

P Zingiber officinale

Common Name(s)

Ginger

How Used

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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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	
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	--	--	

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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)-DIHYDROXY-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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	
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	--	--	
28	6-GINGEROL	Essent. Oil	--	--	
1	6-GINGESULFONIC-ACID	Rhizome	--	13	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	6-METHYL-HEPT-5-EN-2-OL	Rhizome	--	--	
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	--	--	
0	6-METHYLGINGEDIACETATE	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	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
5	8-GINGEROL	Rhizome Essent. Oil	--	--	
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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
3	ACETONE	Rhizome	--	--	
0	AFRAMODIAL	Seed	--	400	1
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	--	1400	
		Essent. Oil			
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
3	ALPHA-CADINOL	Rhizome Essent. Oil	--	--	
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	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
15	ALPHA-LINOLENIC-ACID	Root	340	3190	1.9620665358845129 USDA's Ag Handbook 8 and sequelae)
0	ALPHA-MUUROLENE	Rhizome	--	--	
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

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
23	ALPHA-TERPINEOL	Rhizome	--	10000	
		Essent.			
		Oil			
0	ALPHA-YLANGENE	Rhizome	--	--	
1	ALPHA-ZINGIBERENE	Rhizome	--	200	-1
1	ALPHA-ZINGIBERENE	Rhizome	74	4600	1
1	ALPHA-ZINGIBERENE	Rhizome	--	442600	
		Essent.			
		Oil			
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	--	25000	
		Essent.			
		Oil			
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
3	AROMADENDRENE	Rhizome	--	--		
0	AROMADENDRINE	Rhizome	--	--		
112	ASCORBIC-ACID	Rhizome	--	317	-0.3087839350199982	
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	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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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
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-EUDES MOL	Rhizome	7	465	1
13	BETA-EUDES MOL	Rhizome -- Essent. Oil		9300	
0	BETA-FARNESENE	Root Essent. Oil	--	--	
0	BETA-HIMACHALENE	Rhizome	--	--	
0	BETA-HIMACHALENE	Rhizome -- Essent. Oil		--	
13	BETA-IONONE	Rhizome	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
13	BETA-IONONE	Rhizome Essent. Oil	--	--	
2	BETA-MYRCENE	Rf	2	950	
2	BETA-MYRCENE	Rhizome	--	330	
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-SESQUIPELLANDRENE	Rhizome	--	460	
5	BETA-SESQUIPELLANDRENE	Rhizome Essent. Oil	--	43000	
5	BETA-SESQUIPELLANDRENE	Root Essent. Oil	--	--	
0	BETA-SESQUIPELLANDROL	Rhizome	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Plant	--	--	
47	BETA-SITOSTEROL	Root	100	500	-0.26375908041164936
5	BETA-THUJONE	Rhizome	--	--	
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

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
4	BORON	Rhizome	1	4		
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	--	126000		
		Essent. Oil				
9	CAMPHENE	Essential	--	--		
		Oil				
0	CAMPHENE-HYDRATE	Rhizome	--	--		

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	--	--	

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	--	--		

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	--	--	

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	--	130000	
		Essent.			
		Oil			
20	CITRONELLAL	Rhizome	--	10	
20	CITRONELLAL	Rhizome	--	2900	
		Essent.			
		Oil			
15	CITRONELLOL	Rhizome 2		6500	
15	CITRONELLOL	Rhizome 3000		130000	
		Essent.			
		Oil			
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
1	CUMENE	Rhizome	--	1	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
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.
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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
9	DELTA-CADINENE	Rhizome	--	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 Gokeikagaku Kaishi 61(9): 1119-1122.
0	DIETHYLSULFIDE	Rhizome	--	--	
0	DIHYDROGINGEROL	Rhizome	--	--	
0	DIHYDROGINGEROL	Root	--	--	
0	DODEC-TRANS-2-EN-1-AL	Essent. Oil	--	--	
0	DODEC-TRANS-2-EN-1-AL	Rhizome	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	3800	
		Essent. Oil			
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
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	ETHYL-ISOPROPYL-SULFIDE	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	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.
2	FARNESAL	Rhizome Essent. Oil	--	2000	
2	FARNESENE	Rhizome	245	4910	
2	FARNESENE	Essential Oil	--	--	
17	FARNESOL	Rhizome	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
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		
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	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation	
0	GAMMA-EUDESOL	Rhizome 2		115	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	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		
11	GAMMA-TERPINENE	Rhizome --		1230	1	
11	GAMMA-TERPINENE	Rhizome -- Essent. Oil		500		
13	GERANIAL	Rhizome --		980		
13	GERANIAL	Rhizome 159000 Essent. Oil		400000		
35	GERANIOL	Rhizome 2		345		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
35	GERANIOL	Rhizome	--	6900	
		Essent.			
		Oil			
0	GERANIOL-ACETATE	Rhizome	--	2000	
		Essent.			
		Oil			
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	
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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.
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	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	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	1	135	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	--	--	
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

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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
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	--	--	

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.	
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	--	21000	1.411888259893775	
		Essent. Oil				
0	LINALOL	Rhizome	--	50	-1	
53	LINALOOL	Rhizome	--	50	-1	
53	LINALOOL	Root	--	--		
		Essent. Oil				
53	LINALOOL	Rhizome	3200	30000	1	
		Essent. Oil				
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)

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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
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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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	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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	METHYL-ALLYL-SULFIDE	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	METHYL-ALLYL-SULFIDE	Rhizome	--	--	
2	METHYL-CAPRYLATE	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	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	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
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	--		
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.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
5	MYRTENAL	Rhizome	--	600	
		Essent. Oil			
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	--	--	

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	--	--	

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	--	--	

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 Gokeikagaku 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		

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	

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	

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			

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	

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	--	--	

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	--	1800	
		Essent. Oil			
5	SABINENE	Rhizome	--	20	
5	SABINENE	Rhizome	--	700	
		Essent. Oil			
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

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	SESQUIPELLANDRENE	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	--	--	

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	--	--	

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	--	1800	
		Essent. Oil			
0	TERT-BUTANOL	Essential	--	--	Lawrence, B.M., Essential Oils 1976-1977, Essential Oils 1978, Essential Oils 1979-1980.
		Oil			
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

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-SESQUIPELLANDROL	Rhizome	6	360	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	TRANS-BETA-SESQUIPELLANDROL	Rhizome	--	7200	
		Essent. Oil			

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
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)

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)

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	--	1000	
0	ZERUMBODIENONE	Rhizome	--	--	
77	ZINC	Rhizome	--	57	-0.18700695320743768
77	ZINC	Root	--	--	
0	ZINGERBERONE	Essential Oil	--	--	
13	ZINGERONE	Rhizome	--	--	
13	ZINGERONE	Rhizome	--	--	
13	ZINGERONE	Essent. Oil	--	--	
13	ZINGERONE	Root	--	--	
13	ZINGERONE	Essent. Oil	--	--	
1	ZINGIBAIN	Rhizome	--	--	
1	ZINGIBAIN	Root	--	--	Abstract (See species file)
6	ZINGIBERENE	Rhizome	0.5	30	-1

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	--	--	

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.
