Dr. Duke's Phytochemical and Ethnobotanical Database

Chemicals Found in Zingiber officinale

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(+)-6-GINGEROL	Root	--	--		
0	(+)-ALPHA-CURCUMENE	Essential Oil	--	--		
0	(+)-ANGELICOIDENOL	Rhizome	--	14		
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	-0.7528854377140122	
67	1,8-CINEOLE	Rhizome Essent. Oil	26000	100000		
0	1-(4-HYDROXY-3-METHOXYPHENYL)-3,5-DIACETOXYOCTANE	Rhizome	--	--		
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-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	1-7-BIS-(4-HYDROXY-3-METHOXY-PHENYL)-HEPTANE-3(S)-DIOL	Rhizome	--	4		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	10-DEHYDROGINGERDIONE	Rhizome	--	--		
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		
2	10-GINGERDIONE	Root	--	--		
3	10-GINGEROL	Rhizome	2.6	1862		
3	10-GINGEROL	Root	--	--		
0	10-SHOGAOL	Rhizome	--	74		
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	--	--		
0	2,2,4-TRIMETHYL-HEPTANE	Rhizome Essent. Oil	--	--		
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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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		
0	3(R)-5(S)-DIACETOXY-1-(4-HYDROXY-3-METHOXY-PHENYL)-DECANE	Rhizome	--	41.8		
0	3(R)-ACETOXY-5(S)-DYDROXY-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	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	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	--	--		
0	3-PHENYL-BENZALDEHYDE	Rhizome	--	--		
0	3-PHENYL-BENZALDEHYDE	Rhizome Essent. Oil	--	--		
0	4-GINGEROL	Rhizome	--	--		
0	4-GINGEROL	Rhizome Essent. Oil	--	--		
0	4-PHENYL-BENZALDEHYDE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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-HYDROXYPHENYL)-DECANE	Rhizome	--	3		
0	6,10-DEHYDROGINGERDIONE	Rhizome	--	--		
0	6,10-DEHYDROGINGERDIONE	Root	--	--		
0	6-10-GINGERDIONE	Root	--	--		
2	6-DEHYDROGINGERDIONE	Rhizome	--	--		
0	6-DIHYDROGINGERDIONE	Rhizome	--	--		
0	6-GINGEDIOL	Rhizome	21	30		
0	6-GINGEDIOL-ACETATE	Rhizome	--	--		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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		
28	6-GINGEROL	Rhizome	130	7138		
28	6-GINGEROL	Essential Oil	--	--		
28	6-GINGEROL	Root	--	--		
28	6-GINGEROL	Root Essent. Oil	--	--		
28	6-GINGEROL	Rhizome Essent. Oil	--	--		
1	6-GINGESULFONIC-ACID	Rhizome	--	13		
0	6-METHYL-HEPT-5-EN-2-OL	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	6-METHYL-HEPT-5-EN-2-ONE	Rhizome	2	50		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	6-METHYL-HEPT-5-EN-2-ONE	Rhizome Essent. Oil	--	--		
0	6-METHYLGINGEDIACETATE	Rhizome	--	--		
0	6-METHYLGINGEDIACETATE	Root	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
0	6-METHYLGINGEDIOL	Rhizome	--	--		
0	6-METHYLGINGEDIOL	Root	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
0	6-PARADOL	Rhizome	--	9		
32	6-SHOGAOL	Rhizome	40	330		
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	40	400		
0	8-GINGEDIOL	Rhizome	--	--		
5	8-GINGEROL	Rhizome	110	1069		
5	8-GINGEROL	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	8-GINGEROL	Root	--	--		
2	8-SHOGAOL	Rhizome	48	130		
0	9-GINGEROL	Rhizome	--	--		
2	9-OXO-NEROLIDOL	Rhizome	--	--		
2	9-OXO-NEROLIDOL	Rhizome Essent. Oil	--	--		
6	ACETALDEHYDE	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	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 Gogeikagaku Kaishi 61(9): 1119-1122.
3	ACETONE	Rhizome	--	--		
0	AFRAMODIAL	Seed	--	400	1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	ALANINE	Rhizome	310	1793	-1	
3	ALANINE	Root	310	1793	-0.8118285216311718	USDA's Ag Handbook 8 and sequelae)
0	ALBUMIN	Rhizome	4984	45924		
0	ALBUMIN	Root	4984	45924		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	ALLO-AROMADENDRENE	Rhizome Essent. Oil	--	1400		
0	ALLO-AROMADENDRINE	Rhizome	1	70		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	--	--		
3	ALPHA-CADINOL	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-CEDROL	Rhizome Essent. Oil	--	--		
0	ALPHA-COPAENE	Rhizome	--	--		
0	ALPHA-COPAENE	Rhizome Essent. Oil	--	--		
0	ALPHA-CUBEBENE	Rhizome Essent. Oil	--	--		
3	ALPHA-CURCUMENE	Rhizome	--	280		
3	ALPHA-CURCUMENE	Rhizome Essent. Oil	--	19400		
0	ALPHA-FARNESENE	Rhizome	20	1250		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ALPHA-FARNESENE	Rhizome Essent. Oil	--	25000		
0	ALPHA-FARNESENE	Root Essent. Oil	--	--		
15	ALPHA-LINOLENIC-ACID	Rhizome	340	3190		
15	ALPHA-LINOLENIC-ACID	Root	340	3190	1.9620665358845129	USDA's Ag Handbook 8 and sequelae)
0	ALPHA-MUUROLENE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ALPHA-MUUROLENE	Rhizome Essent. Oil	--	--		
11	ALPHA-PHELLANDRENE	Rhizome	3	200	-1	
11	ALPHA-PHELLANDRENE	Rhizome Essent. Oil	--	4000		
28	ALPHA-PINENE	Rhizome	--	720	1.111167799007431	
28	ALPHA-PINENE	Rhizome Essent. Oil	--	39000	1.392186073629917	
3	ALPHA-SELINENE	Rhizome	--	--		
3	ALPHA-SELINENE	Rhizome Essent. Oil	--	--		
13	ALPHA-TERPINENE	Rhizome	0.5	35	1	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
13	ALPHA-TERPINENE	Rhizome Essent. Oil	--	700		
23	ALPHA-TERPINEOL	Rhizome	8	500	-0.26863716905966795	
23	ALPHA-TERPINEOL	Rhizome Essent. Oil	--	10000		
0	ALPHA-YLANGENE	Rhizome	--	--		
1	ALPHA-ZINGIBERENE	Rhizome	--	200	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	ALPHA-ZINGIBERENE	Rhizome	74	4600	1	
1	ALPHA-ZINGIBERENE	Rhizome Essent. Oil	--	442600		
5	ALUMINUM	Rhizome	--	663		
5	ALUMINUM	Root	46	663	0.04325697966835661	
0	ANGELICOIDENOL-2-O-BETA-D-GLUCOPYRANOSIDE	Rhizome	--	14		
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	9520	1	
3	AR-CURCUMENE	Rhizome Essent. Oil	--	25000		
3	AR-CURCUMENE	Root	--	--		
3	AR-CURCUMENE	Root Essent. Oil	--	--		
14	ARGININE	Rhizome	430	2486	-1	
14	ARGININE	Root	430	2486	-0.41425783754112155	USDA's Ag Handbook 8 and sequelae)
14	ARGININE	Tuber	--	--		
3	AROMADENDRENE	Rhizome Essent. Oil	--	--		
0	AROMADENDRINE	Rhizome	--	--		
112	ASCORBIC-ACID	Rhizome	--	317	-0.3087839350199982	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
112	ASCORBIC-ACID	Root	20	288	-0.48133996980232785	
0	ASH	Rhizome	7700	200000	1.829986028498204	
0	ASH	Root	2450	35000	-0.9297321702301228	
2	ASPARAGINE	Rhizome	500	500	-0.734470603058131	
3	ASPARTIC-ACID	Rhizome	2080	11990	-1	
3	ASPARTIC-ACID	Root	2080	11990	0.26543138626572105	USDA's Ag Handbook 8 and sequelae)
3	ASPARTIC-ACID	Shoot	--	--		
3	ASPARTIC-ACID	Tuber	--	--		
24	BENZALDEHYDE	Rhizome	--	--		
6	BETA-BISABOLENE	Rhizome	5	3600	-1	
6	BETA-BISABOLENE	Rhizome Essent. Oil	25000	105100	1	
0	BETA-BISABOLOL	Rhizome	5	295		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	BETA-BISABOLOL	Rhizome Essent. Oil	--	5900		
53	BETA-CAROTENE	Rhizome	--	4	-0.6667259338283312	
53	BETA-CAROTENE	Root	0.1	1	-0.43002798118623115	
0	BETA-CARYOPHYLLENE	Rhizome	0.7	45	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	BETA-CARYOPHYLLENE	Rhizome Essent. Oil	--	900	-1	
5	BETA-ELEMENE	Rhizome	2	500	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		
13	BETA-EUDESMOL	Rhizome	7	465	1	
13	BETA-EUDESMOL	Rhizome Essent. Oil	--	9300		
0	BETA-FARNESENE	Root Essent. Oil	--	--		
0	BETA-HIMACHALENE	Rhizome	--	--		
0	BETA-HIMACHALENE	Rhizome Essent. Oil	--	--		
13	BETA-IONONE	Rhizome	--	--		
13	BETA-IONONE	Rhizome Essent. Oil	--	--		
2	BETA-MYRCENE	Rf	2	950		
2	BETA-MYRCENE	Rhizome	--	330		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	BETA-MYRCENE	Rhizome Essent. Oil	--	--		
3	BETA-PHELLANDRENE	Rhizome	32	2850		
3	BETA-PHELLANDRENE	Rhizome Essent. Oil	57000	106700		
13	BETA-PINENE	Rhizome	--	100	0.1867718419094071	
13	BETA-PINENE	Rhizome Essent. Oil	--	5300	1.248959633610851	
2	BETA-SANTALOL	Rhizome Essent. Oil	--	162000		
3	BETA-SELINENE	Rhizome	--	--		
3	BETA-SELINENE	Rhizome Essent. Oil	--	--		
5	BETA-SESQUIPHELLANDRENE	Rhizome	--	460		
5	BETA-SESQUIPHELLANDRENE	Rhizome Essent. Oil	--	43000		
5	BETA-SESQUIPHELLANDRENE	Root Essent. Oil	--	--		
0	BETA-SESQUIPHELLANDROL	Rhizome	--	--		
47	BETA-SITOSTEROL	Plant	--	--		
47	BETA-SITOSTEROL	Root	100	500	-0.26375908041164936	
5	BETA-THUJONE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
5	BETA-THUJONE	Rhizome Essent. Oil	--	--		
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	--	--		
0	BISABOLENE	Root Essent. Oil	--	--		
0	BISABOLENE	Essential Oil	--	--		
0	BISABOLENE	Rhizome	--	--		
35	BORNEOL	Rhizome Essent. Oil	--	18000		
35	BORNEOL	Rhizome	--	180		
0	BORNEOL-ACETATE	Rhizome Essent. Oil	--	2100		
0	BORNEOL-METHYL-ETHER	Rhizome	--	--		
12	BORNYL-ACETATE	Rhizome	2	105		
12	BORNYL-ACETATE	Root	2	105	-0.5636066792773037	
4	BORON	Rhizome	1	4		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	BORON	Root	1	4	-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).
102	CAFFEIC-ACID	Rhizome	--	--		
0	CALAMENEN	Rhizome	--	--		
0	CALAMENENE	Rhizome Essent. Oil	--	--		
28	CALCIUM	Rhizome	150	3458	-0.7549394061569589	
28	CALCIUM	Root	116	1650	-0.6300358799835268	
2	CAMPESTEROL	Root	10	100	-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	--	3080	1	
9	CAMPHENE	Rhizome Essent. Oil	--	126000		
9	CAMPHENE	Essential Oil	--	--		
0	CAMPHENE-HYDRATE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CAMPHENE-HYDRATE	Rhizome Essent. Oil	--	--		
41	CAMPHOR	Rhizome	1	60		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
41	CAMPHOR	Rhizome Essent. Oil	--	1200	1	
3	CAPRIC-ACID	Rhizome	1800	1980		
3	CAPRIC-ACID	Root	1800	1980		USDA's Ag Handbook 8 and sequelae)
5	CAPRYLIC-ACID	Rhizome	70	380		
5	CAPRYLIC-ACID	Root	70	380		USDA's Ag Handbook 8 and sequelae)
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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CARBOHYDRATES	Rhizome	92000	823240	0.675882053937855	
0	CARBOHYDRATES	Root	47390	677000	-1.9641525828914683	
31	CARYOPHYLLENE	Essential Oil	--	--		
0	CEDOROL	Rhizome	--	--		
0	CEDOROL	Rhizome Essent. Oil	--	--		
3	CHAVICOL	Rhizome	--	--		
3	CHAVICOL	Rhizome Essent. Oil	--	--		
77	CHLOROGENIC-ACID	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
24	CHROMIUM	Rhizome	6	20	1	
24	CHROMIUM	Root	--	0.6	-0.44035111981195524	
0	CHRYSANTHEMIN	Rhizome	--	--		
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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	40		
0	CIS-8-SHOGAOL	Rhizome	--	40		
0	CIS-8-SHOGOAL	Rhizome	--	40		
0	CIS-BETA-SESQUIPHELLANDROL	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	CIS-BETA-SESQUIPHELLANDROL	Rhizome Essent. Oil	--	--		
0	CIS-GERANIC-ACID	Rhizome	--	--		
0	CIS-HEXAN-3-OL	Rhizome	--	--		
0	CIS-HEXAN-3-OL	Rhizome Essent. Oil	--	--		
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	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	CIS-SESQUISABINENE-HYDRATE	Rhizome Essent. Oil	--	--		
0	CIS-SESQUISABINENE-HYDRATE	Rhizome	--	--		
53	CITRAL	Rhizome	--	13500		
53	CITRAL	Root	--	13500		
53	CITRAL	Rhizome Essent. Oil	--	130000		
20	CITRONELLAL	Rhizome	--	10		
20	CITRONELLAL	Rhizome Essent. Oil	--	2900		
15	CITRONELLOL	Rhizome	2	6500		
15	CITRONELLOL	Rhizome Essent. Oil	3000	130000		
0	CITRONELLOL-ACETATE	Rhizome Essent. Oil	--	--		
0	CITRONELLOL-ACETATE	Rhizome	--	--		
2	CITRONELLYL-ACETATE	Rhizome	--	--		
2	CITRONELLYL-ACETATE	Rhizome Essent. Oil	--	--		
2	COBALT	Rhizome	0.9	42	1	
2	COBALT	Root	0.3	4.2	-0.454047411785451	
12	COPPER	Rhizome	3	16	1.223047708525459	
12	COPPER	Root	3	16	0.47378131766732856	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	CUMENE	Rhizome	--	1		
1	CUMENE	Root	1	1		
135	CURCUMIN	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
135	CURCUMIN	Rhizome	--	--		
5	CYANIN	Rhizome	--	--		
13	CYSTEINE	Shoot	--	--		
13	CYSTEINE	Tuber	--	--		
2	CYSTINE	Rhizome	80	462	-1	
2	CYSTINE	Root	80	462	-0.8891832694867765	USDA's Ag Handbook 8 and sequelae)
4	D-BORNEOL	Rhizome	14	1102	1	
4	D-BORNEOL	Root	14	1102		
0	DEC-TRANS-2-EN-1-AL	Rhizome	--	--		
1	DECAN-1-AL	Rhizome	--	--		
0	DECANAL	Plant	5	100	1	
0	DECYL-ALDEHYDE	Rhizome	--	--		
0	DECYL-ALDEHYDE	Root	--	--		
9	DELPHINIDIN	Plant	--	--		Stitt, Paul. Why George should eat broccoli.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
9	DELTA-CADINENE	Rhizome	1	65	-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	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	Rhizome	--	--		
0	DEMETHYL-HEXAHYDROCURCUMIN	Root	--	--		
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	DIETHYLSULFIDE	Rhizome	--	--		
0	DIHYDROGINGEROL	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	DIHYDROGINGEROL	Root Essent. Oil	--	--		
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	190		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	ELEMOL	Rhizome Essent. Oil	--	3800		
0	EO	Or	800	50000		
0	EO	Resin, Exudate, Sap	60000	60000	-1.007598115442729	
0	EO	Rhizome	--	10000	-0.5317116167359565	
0	EO	Root	700	30000	0.7582862013339499	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	100		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
2	FARNESAL	Rhizome Essent. Oil	--	2000		
2	FARNESENE	Rhizome	245	4910		
2	FARNESENE	Essential Oil	--	--		
17	FARNESOL	Rhizome	--	--		
17	FARNESOL	Root	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
17	FARNESOL	Rhizome Essent. Oil	--	--		
0	FAT	Rhizome	7000	77000	0.7203322628500908	
0	FAT	Root	5040	72000	1.6380886391848568	
61	FERULIC-ACID	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
15	FIBER	Rhizome	9000	171000	-0.07465068104411866	
15	FIBER	Root	9000	171000	1.8408067359156413	
0	FIBER(CRUDE)	Root	--	171000	1.7664789948967667	
0	FIBER(DIETARY)	Root	--	242000	-1.7083639629745593	
3	FLUORIDE	Rhizome	--	7.9	1	
0	FLUORINE	Rhizome	--	2		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	FLUORINE	Root	2	2	1.3347186593784242	ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
8	FRUCTOSE	Rhizome	--	--		
8	FRUCTOSE	Root	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
0	FURANOGERMENONE	Rhizome	--	--		
6	FURFURAL	Plant	--	--		
6	FURFURAL	Rhizome Essent. Oil	--	--		
0	GADOLEIC-ACID	Rhizome	70	380	1	
0	GADOLEIC-ACID	Root	70	380		USDA's Ag Handbook 8 and sequelae)
4	GALANOLACTONE	Root	--	--		
4	GALANOLACTONE	Rhizome	--	--		
22	GAMMA-AMINOBUTYRIC-ACID	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	--	--		
0	GAMMA-EUDESMOL	Rhizome	2	115		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GAMMA-EUDESMOL	Rhizome Essent. Oil	--	2300		
0	GAMMA-MUUROLENE	Rhizome	7	455	1	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	GAMMA-SELINENE	Rhizome	35	700		
0	GAMMA-SELINENE	Root	35	700		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	GAMMA-TERPINENE	Rhizome	--	1230	1	
11	GAMMA-TERPINENE	Rhizome Essent. Oil	--	500		
13	GERANIAL	Rhizome	--	980		
13	GERANIAL	Rhizome Essent. Oil	159000	400000		
35	GERANIOL	Rhizome	2	345		
35	GERANIOL	Rhizome Essent. Oil	--	6900		
0	GERANIOL-ACETATE	Rhizome Essent. Oil	--	2000		
0	GERANIOL-ACETATE	Rhizome	--	--		
5	GERANYL-ACETATE	Rhizome	--	--		
5	GERANYL-ACETATE	Rhizome Essent. Oil	--	--		
0	GERMANIUM	Rhizome	87	169		
0	GINGEDIACETATE	Rhizome	--	--		
0	GINGEDIACETATE	Root	--	--		Chemical Constituents of Oriental Herbs (3 diff. books)
3	GINGERENONE-A	Rhizome	118	136		
2	GINGERENONE-B	Rhizome	4.7	4.7		
2	GINGERENONE-C	Rhizome	14.2	14.2		
0	GINGERGLYCOLIPID-A	Rhizome	--	13		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	GINGERGLYCOLIPID-B	Rhizome	14	15		
0	GINGERGLYCOLIPID-C	Rhizome	--	14		
27	GINGEROL	Rhizome	--	--		
27	GINGEROL	Root	--	--		
27	GINGEROL	Root Essent. Oil	--	--		
0	GINGEROL-METHYL-ETHER	Rhizome	--	--		
0	GINGEROLS	Rhizome	13200	13200		
0	GINGERONE	Rhizome	--	--		
0	GINGERONE	Root	--	--		
0	GLANOLACTONE	Rhizome	--	120		
0	GLOBULIN	Rhizome	2366	21801		
0	GLOBULIN	Root	2366	21801		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
7	GLUCOSE	Rhizome	--	--		
7	GLUCOSE	Root	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
8	GLUTAMIC-ACID	Rhizome	1620	9328	1	
8	GLUTAMIC-ACID	Root	1620	9328	-0.49975515668744586	USDA's Ag Handbook 8 and sequelae)
0	GLUTELIN	Rhizome	2506	23091		
0	GLUTELIN	Root	2506	23091		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
12	GLYCINE	Rhizome	430	2486	-1	
12	GLYCINE	Root	430	2486	-0.22589147640123697	USDA's Ag Handbook 8 and sequelae)
12	GLYCINE	Shoot	--	--		
12	GLYCINE	Tuber	--	--		
0	GLYOXAL	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	GUAIL	Rhizome	--	--		
3	GUAIOL	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	1	135		
0	HEPTAN-2-OL	Rhizome Essent. Oil	--	2700		
0	HEPTAN-2-ONE	Rhizome	--	--		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	HEPTAN-2-ONE	Rhizome Essent. Oil	--	--		
2	HEXAHYDROCURCUMIN	Rhizome	21.3	25.1		
2	HEXAHYDROCURCUMIN	Rhizome Essent. Oil	--	--		
0	HEXAN-1-AL	Rhizome	2	35		
0	HEXAN-1-AL	Rhizome Essent. Oil	2	700		
0	HEXAN-1-OL	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEXAN-1-OL	Rhizome	--	--		
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	1738	-1	
7	HISTIDINE	Root	300	1738	-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	--	--		
6	IRON	Rhizome	4	162	-0.5945282624931012	
6	IRON	Root	1.1	15	-0.4198613477374219	
7	ISOBORNEOL	Rhizome Essent. Oil	--	--		
7	ISOBORNEOL	Rhizome	--	--		
16	ISOEUGENOL	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ISOEUGENOL-METHYL-ETHER	Rhizome	0.6	40		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ISOEUGENOL-METHYL-ETHER	Rhizome Essent. Oil	--	800		
2	ISOGINGERENONE-B	Rhizome	4.7	4.7		
3	ISOLEUCINE	Rhizome	510	2926	1	
3	ISOLEUCINE	Root	510	2926	-0.2833451886291646	USDA's Ag Handbook 8 and sequelae)
3	ISOLEUCINE	Tuber	--	--		
1	ISOVALERALDEHYDE	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	ISOVALERALDEHYDE	Rhizome	--	--		
0	JUNIPER-CAMPHOR	Rhizome Essent. Oil	--	--		
75	KAEMPFEROL	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
0	KILOCALORIES	Rhizome	690	3764	1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	KILOCALORIES	Root	690	3764	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	3630		
7	LAURIC-ACID	Root	390	3630	1.4134619657773633	USDA's Ag Handbook 8 and sequelae)
7	LAURIC-ACID	Rhizome Essent. Oil	--	900		
20	LECITHIN	Rhizome	--	--		
20	LECITHIN	Root	--	--		Leung, A.Y., Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics, John Wiley & Sons, New York, 1980.
2	LEUCINE	Rhizome	740	4257	1	
2	LEUCINE	Root	740	4257	-0.0564322869347267	USDA's Ag Handbook 8 and sequelae)
2	LEUCINE	Tuber	--	--		
60	LIMONENE	Rhizome	17	1050	0.6650265305559545	
60	LIMONENE	Rhizome Essent. Oil	--	21000	1.411888259893775	
0	LINALOL	Rhizome	--	50	-1	
53	LINALOOL	Rhizome	--	50	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
53	LINALOOL	Root Essent. Oil	--	--		
53	LINALOOL	Rhizome Essent. Oil	3200	30000	1	
0	LINALOOL-OXIDE	Rhizome	--	--		
0	LINALOOL-PROPIONATE	Rhizome Essent. Oil	--	--		
27	LINOLEIC-ACID	Rhizome	1200	11220	1	
27	LINOLEIC-ACID	Root	1200	11220	3.017959618154365	USDA's Ag Handbook 8 and sequelae)
4	LYSINE	Rhizome	570	3110	-1	
4	LYSINE	Root	570	3110	-0.5755610272389462	USDA's Ag Handbook 8 and sequelae)
65	MAGNESIUM	Rhizome	430	2690	1.0779788333953992	
65	MAGNESIUM	Root	188	2690	0.0683510412136399	
14	MANGANESE	Rhizome	106	350	1.4980699854714286	
14	MANGANESE	Root	2.4	33.8	-0.14226990626562633	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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.
0	MENTHOL-ACETATE	Rhizome	--	--		
0	MENTHOL-ACETATE	Rhizome Essent. Oil	--	--		
15	METHIONINE	Rhizome	130	737	-1	
15	METHIONINE	Root	130	737	-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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	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.
3	METHYL-ACETATE	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.
0	METHYL-ALLYL-SULFIDE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	--	--		
0	METHYL-GLYOXAL	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	METHYL-HEPTENONE	Rhizome	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
0	METHYL-HEPTENONE	Rhizome Essent. Oil	--	--		
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	--	--		
3	METHYL-NONYL-KETONE	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	MUFA	Rhizome	1540	8400	1	
13	MUFA	Root	1540	8400	2.513577974996003	USDA's Ag Handbook 8 and sequelae)
22	MYRCENE	Rf	2	950		
22	MYRCENE	Rhizome	2	950	-1	
22	MYRCENE	Rhizome Essent. Oil	--	19000	-1	
34	MYRICETIN	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
6	MYRISTIC-ACID	Rhizome	180	1650	-1	
6	MYRISTIC-ACID	Root	180	1650	1.7305384293651185	USDA's Ag Handbook 8 and sequelae)
5	MYRTENAL	Rhizome	0.5	30		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
5	MYRTENAL	Rhizome Essent. Oil	--	600		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	N-BUTYRALDEHYDE	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-BUTYRALDEHYDE	Rhizome	--	--		
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	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-NONANE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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-NONANOL	Rhizome	--	--		
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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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-PROPANOL	Rhizome	--	--		
0	N-UNDECANONE	Rhizome	--	--		
0	N-UNDECANONE	Rhizome Essent. Oil	--	--		
0	NEO-ISOPULEGOL	Rhizome	--	--		
0	NEOISOPULEGOLE	Rhizome Essent. Oil	--	--		
4	NERAL	Rhizome	--	410		
4	NERAL	Rhizome Essent. Oil	81000	260000		
10	NEROL	Rhizome	--	--		
10	NEROL	Rhizome Essent. Oil	--	--		
0	NEROL-OXIDE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	NEROLIDOL	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.
11	NEROLIDOL	Rhizome	--	60		
11	NEROLIDOL	Rhizome Essent. Oil	--	--		
39	NIACIN	Rhizome	5	135	1.0692722579935732	
39	NIACIN	Root	3.6	51	0.0220587467388613	
3	NICKEL	Rhizome	2	5.2	1	
3	NICKEL	Root	2	5.2	1.752676229894103	
0	NITROGEN	Rhizome	16000	24440		
0	NITROGEN	Root	16000	24440	-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	NONAN-2-OL	Rhizome Essent. Oil	--	2000		
0	NONAN-2-ONE	Rhizome	8	160		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	NONAN-2-ONE	Rhizome Essent. Oil	--	3200		
0	NONANAL	Rhizome	2	50	1	
0	NONANAL	Root	2	50		
0	NONYL-ALDEHYDE	Rhizome	--	--		
0	NONYL-ALDEHYDE	Rhizome Essent. Oil	--	--		
0	OCT-TRANS-2-EN-1-AL	Rhizome	--	--		
0	OCTAN-1-AL	Rhizome	2	40		
0	OCTAN-1-AL	Rhizome Essent. Oil	--	800		
0	OCTAN-1-OL-ACETATE	Rhizome	--	--		
0	OCTAN-2-OL	Rhizome	--	--		
18	OLEIC-ACID	Rhizome	1190	11000	1	
18	OLEIC-ACID	Root	1190	11000	3.056426676222409	USDA's Ag Handbook 8 and sequelae)
9	OXALIC-ACID	Rhizome	--	5000		
9	OXALIC-ACID	Root	--	5000	2.5415261372448525	
25	P-COUMARIC-ACID	Rhizome	19	19	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	P-CYMEN-8-OL	Rhizome	0.5	35		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		
16	P-CYMENE	Rhizome	--	90	-0.47413848530364283	
16	P-CYMENE	Rhizome Essent. Oil	--	26000		
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	11220	1	
13	PALMITIC-ACID	Root	1200	11220	0.13536149219761523	USDA's Ag Handbook 8 and sequelae)
2	PALMITOLEIC-ACID	Rhizome	210	1145	1	
2	PALMITOLEIC-ACID	Root	210	1145	0.05724502554235483	USDA's Ag Handbook 8 and sequelae)
11	PANTOTHENIC-ACID	Rhizome	2	11		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	PANTOTHENIC-ACID	Root	2	11	-0.9376231626080279	USDA's Ag Handbook 8 and sequelae)
3	PARADOL	Rhizome	--	--		
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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	PERILLENE	Rhizome	1	95		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	PERILLENE	Rhizome Essent. Oil	--	1900		
7	PHENYLALANINE	Rhizome	450	2455	1	
7	PHENYLALANINE	Root	450	2455	-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	5323	0.4586280406131061	
4	PHOSPHORUS	Root	181	2580	-0.1647701538167895	
2	PHYTOSTEROLS	Rhizome	150	913		
2	PHYTOSTEROLS	Root	150	913	0.021969609312565776	USDA's Ag Handbook 8 and sequelae)
0	PIN-2-EN-5-OL	Rhizome	--	--		
2	PIPECOLIC-ACID	Rhizome	320	320		
14	POTASSIUM	Rhizome	2640	25079	1.345332062692374	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
14	POTASSIUM	Root	1323	18900	0.22854620707535842	
0	PROLAMINE	Plant	1540	14190		
0	PROLINE	Rhizome	410	2376	-1	
0	PROLINE	Root	410	2376	0.2837932421997398	USDA's Ag Handbook 8 and sequelae)
2	PROPIONALDEHYDE	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	PROPIONALDEHYDE	Rhizome	--	--		
0	PROTEASE	Rhizome	--	--		
0	PROTEIN	Rhizome	14000	129000	-0.1125496505640368	
0	PROTEIN	Root	7000	100000	-0.20677098370529998	
4	PUFA	Rhizome	1540	8400	1	
4	PUFA	Root	1540	8400	1.333787882042874	USDA's Ag Handbook 8 and sequelae)
176	QUERCETIN	Plant	--	--		Stitt, Paul. Why George should eat broccoli.
1	RAFFINOSE	Rhizome	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
1	RAFFINOSE	Root	--	--		ANON. 1948-1976. The Wealth of India raw materials. Publications and Information Directorate, CSIR, New Delhi. 11 volumes.
15	RIBOFLAVIN	Rhizome	--	5	-0.10465353747473792	
15	RIBOFLAVIN	Root	0.2	3.1	-0.21327168080429257	
0	ROSEFURAN	Rhizome	1	90		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ROSEFURAN	Rhizome Essent. Oil	--	1800		
5	SABINENE	Rhizome	--	20		
5	SABINENE	Rhizome Essent. Oil	--	700		
7	SALICYLATES	Root	45	250	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	-0.29131634494743897	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	SELINA-3,7(11)-DIENE	Rhizome	1	65		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		
1	SERINE	Rhizome	450	2596	-1	
1	SERINE	Root	450	2596	-0.4317372218630029	USDA's Ag Handbook 8 and sequelae)
1	SERINE	Shoot	--	--		
1	SERINE	Tuber	--	--		
0	SESQUIPHELLANDRENE	Rhizome Essent. Oil	--	--		
0	SESQUITERPENE-HYDROCARBON	Rhizome Essent. Oil	--	--		
0	SESQUITHUJENE	Essential Oil	--	--		
0	SESQUITHUJENE	Rhizome	--	--		
0	SFA	Rhizome	2030	11085		
0	SFA	Root	2030	11085	3.076072794631063	USDA's Ag Handbook 8 and sequelae)
14	SHIKIMIC-ACID	Leaf	--	--		
18	SHOGAOL	Root	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
18	SHOGAOL	Root Essent. Oil	--	--		
18	SHOGAOL	Rhizome Essent. Oil	--	--		
18	SHOGAOL	Essential Oil	--	--		
18	SHOGAOL	Rhizome	1800	--		
0	SHOGAOLS	Rhizome	--	1800		
0	SHOGAOLS	Root	--	1800		
4	SILICON	Rhizome	--	285		
4	SILICON	Root	2	28.5	-0.2119845357116175	
1	SODIUM	Rhizome	60	709	0.18755999323325184	
1	SODIUM	Root	30	423	-0.31581734202184225	
5	STARCH	Rhizome	123000	500000	0.41680828464384206	
5	STARCH	Root	35000	600000	1.18913249334548	
8	STEARIC-ACID	Rhizome	170	1540	1	
8	STEARIC-ACID	Root	170	925	2.8114380671291452	USDA's Ag Handbook 8 and sequelae)
12	STIGMASTEROL	Root	40	200	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	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	80000	-0.231158975572398	
23	TERPINEN-4-OL	Rhizome	--	--		
23	TERPINEN-4-OL	Rhizome Essent. Oil	--	--		
9	TERPINOLENE	Rhizome	1	90		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	TERT-BUTANOL	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
31	THIAMIN	Rhizome	--	3	-0.9831353843426084	
31	THIAMIN	Root	--	3	-0.32687193108858614	
0	THIAMINE	Root	0.1	1.5	-0.5634413774971821	
4	THREONINE	Rhizome	360	2057	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
4	THREONINE	Root	360	2057	-0.4948266685368329	USDA's Ag Handbook 8 and sequelae)
4	THREONINE	Tuber	--	--		
4	THREONINE	Shoot	--	--		
4	TIN	Rhizome	--	13		
4	TIN	Root	0.1	1.3	-1.5436732662398835	
0	TRAN-6-SHOGOAL	Rhizome	--	40		
0	TRAN-8-SHOGOAL	Rhizome	--	40		
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	TRANS-8-SHOGAOL	Rhizome	--	40		
2	TRANS-BETA-FARNESENE	Rhizome	1	60	-1	
0	TRANS-BETA-SESQUIPHELLANDROL	Rhizome	6	360		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TRANS-BETA-SESQUIPHELLANDROL	Rhizome Essent. Oil	--	7200		
0	TRANS-GERANIC-ACID	Rhizome	--	--		
0	TRANS-LINALOL-OXIDE	Rhizome	--	--		
0	TRANS-LINALOOL-OXIDE	Rhizome Essent. Oil	--	--		
0	TRANS-NEROLIDOL	Rhizome	5	350		
0	TRANS-NEROLIDOL	Rhizome Essent. Oil	5	7000		
0	TRANS-OCTEN-2-AL	Rhizome	--	--		
0	TRANS-OCTEN-2-AL	Rhizome Essent. Oil	--	--		
0	TRANS-ROSE-OXIDE	Rhizome	--	--		
0	TRICYCLENE	Rhizome	2	115		
0	TRICYCLENE	Rhizome Essent. Oil	--	2300		
29	TRYPTOPHAN	Rhizome	120	693	-1	
29	TRYPTOPHAN	Root	120	693	-0.48600202664790343	USDA's Ag Handbook 8 and sequelae)
8	TYROSINE	Rhizome	200	1122	-1	
8	TYROSINE	Root	200	1122	-1.4340366854424644	USDA's Ag Handbook 8 and sequelae)

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	UNDECAN-2-OL	Rhizome	1	25		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	UNDECAN-2-OL	Rhizome Essent. Oil	--	500		
0	UNDECAN-2-ONE	Rhizome	--	--		
0	UNDECAN-2-ONE	Rhizome Essent. Oil	--	--		
0	URIDINE	Rhizome	--	11	1.0000000000000002	
3	VALINE	Rhizome	730	4202	1	
3	VALINE	Root	730	4202	0.07599207749422336	USDA's Ag Handbook 8 and sequelae)
3	VALINE	Shoot	--	--		
3	VALINE	Tuber	--	--		
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)

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	WATER	Rhizome	93090	930000	0.9531262707913175	
0	WATER	Root	--	930000	1.052183415545071	
0	XANTHORRHIZOL	Rhizome	1	50		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	ZERUMBODIENONE	Rhizome	--	--		
77	ZINC	Rhizome	--	57	-0.18700695320743768	
77	ZINC	Root	--	--		
0	ZINGERBERONE	Essential Oil	--	--		
13	ZINGERONE	Rhizome	--	--		
13	ZINGERONE	Rhizome Essent. Oil	--	--		
13	ZINGERONE	Root Essent. Oil	--	--		
13	ZINGERONE	Essential Oil	--	--		
1	ZINGIBAIN	Rhizome	--	--		
1	ZINGIBAIN	Root	--	--		Abstract (See species file)
6	ZINGIBERENE	Rhizome	0.5	30	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
6	ZINGIBERENE	Root Essent. Oil	--	--		
6	ZINGIBERENE	Essential Oil	--	--		
6	ZINGIBERENE	Rhizome Essent. Oil	--	--		
0	ZINGIBERENES	Rhizome	890	17836		Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	ZINGIBERENOL	Rhizome	--	100		
0	ZINGIBERENOL	Rhizome Essent. Oil	--	--		
0	ZINGIBERINE	Root	--	--		
0	ZINGIBEROL	Rhizome	--	8000		
0	ZINGIBEROL	Rhizome Essent. Oil	2900	160000		
0	ZINGIBEROL	Essential Oil	--	--		
2	ZINGIBERONE	Rhizome	0.3	20		
2	ZINGIBERONE	Rhizome Essent. Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ZONARENE	Essential Oil	--	--		Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.