's Ag Handbook 8 and sequelae)
3	ISOLEUCINE	Tuber				--
1	ISOVALERALDEHYDE	Rhizome				--
1	ISOVALERALDEHYDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	JUNIPER-CAMPHOR	Rhizome Essent. Oil				--
75	KAEMPFEROL	Plant				Stitt, Paul. Why George should eat broccoli.
0	KILOCALORIES	Rhizome	690.0	3764.0	1.0	--
0	KILOCALORIES	Root	690.0	3764.0	0.8753423179683022	USDA's Ag Handbook 8 and sequelae)
1	LABDA-TRANS-8(17)-12-DIENE-15-16-DIAL	Rhizome				--
7	LAURIC-ACID	Rhizome	390.0	3630.0		--
7	LAURIC-ACID	Root	390.0	3630.0	1.4134619657773633	USDA's Ag Handbook 8 and sequelae)
7	LAURIC-ACID	Rhizome Essent. Oil		900.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
20	LECITHIN	Root				Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
20	LECITHIN	Rhizome				--
2	LEUCINE	Rhizome	740.0	4257.0	1.0	--
2	LEUCINE	Root	740.0	4257.0	-0.0564322869347267	USDA's Ag Handbook 8 and sequelae)
2	LEUCINE	Tuber				--
60	LIMONENE	Rhizome	17.0	1050.0	0.6650265305559545	--
60	LIMONENE	Rhizome Essent. Oil		21000.0	1.411888259893775	--
0	LINALOL	Rhizome		50.0	-1.0	--
53	LINALOOL	Rhizome Essent. Oil	3200.0	30000.0	1.0	--
53	LINALOOL	Root Essent. Oil				--
53	LINALOOL	Rhizome		50.0	-1.0	--
0	LINALOOL-OXIDE	Rhizome				--
0	LINALOOL-PROPIONATE	Rhizome Essent. Oil				--
27	LINOLEIC-ACID	Root	1200.0	11220.0	3.017959618154365	USDA's Ag Handbook 8 and sequelae)
27	LINOLEIC-ACID	Rhizome	1200.0	11220.0	1.0	--
4	LYSINE	Rhizome	570.0	3110.0	-1.0	--
4	LYSINE	Root	570.0	3110.0	-0.5755610272389462	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Root	188.0	2690.0	0.0683510412136399	--
65	MAGNESIUM	Rhizome	430.0	2690.0	1.0779788333953992	--
14	MANGANESE	Root	2.4	33.8	-0.14226990626562633	--
14	MANGANESE	Rhizome	106.0	350.0	1.4980699854714286	--
23	MELATONIN	Rhizome		0.001		Hattori, A., et. al. 1995. Identification of Melatonin in Plants and its Effects on Plasma Melatonin Levels and Binding to Melatonin Receptors in Vertebrates. Biochem. Mol. Biol. Int., 35(3): 627-634.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	MENTHOL-ACETATE	Rhizome Essent. Oil				--
0	MENTHOL-ACETATE	Rhizome				--
15	METHIONINE	Rhizome	130.0	737.0	-1.0	--
15	METHIONINE	Root	130.0	737.0	-0.5917219440063812	USDA's Ag Handbook 8 and sequelae)
0	METHYL-10-GINGEROL	Rhizome				--
0	METHYL-10-SHOGOAL	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	METHYL-12-GINGEDIOL	Rhizome				--
0	METHYL-12-GINGEROL	Rhizome				--
0	METHYL-6-GINGEROL	Rhizome				--
0	METHYL-6-SHOGOAL	Rhizome				--
0	METHYL-8-GINGEROL	Rhizome				--
0	METHYL-8-SHOGOAL	Rhizome				Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	METHYL-ACETATE	Rhizome				--
3	METHYL-ACETATE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	METHYL-ALLYL-SULFIDE	Rhizome				--
0	METHYL-ALLYL-SULFIDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
2	METHYL-CAPRYLATE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	METHYL-GINGEROL	Essential Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	METHYL-GLYOXAL	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	METHYL-HEPTENONE	Rhizome Essent. Oil				--
0	METHYL-HEPTENONE	Rhizome				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
2	METHYL-ISOBUTYL-KETONE	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
3	METHYL-NONYL-KETONE	Rhizome Essent. Oil				--
3	METHYL-NONYL-KETONE	Rhizome				--
13	MUFA	Root	1540.0	8400.0	2.513577974996003	USDA's Ag Handbook 8 and sequelae)
13	MUFA	Rhizome	1540.0	8400.0	1.0	--
22	MYRCENE	Rhizome	2.0	950.0	-1.0	--
22	MYRCENE	Rhizome Essent. Oil		19000.0	-1.0	--
22	MYRCENE	Rf	2.0	950.0		--
34	MYRICETIN	Plant				Stitt, Paul. Why George should eat broccoli.
6	MYRISTIC-ACID	Rhizome	180.0	1650.0	-1.0	--
6	MYRISTIC-ACID	Root	180.0	1650.0	1.7305384293651185	USDA's Ag Handbook 8 and sequelae)
5	MYRTENAL	Rhizome	0.5	30.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
5	MYRTENAL	Rhizome Essent. Oil		600.0		--
1	N-BUTYRALDEHYDE	Rhizome				--
1	N-BUTYRALDEHYDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	N-DECANAL	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
1	N-HEPTANE	Rhizome				--
0	N-NONANE	Rhizome				--
0	N-NONANE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	N-NONANOL	Rhizome				--
0	N-NONANOL	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	N-NONANONE	Rhizome				--
0	N-NONANONE	Rhizome Essent. Oil				--
0	N-OCTANE	Essential Oil				--
0	N-OCTANE	Rhizome				--
0	N-OCTANE	Rhizome Essent. Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	N-OCTANOL	Rhizome				--
0	N-PROPANOL	Rhizome				--
0	N-PROPANOL	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	N-UNDECANONE	Rhizome Essent. Oil				--
0	N-UNDECANONE	Rhizome				--
0	NEO-ISOPULEGOL	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NEOISOPULEGOLE	Rhizome Essent. Oil				--
4	NERAL	Rhizome		410.0		--
4	NERAL	Rhizome Essent. Oil	81000.0	260000.0		--
10	NEROL	Rhizome				--
10	NEROL	Rhizome Essent. Oil				--
0	NEROL-OXIDE	Rhizome				--
11	NEROLIDOL	Rhizome Essent. Oil				--
11	NEROLIDOL	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
11	NEROLIDOL	Rhizome		60.0		--
39	NIACIN	Rhizome	5.0	135.0	1.0692722579935732	--
39	NIACIN	Root	3.6	51.0	0.0220587467388613	--
3	NICKEL	Rhizome	2.0	5.2	1.0	--
3	NICKEL	Root	2.0	5.2	1.752676229894103	--
0	NITROGEN	Rhizome	16000.0	24440.0		--
0	NITROGEN	Root	16000.0	24440.0	-0.453393339582228	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	NONAN-1-AL	Rhizome				--
0	NONAN-2-OL	Rhizome		10.0		--
0	NONAN-2-OL	Rhizome Essent. Oil		2000.0		--
0	NONAN-2-ONE	Rhizome Essent. Oil		3200.0		--
0	NONAN-2-ONE	Rhizome	8.0	160.0		--
0	NONANAL	Root	2.0	50.0		--
0	NONANAL	Rhizome	2.0	50.0	1.0	--
0	NONYL-ALDEHYDE	Rhizome Essent. Oil				--
0	NONYL-ALDEHYDE	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	OCT-TRANS-2-EN-1-AL	Rhizome				--
0	OCTAN-1-AL	Rhizome Essent. Oil		800.0		--
0	OCTAN-1-AL	Rhizome	2.0	40.0		--
0	OCTAN-1-OL-ACETATE	Rhizome				--
0	OCTAN-2-OL	Rhizome				--
18	OLEIC-ACID	Root	1190.0	11000.0	3.056426676222409	USDA's Ag Handbook 8 and sequelae)
18	OLEIC-ACID	Rhizome	1190.0	11000.0	1.0	--
9	OXALIC-ACID	Rhizome		5000.0		--
9	OXALIC-ACID	Root		5000.0	2.5415261372448525	--
25	P-COUMARIC-ACID	Rhizome		19.0	-1.0	--
0	P-CYMEN-8-OL	Rhizome	0.5	35.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	P-CYMEN-8-OL	Rhizome Essent. Oil		700.0		--
16	P-CYMENE	Rhizome Essent. Oil		26000.0		--
16	P-CYMENE	Rhizome		90.0	-0.47413848530364283	--
13	P-HYDROXY-BENZOIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
0	P-MENTHA-1,5-DIEN-7-OL	Rhizome				--
0	P-MENTHA-1-8-DIEN-7-OL	Rhizome				--
0	P-MENTHA-2,8-DIEN-1-OL	Rhizome				--
13	PALMITIC-ACID	Rhizome	1200.0	11220.0	1.0	--
13	PALMITIC-ACID	Root	1200.0	11220.0	0.13536149219761523	USDA's Ag Handbook 8 and sequelae)
2	PALMITOLEIC-ACID	Root	210.0	1145.0	0.05724502554235483	USDA's Ag Handbook 8 and sequelae)
2	PALMITOLEIC-ACID	Rhizome	210.0	1145.0	1.0	--
11	PANTOTHENIC-ACID	Root	2.0	11.0	-0.9376231626080279	USDA's Ag Handbook 8 and sequelae)
11	PANTOTHENIC-ACID	Rhizome	2.0	11.0		--
3	PARADOL	Rhizome				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	PATCHOULI-ALCOHOL	Rhizome				--
4	PATCHOULI-ALCOHOL	Rhizome Essent. Oil				--
1	PENTADECANOIC-ACID	Rhizome				Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
0	PENTAN-2-OL	Rhizome				--
0	PENTOSANS	Rhizome				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
11	PERILLALDEHYDE	Rhizome Essent. Oil				--
0	PERILLEN	Rhizome				--
0	PERILLEN	Rhizome Essent. Oil				--
0	PERILLENE	Rhizome	1.0	95.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	PERILLENE	Rhizome Essent. Oil		1900.0		--
7	PHENYLALANINE	Rhizome	450.0	2455.0	1.0	--
7	PHENYLALANINE	Root	450.0	2455.0	-0.39322284344633335	USDA's Ag Handbook 8 and sequelae)
0	PHOSPHATIDIC-ACID	Rhizome				--
0	PHOSPHATIDIC-ACID	Root				Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
4	PHOSPHORUS	Rhizome	320.0	5323.0	0.4586280406131061	--
4	PHOSPHORUS	Root	181.0	2580.0	-0.1647701538167895	--
2	PHYTOSTEROLS	Rhizome	150.0	913.0		--
2	PHYTOSTEROLS	Root	150.0	913.0	0.021969609312565776	USDA's Ag Handbook 8 and sequelae)
0	PIN-2-EN-5-OL	Rhizome				--
2	PIPECOLIC-ACID	Rhizome		320.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	POTASSIUM	Root	1323.0	18900.0	0.22854620707535842	--
14	POTASSIUM	Rhizome	2640.0	25079.0	1.345332062692374	--
0	PROLAMINE	Plant	1540.0	14190.0		--
0	PROLINE	Rhizome	410.0	2376.0	-1.0	--
0	PROLINE	Root	410.0	2376.0	0.2837932421997398	USDA's Ag Handbook 8 and sequelae)
2	PROPIONALDEHYDE	Rhizome				--
2	PROPIONALDEHYDE	Essential Oil				Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	PROTEASE	Rhizome				--
0	PROTEIN	Rhizome	14000.0	129000.0	-0.1125496505640368	--
0	PROTEIN	Root	7000.0	100000.0	-0.20677098370529998	--
4	PUFA	Rhizome	1540.0	8400.0	1.0	--
4	PUFA	Root	1540.0	8400.0	1.333787882042874	USDA's Ag Handbook 8 and sequelae)
176	QUERCETIN	Plant				Stitt, Paul. Why George should eat broccoli.
1	RAFFINOSE	Root				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
1	RAFFINOSE	Rhizome				--
15	RIBOFLAVIN	Root	0.2	3.1	-0.21327168080429257	--
15	RIBOFLAVIN	Rhizome	0.0	5.0	-0.10465353747473792	--
0	ROSEFURAN	Rhizome Essent. Oil		1800.0		--
0	ROSEFURAN	Rhizome	1.0	90.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
5	SABINENE	Rhizome Essent. Oil		700.0		--
5	SABINENE	Rhizome		20.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
7	SALICYLATES	Root	45.0	250.0	0.1478264757482174	--
0	SEC-BUTANOL	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
60	SELENIUM	Rhizome				--
60	SELENIUM	Root	0.1	1.0	-0.29131634494743897	--
0	SELINA-3,7(11)-DIENE	Rhizome	1.0	65.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	SELINA-3,7(11)-DIENE	Rhizome Essent. Oil		1300.0		--
1	SERINE	Rhizome	450.0	2596.0	-1.0	--
1	SERINE	Root	450.0	2596.0	-0.4317372218630029	USDA's Ag Handbook 8 and sequelae)
1	SERINE	Tuber				--
1	SERINE	Shoot				--
0	SESQUIPHELLANDRENE	Rhizome Essent. Oil				--
0	SESQUITERPENE-HYDROCARBON	Rhizome Essent. Oil				--
0	SESQUITHUJENE	Essential Oil				--
0	SESQUITHUJENE	Rhizome				--
0	SFA	Rhizome	2030.0	11085.0		--
0	SFA	Root	2030.0	11085.0	3.076072794631063	USDA's Ag Handbook 8 and sequelae)
14	SHIKIMIC-ACID	Leaf				--
18	SHOGAOL	Essential Oil				--
18	SHOGAOL	Rhizome Essent. Oil				--
18	SHOGAOL	Root Essent. Oil				--
18	SHOGAOL	Root				--
18	SHOGAOL	Rhizome				--
0	SHOGAOLS	Root		1800.0		--
0	SHOGAOLS	Rhizome		1800.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	SILICON	Root	2.0	28.5	-0.2119845357116175	--
4	SILICON	Rhizome		285.0		--
1	SODIUM	Root	30.0	423.0	-0.31581734202184225	--
1	SODIUM	Rhizome	60.0	709.0	0.18755999323325184	--
5	STARCH	Root	35000.0	600000.0	1.18913249334548	--
5	STARCH	Rhizome	123000.0	500000.0	0.41680828464384206	--
8	STEARIC-ACID	Root	170.0	1540.0	2.8114380671291452	USDA's Ag Handbook 8 and sequelae)
8	STEARIC-ACID	Rhizome	170.0	1540.0	1.0	--
12	STIGMASTEROL	Root	40.0	200.0	0.32535405334624357	Spiller, G. A. 1996 (Spiller, G. A. Ed. 1996. CRC Handbook of Lipids in Human Nutrition. CRC Press. Boca Raton, FL. 233 pp.)
14	SUCROSE	Rhizome				--
14	SUCROSE	Root				ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	SUGARS	Root	5600.0	80000.0	-0.231158975572398	--
23	TERPINEN-4-OL	Rhizome				--
23	TERPINEN-4-OL	Rhizome Essent. Oil				--
9	TERPINOLENE	Rhizome	1.0	90.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
9	TERPINOLENE	Rhizome Essent. Oil		1800.0		--
0	TERT-BUTANOL	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	THIAMIN	Rhizome	0.0	3.0	-0.9831353843426084	--
31	THIAMIN	Root	0.0	3.0	-0.32687193108858614	--
0	THIAMINE	Root	0.1	1.5	-0.5634413774971821	--
4	THREONINE	Shoot				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	THREONINE	Tuber				--
4	THREONINE	Root	360.0	2057.0	-0.4948266685368329	USDA's Ag Handbook 8 and sequelae)
4	THREONINE	Rhizome	360.0	2057.0	-1.0	--
4	TIN	Root	0.1	1.3	-1.5436732662398835	--
4	TIN	Rhizome		13.0		--
0	TRAN-6-SHOGOAL	Rhizome		40.0		--
0	TRAN-8-SHOGOAL	Rhizome		40.0		--
0	TRANS-10-SHOGAOL	Rhizome				--
0	TRANS-10-SHOGOAL	Rhizome				--
0	TRANS-12-SHOGAOL	Rhizome				--
0	TRANS-12-SHOGOAL	Rhizome				--
0	TRANS-3-(2-4-5-TRIMETHOXY-PHENYL)-4-(TRANS-3-4-DIMETHOXY-STYRYL)-CYCLOHEXENE	Rhizome		13.9		--
0	TRANS-3-(3-4-DIMETHOXY-PHENYL)-4-(TRANS-3-4-DIMETHOXY-STYRYL)-CYCLOHEXENE	Rhizome		55.8		--
0	TRANS-6-SHOGAOL	Rhizome		40.0		--
0	TRANS-8-SHOGAOL	Rhizome		40.0		--
2	TRANS-BETA-FARNESENE	Rhizome	1.0	1200.0	-1.0	--
0	TRANS-BETA-SESQUIPHELLANDROL	Rhizome	6.0	360.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	TRANS-BETA-SESQUIPHELLANDROL	Rhizome Essent. Oil		7200.0		--
0	TRANS-GERANIC-ACID	Rhizome				--
0	TRANS-LINALOL-OXIDE	Rhizome				--
0	TRANS-LINALOOL-OXIDE	Rhizome Essent. Oil				--
0	TRANS-NEROLIDOL	Rhizome Essent. Oil	5.0	7000.0		--
0	TRANS-NEROLIDOL	Rhizome	5.0	350.0		--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-OCTEN-2-AL	Rhizome				--
0	TRANS-OCTEN-2-AL	Rhizome Essent. Oil				--
0	TRANS-ROSE-OXIDE	Rhizome				--
0	TRICYCLEN	Rhizome Essent. Oil		2300.0		--
0	TRICYCLEN	Rhizome	2.0	115.0		--
29	TRYPTOPHAN	Rhizome	120.0	693.0	-1.0	--
29	TRYPTOPHAN	Root	120.0	693.0	-0.48600202664790343	USDA's Ag Handbook 8 and sequelae)
8	TYROSINE	Rhizome	200.0	1122.0	-1.0	--
8	TYROSINE	Root	200.0	1122.0	-1.4340366854424644	USDA's Ag Handbook 8 and sequelae)
0	UNDECAN-2-OL	Rhizome Essent. Oil		500.0		--
0	UNDECAN-2-OL	Rhizome	1.0	25.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	UNDECAN-2-ONE	Rhizome Essent. Oil				--
0	UNDECAN-2-ONE	Rhizome				--
0	URIDINE	Rhizome		11.0	1.0000000000000002	--
3	VALINE	Root	730.0	4202.0	0.07599207749422336	USDA's Ag Handbook 8 and sequelae)
3	VALINE	Rhizome	730.0	4202.0	1.0	--
3	VALINE	Tuber				--
3	VALINE	Shoot				--
24	VANILLIC-ACID	Plant				Stitt, Paul. Why George should eat broccoli.
28	VANILLIN	Plant				Stitt, Paul. Why George should eat broccoli.
0	VIT-B-6	Rhizome	1.6	8.7		--
0	VIT-B-6	Root	1.6	8.7	-0.2586482502443934	USDA's Ag Handbook 8 and sequelae)
0	WATER	Rhizome	93090.0	930000.0	0.9531262707913175	--
0	WATER	Root		930000.0	1.052183415545071	--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	XANTHORRHIZOL	Rhizome	1.0	50.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	XANTHORRHIZOL	Rhizome Essent. Oil		1000.0		--
0	ZERUMBODIENONE	Rhizome				--
77	ZINC	Root				--
77	ZINC	Rhizome		57.0	-0.18700695320743768	--
0	ZINGERBERONE	Essential Oil				--
13	ZINGERONE	Essential Oil				--
13	ZINGERONE	Root Essent. Oil				--
13	ZINGERONE	Rhizome				--
13	ZINGERONE	Rhizome Essent. Oil				--
1	ZINGIBAIN	Root				Abstract (See species file)
1	ZINGIBAIN	Rhizome				--
6	ZINGIBERENE	Rhizome Essent. Oil				--
6	ZINGIBERENE	Essential Oil				--
6	ZINGIBERENE	Root Essent. Oil				--
6	ZINGIBERENE	Rhizome	0.5	600.0	-1.0	--
0	ZINGIBERENES	Rhizome	890.0	17836.0		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ZINGIBERENOL	Rhizome Essent. Oil				--
0	ZINGIBERENOL	Rhizome		100.0		--
0	ZINGIBERINE	Root				--
0	ZINGIBEROL	Rhizome	0.0	8000.0		--
0	ZINGIBEROL	Rhizome Essent. Oil	2900.0	160000.0		--
0	ZINGIBEROL	Essential Oil				--
2	ZINGIBERONE	Rhizome Essent. Oil				--

Activities Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	ZINGIBERONE	Rhizome	0.3	400.0		--
0	ZONARENE	Essential Oil				Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.