

# P Glycyrrhiza glabra

## Common Name(s)

Common Licorice, Licorice, Licorice-Root, Smooth Licorice

## How Used

G

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	1,7-DIMETHYL-7(4-METHYL-3-PENTENYL)-TRICYCLOHEPTANE	Root	0.1	6	
0	1-(2-FURYL)-PROPAN-2-ONE	Root	--	--	
0	1-(2-FURYL)-PROPAN-2-ONE	Root Essent. Oil	--	--	
0	1-(5-METHYL-2-FURYL)-PROPANE-1,2-DIONE	Root Essent. Oil	--	--	
0	1-(5-METHYL-2-FURYL)-PROPOANE-1,2-DIONE	Root	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	1-ACETILPYRROLE	Root	--	--	
0	1-FURFURYL-2-ACETYL-PYRROLE	Root	--	--	

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 1-FURFURYL-2-ACETYL-PYRROLE	Root Essent. Oil	--	--	
0 1-FURFURYL-2-FORMYL-PYRROLE	Root	--	--	
0 1-FURFURYL-2-FORMYL-PYRROLE	Root Essent. Oil	--	--	
0 1-METHOXY-4-ISOPROPYL-BENZENE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 1-METHOXY-4-ISOPROPYL-CYCLOHEXANE	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 1-METHYL-2-FORMYL-PYRROLE	Root	--	--	
0 1-METHYL-2-FORMYL-PYRROLE	Root Essent. Oil	--	--	
0 1-PENTADECANOL	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	11-DEOXO-GLABROLIDE	Root	--	--	
0	11-DESOXOGLYCYRRHETINIC-ACID	Plant	--	--	
0	18-ALPHA-GLYCYRRHETINIC-ACID	Root	1300	5200	
0	18-ALPHA-GLYCYRRHIZINIC-ACID	Root	--	--	
0	18-BETA-GLYCYRRHETINIC-ACID	Root	39800	95200	
0	18-BETA-GLYCYRRHIZINIC-ACID	Root	--	--	
0	18ALPHA-HYDROXYGLYCYRRHETIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	2,2-DIFURYL-ETHANE	Root	--	--	
0	2,2-DIFURYL-ETHANE	Root Essent. Oil	--	--	
0	2,2-DIFURYL-ETHYLENE	Root	--	--	
0	2,2-DIFURYL-ETHYLENE	Root Essent. Oil	--	--	
0	2,2-DIFURYL-METHANE	Root	--	--	
0	2,2-DIFURYL-METHANE	Root Essent. Oil	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	2,3-DIHYDRO-4-METHYL-FURAN	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
1	2,3-DIHYDROBENZOFURAN	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
1	2,3-DIHYDROBENZOFURAN	Root Essent. Oil	--	--	
0	2,4-DIFURFURYL-FURAN	Root	--	--	
0	2,4-DIFURFURYL-FURAN	Root Essent. Oil	--	--	
0	2,4-DIHYDROXY-ACETOPHENONE	Root	--	--	
0	2,4-DIHYDROXY-ACETOPHENONE	Root Essent. Oil	--	--	
0	2,6-DIMETHYL-PYRAZINE	Root	--	--	
0	2,6-DIMETHYL-PYRAZINE	Root Essent. Oil	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	2,7-DIHYDROXY-3',4'-DIMETHOXYISOFLAVONE	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	2-ACETYL-5-METHYL-FURAN	Root	--	--	
0	2-ACETYL-5-METHYL-FURAN	Root Essent. Oil	--	--	
0	2-ACETYL-FURAN	Root	--	--	
0	2-ACETYL-FURAN	Root Essent. Oil	--	--	
0	2-ACETYL-PYRROLE	Root	--	--	
0	2-ACETYL-PYRROLE	Root Essent. Oil	--	--	
0	2-BETA-GLUCOSONOSYL-GLUCURONIC-ACID	Plant	--	--	
0	2-BUTYL-2-OCTENAL	Root	--	2	
0	2-ETHYL-1,4-DIMETHYL-BENZENE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	2-ETHYL-6-METHYL-PYRAZINE	Root	--	--	
0	2-ETHYL-6-METHYL-PYRAZINE	Root Essent. Oil	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	2-FORMYL-5-METHYL-PYRROLE	Root	--	--	
0	2-FORMYL-5-METHYL-PYRROLE	Root Essent. Oil	--	--	
0	2-HEXANAL	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	2-HYDROXY-4-METHYL-BENZALDEHYDE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	2-HYDROXY-5-METHYL-CYCLOPENT-2-EN-1-ONE	Root	--	--	
0	2-HYDROXY-5-METHYL-CYCLOPENT-2-EN-1-ONE	Root Essent. Oil	--	--	
0	2-METHALYL-PHENOL	Root	1	1	
0	2-METHYL-3-DECEN-5-ONE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 2-METHYL-5-ISOPROPYL-2-CYCLOHEXEN-1-ONE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 2-METHYL-5-ISOPROPYL-PHENOL	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 2-METHYL-6-METHYLENE-7-OCTEN-2-OL	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 2-METHYL-PHENOL	Root	--	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 2-METHYL-PROPANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 2-METHYL-TETRAHYDRO-FURAN-3-ONE	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation	
0	2-PENTYL-FURAN	Root	2	2	-1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	2-PHENETHANOL	Root	--	--		
0	2-PHENYLETHANOL	Root Essent. Oil	--	--		
0	2-TETRAHYDRO-2-METHYL-FURAN-3-ONE	Root Essent. Oil	--	--		
0	21-ALPHA-HYDROXY-ISOGLABROLIDE	Root	--	--		
0	22,23-DIHYDROSTIGMASTEROL	Plant	--	--		
0	22,23-DIHYDROSTIGMASTEROL	Root	--	--		Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	23-HYDROXYGLYCYRRHETIC-ACID	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	24-HYDROXY-11-DEOXYGLYCYRRHETIC-ACID	Plant	--	--		J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	24-HYDROXYGLYCYRRRHIZIN	Plant	--	--		



Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 24-HYDROXYGLYCYRRRHIZIN	Root	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
0 24-HYDROXYLIQUIRITIC-ACID	Root	--	--	
0 28-HYDROXYGLYCYRRHETIC-ACID	Root	--	--	
0 3'-METHOXYGLABRIDIN	Root	117	117	
0 3,24-DIHYDROXY-OLEANA-11,13(18)-DIENOIC-ACID	Shoot	--	--	
0 3,24-DIHYDROXY-OLEANA-9(11),12-DIENOIC-ACID	Shoot	--	--	
0 3,5-OCTADIEN-2-ONE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0 3-HYDRO-5-METHYL-FURAN-2-ONE	Root	--	--	
0 3-HYDRO-5-METHYL-FURAN-2-ONE	Root Essent. Oil	--	--	
0 3-HYDROXY-GLABROL	Rhizome	--	23.3	
0 3-METHOXY-2-METHYL-PROPANE	Root	2	2	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
0 3-METHYL-3-HEPTEN-2-ONE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 3-METHYL-6-PROPYL-PHENOL	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0 4',7-DIHYDROXYFLAVONE	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0 4'-O-METHYLGLABRIDIN	Root	--	--	
0 4'-O-METHYLGLABRIDIN	Rhizome	--	169	
0 4-HYDROXY-4-METHYL-PENTAN-2-ONE	Root	--	--	
0 4-HYDROXY-4-METHYL-PENTAN-2-ONE	Root Essent. Oil	--	--	
0 4-HYDROXYCHALCONE	Plant	--	--	
0 4-HYDROXYCHALCONE	Root	--	--	
0 4-METHYL-ISOPROPYL-3-CYCLOHEXEN-1-OL	Root	6	6	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	4-PROPENYL-ANISOLE	Root	--	--	
0	4-PROPENYL-TOLUENE	Root	--	--	
0	5,7-DIHYDROXY-6(GAMMA,GAMMA)DIMETHYL-ALLYL-FLAVANONE	Shoot	--	--	
0	5-METHYL-2-UNDECENE	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	5-METHYL-FURFURAL	Root	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	5-METHYL-FURFURAL	Root Essent. Oil	--	--	
0	5-O-METHYLGLYCYROL	Plant	--	--	
0	5-PENTYLPYRAN-2-ONE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	6-(GAMMA,GAMMA-DIMETHYL-ALLYL)-5,7-DIHYDROXY-FLAVANONE	Shoot	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	6-METHYL-3,5-HEPTADIEN-2-ONE	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	6-METHYL-3-UNDECENE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	6-METHYL-5-HEPTEN-2-ONE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	7-ACETOXY-2-METHYLISOFLAVONE	Root	17	17	
0	7-HYDROXY-2-METHYLISOFLAVONE	Root	4	4	
0	7-METHOXY-2-METHYLISOFLAVONE	Plant	--	25	
0	7-METHOXY-2-METHYLISOFLAVONE	Root	--	25	
0	7-METHOXY-3,7-DIMETHYL-OCTANAL	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
1	9,12,13-TRIHYDROXY-10,11-EPOXY-OCTADECANOIC-ACID	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
1	9,12,13-TRIHYDROXY-10,11-EPOXY-OCTADECANOIC-ACID	Stem	--	--	
0	9,12,13-TRIHYDROXY-OCTADEC-TRANS-10-ENOIC-ACID	Root	--	--	
0	9,12,13-TRIHYDROXY-OCTADEC-TRANS-10-ENOIC-ACID	Stem	--	--	
0	9-METHYL-3-UNDECENE	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
16	ACETIC-ACID	Root	2	2	
0	ACETOIN	Root	--	--	
0	ACETOIN	Root Essent. Oil	--	--	
0	ACETOL	Root	--	--	
0	ACETOL	Root Essent. Oil	--	--	
6	ACETOPHENONE	Root	--	--	
0	ALCOHOL	Root	--	--	
23	ALPHA-TERPINEOL	Rhizome Essent. Oil	75000	--	
23	ALPHA-TERPINEOL	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
23	ALPHA-TERPINEOL	Root Essent. Oil	--	--		
0	ALPHA-TERPINOLENE	Root	--	0.1		
5	ALUMINUM	Root	29	182	-0.21482686343318208	
36	ANETHOLE	Root	1	1		
101	APIGENIN	Root	--	--		
1	APIOGLYCYRRHIZIN	Root	157	157	1	
1	ARABOGLYCYRRHIZIN	Root	75	75	-1	
112	ASCORBIC-ACID	Root	98	626	-0.2881241332595798	
0	ASH	Root	16799	107000	1.1262629729712743	
2	ASPARAGINE	Root	20000	40000	1.2247448713915892	=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
7	ASTRAGALIN	Shoot	--	--		
24	BENZALDEHYDE	Rhizome Essent. Oil	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
24	BENZALDEHYDE	Root	75000	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
24	BENZALDEHYDE	Root Essent. Oil	--	--	
20	BENZOIC-ACID	Root	--	--	
20	BENZOIC-ACID	Root Essent. Oil	--	--	
9	BENZYL-ALCOHOL	Root	--	--	
9	BENZYL-ALCOHOL	Rhizome Essent. Oil	--	--	
26	BERGAPTEN	Shoot	--	--	
9	BETA-AMYRIN	Root	--	--	
9	BETA-AMYRIN	Tissue Culture	--	--	
53	BETA-CAROTENE	Root	--	--	
53	BETA-CAROTENE	Seed	5	5	-0.11676226294423345
0	BETA-GLYCYRRHETINIC-ACID	Root	5300	43900	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Root	500	500	-0.26375908041164936
47	BETA-SITOSTEROL	Plant	--	--	
47	BETA-SITOSTEROL	Shoot	--	--	
14	BETAINE	Plant	--	--	
14	BETAINE	Root	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
0	BETULIC-ACID	Plant	--	--	
0	BETULIC-ACID	Tissue Culture	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
22	BETULINIC-ACID	Tissue Culture	--	--	
0	BUTAN-1-OL-2-ONE	Root	--	--	
0	BUTAN-1-OL-2-ONE	Root Essent. Oil	--	--	
0	BUTAN-1-OL-3-ONE	Root	--	--	
0	BUTAN-1-OL-3-ONE	Root Essent. Oil	--	--	



Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	BUTANE-2,3-DIOL	Root	--	--	
0	BUTANE-2,3-DIOL	Root Essent. Oil	--	--	
0	BUTANOIC-ACID	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	BUTYL-PHTHALATE	Root	--	--	
0	BUTYL-PHTHALATE	Root Essent. Oil	--	--	
0	BUTYRIC-ANHYDRIDE	Root	--	--	
0	BUTYRIC-ANHYDRIDE	Root Essent. Oil	--	--	
28	CALCIUM	Root	1379	8780	0.15082777410199327
41	CAMPHOR	Root	--	--	
1	CAPROIC-ACID	Root	--	--	
1	CAPROIC-ACID	Root Essent. Oil	--	--	
0	CARBOHYDRATES	Root	121361	773000	-0.7320494671950322

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference	Citation
37	CARVACROL	Root	--	--		
37	CARVACROL	Root Essent. Oil	--	--		
1	CELLULOSE	Plant	--	300000	-0.03979603129559332	
1	CELLULOSE	Root	300000	300000	1	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
20	CHOLINE	Root	--	--		Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
24	CHROMIUM	Root	0.3	1.7	-0.2211082365074478	
2	COBALT	Root	2	10.1	-0.3259875959839659	
5	CRESOL	Root	--	--		
0	CUMIC-ALCOHOL	Root	4	4		Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	D-SUCROSE	Rhizome	--	--		
0	DECANE	Root	--	--		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
3	DECANOIC-ACID	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	DESOXOGLABROLIDE	Plant	--	--	
0	DIFURFURYL-ETHER	Root	--	--	
0	DIFURFURYL-ETHER	Root Essent. Oil	--	--	
0	DIHYDRO-5,5-DIMETHYL-2(3H)-FURANONE	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	DIMETHYL-PHENYLETHYL-ALCOHOL	Root	--	--	
0	DOCOSANE	Root	0.1	25	
0	DODECANE	Root	--	--	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
1	DODECANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	DOTRIACONTANE	Root	3	9	
1	ECHINATIN	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
0	EICOSANE	Root	--	19	1
0	EO	Root	400	590	-0.6270017852755354
12	ESTRAGOLE	Root	1	1	
6	ESTRIOL	Root	--	--	
0	ETHYL-LINOLEATE	Root	--	--	
0	ETHYL-LINOLENATE	Root	--	--	
1	ETHYL-PALMITATE	Root	--	--	
0	ETHYL-PHENOL	Root	--	--	
1	ETHYL-PHENYLACETATE	Root	--	--	
1	ETHYL-PHENYLACETATE	Root Essent. Oil	--	--	
76	EUGENOL	Root	1	1	
0	FAT	Root	1570	10000	-0.4295238000692604

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
6	FENCHONE	Root	--	--	
61	FERULIC-ACID	Plant	--	--	
15	FIBER	Root	84000	84000	-0.09131862751650978 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	FIBER(CRUDE)	Root	--	84000	-0.8067464693783728
0	FIBER(DIETARY)	Root	--	323000	-0.8237590615986915
3	FLUORIDE	Root	--	4.2	-0.6333282398540948
16	FORMONONETIN	Root	33	1920	1.414022441541796
8	FRUCTOSE	Root	--	--	
6	FURFURAL	Root	2	2	-1 Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
6	FURFURAL	Root Essent. Oil	--	--	
0	FURFURYL-ACETATE	Root	--	--	
0	FURFURYL-ACETATE	Root Essent. Oil	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
1	FURFURYL-ALCOHOL	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
1	FURFURYL-ALCOHOL	Root Essent. Oil	--	--	
0	FURFURYL-BUTYRATE	Root	--	--	
0	FURFURYL-BUTYRATE	Root Essent. Oil	--	--	
0	FURFURYL-FORMATE	Root	--	--	
0	FURFURYL-FORMATE	Root Essent. Oil	--	--	
0	FURFURYL-PROPIONATE	Root	--	--	
0	FURFURYL-PROPIONATE	Root Essent. Oil	--	--	
0	FURYL-ETHYL-KETONE	Root Essent. Oil	--	--	
0	FURYL-METHYL-KETONE	Root	--	--	
13	GALANGIN	Shoot	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	GAMMA-BUTYROLACTONE	Root	--	--	
0	GAMMA-BUTYROLACTONE	Root Essent. Oil	--	--	
0	GAMMA-HEPTALACTONE	Root	--	--	
0	GAMMA-HEPTALACTONE	Root Essent. Oil	--	--	
1	GAMMA-HEXALACTONE	Root	--	--	
2	GAMMA-NONALACTONE	Root	6	6	
2	GAMMA-NONALACTONE	Root Essent. Oil	--	--	
0	GAMMA-OCTALACTONE	Root	--	--	
81	GENISTEIN	Shoot	--	--	
35	GERANIOL	Root	--	--	
35	GERANIOL	Rhizome Essent. Oil	--	--	
0	GLABRALONIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
4	GLABRANIN	Shoot	3100	3100	
4	GLABRANIN	Plant	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
4	GLABRANIN	Root	--	--	
0	GLABRANIN-A	Shoot	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GLABRANIN-A	Root	--	--	
0	GLABRANIN-B	Shoot	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	GLABRANIN-B	Root	--	--	
5	GLABRENE	Rhizome	129	600	
5	GLABRENE	Root	80	800	
0	GLABRIC-ACID	Root	--	--	
37	GLABRIDIN	Rhizome	1433	5700	
37	GLABRIDIN	Root	400	4000	
6	GLABROL	Root	129	440	
0	GLABROLIDE	Root	--	--	
0	GLABRONE	Root	12	12	
0	GLUCOLIQUIRITIN-APIOSIDE	Root	--	--	
7	GLUCOSE	Root	30000	42300	1.471886334456661



Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
4	GLUCURONIC-ACID	Root	--	--	
0	GLYCESTRONE	Shoot	--	--	
0	GLYCOCOUMARIN	Root	110	710	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
5	GLYCYCOUMARIN	Root	110	710	-1
0	GLYCYRIN	Root	--	--	
0	GLYCYROL	Root	--	80	-1
0	GLYCYRRAM	Root	--	--	
29	GLYCYRRHETIC-ACID	Plant	--	--	
32	GLYCYRRHETINIC-ACID	Root	6000	22400	
32	GLYCYRRHETINIC-ACID	Rhizome	--	--	
0	GLYCYRRHETINIC-ACID-MONOGLUCURONIDE	Root	6000	22400	
0	GLYCYRRHETOL	Root	--	--	
1	GLYCYRRHISOFLAVANONE	Root	--	--	
8	GLYCYRRHISOFLAVONE	Root	--	--	
0	GLYCYRRHIZA-GALACTOMANNAN	Seed	--	50000	
0	GLYCYRRHIZA-GLABRA-TRITERPENE	Root	--	80	
0	GLYCYRRHIZAN-GA	Rhizome	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
17	GLYCYRRHIZIC-ACID	Plant	100000	240000	
57	GLYCYRRHIZIN	Root	360	152000	1.4022164518368727
57	GLYCYRRHIZIN	Stem	--	--	
57	GLYCYRRHIZIN	Leaf	--	--	
57	GLYCYRRHIZIN	Tissue Culture	--	--	
57	GLYCYRRHIZIN	Rhizome	24000	27560	-0.34086713770350074
0	GLYZAGLABRIN	Root	--	--	
0	GLYZARIN	Root	--	--	
18	GUAIACOL	Root	--	--	
0	GUM	Plant	--	--	
4	HEDERASAPONIN-C	Root	--	--	
0	HENEICOSANE	Root	0.1	7	
0	HEPTACOSANE	Root	4	38	
0	HEPTADECANE	Root	--	7	
0	HEPTANE-1,2-DIOL	Root	--	--	
0	HEPTANE-1,2-DIOL	Root Essent. Oil	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	HEPTANOIC-ACID	Root	12	12	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	HERANOL	Root	--	--	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
12	HERNIARIN	Root	--	--	
0	HEX-TRANS-3-EN-1-OL	Rhizome Essent. Oil	--	--	
0	HEX-TRANS-3-EN-OL	Root	--	--	
0	HEXACOSANE	Root	5	40	
0	HEXADECANE	Root	--	0.8	-0.9999999999999999
0	HEXADECANOIC-ACID	Root	16	16	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	HEXADECYL-ACETATE	Root	--	--	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
0	HEXAN-1-OL	Root	--	--		
0	HEXAN-1-OL	Rhizome Essent. Oil	--	--		
2	HEXANOIC-ACID	Root	148	148		
3	HEXANOL	Root	8	8	-1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
1	HEXYL-FORMATE	Root	4	4		Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
3	HISPAGLABRIDIN-A	Root	--	--		
3	HISPAGLABRIDIN-A	Rhizome	126	127		
3	HISPAGLABRIDIN-B	Root	--	--		
3	HISPAGLABRIDIN-B	Rhizome	--	119		
0	HISPAGLABRIN-A	Rhizome	127	127		
0	HISPAGLABRIN-A	Root	60	60		
0	HISPAGLABRIN-B	Rhizome	119	119		
0	HISPAGLABRIN-B	Root	60	60		

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
15	INDOLE	Root	2	2	
6	IRON	Root	14	88	-0.313807642199598
0	ISOBUTYL-ADIPATE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	ISOGLABROLIDE	Root	--	--	
0	ISOGLYCYCOUMARIN	Root	50	50	
0	ISOGLYCYROL	Rhizome	80	200	-1
0	ISOGLYCYROL	Root	--	200	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
2	ISOLICOFLAVONOL	Rhizome	--	--	
28	ISOLIQUIRITIGENIN	Rhizome	160	160	-1
28	ISOLIQUIRITIGENIN	Root	1000	9610	1
0	ISOLIQUIRITIGENIN-4-GLUCOSIDE	Root	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
6	ISOLIQUIRITIN	Rhizome	--	4250	-1

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
6	ISOLIQUIRITIN	Root	920	920	-1
0	ISOLIQUIRITIN-APIOSIDE	Root	--	--	
0	ISOLIQUIRITOSIDE	Root	--	--	
3	ISOMUCRONULATOL	Leaf	--	--	
3	ISOMUCRONULATOL	Root	--	--	
0	ISONEOLIQUIRITIN	Root	--	--	
22	ISOQUERCITRIN	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
0	ISOSCHAFTOSIDE	Root	--	--	
0	ISOVIOLANTHIN	Root	--	--	
75	KAEMPFEROL	Shoot	--	--	
75	KAEMPFEROL	Root	--	--	
0	KANZONOL-R	Root	--	10	
0	KILOCALORIES	Root	2680	2680	-1.511824551042841 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	KUMATAKENIN	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	L-ASPARTIC-ACID	Plant	--	--	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
0	LAVANDOLOL	Root	--	--	
0	LAVANDULOL	Root	--	--	
28	LICOCHALCONE-A	Root	250	250	
2	LICOCHALCONE-B	Root	--	--	
4	LICOCOUMARONE	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
4	LICOCOUMARONE	Root	--	--	
1	LICOFLAVANONE	Leaf	4900	4900	
0	LICOFLAVONE-B	Root	--	--	
0	LICOFLAVONOL	Root	--	--	
0	LICOISOFLAVANONE	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
4	LICOISOFLAVONE-A	Root	--	--	
2	LICOISOFLAVONE-B	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	LICOISOFLAVONE-C	Root	--	--	
7	LICOPYRANOCOUMARIN	Rhizome	--	--	
0	LICORIC-ACID	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
1	LICORICIDIN	Root	--	--	
0	LICORICONE	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
1	LICURASIDE	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
0	LICUROSIDE	Root	--	--	
0	LICUROSIDE	Rhizome	--	--	
13	LIGNIN	Root	100000	180000	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.



Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
3	LIGUSTRAZINE	Rhizome	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
3	LIGUSTRAZINE	Rhizome Essent. Oil	--	--	
0	LIKVIRITIN	Root	--	--	
0	LINALOL	Root	--	2	-0.6720601732560163
0	LINALOL-A-OXIDE	Root	--	--	
0	LINALOL-B-OXIDE	Root	--	--	
53	LINALOOL	Root	--	2	-1.2001299669671104
0	LINALOOL-A-OXIDE	Rhizome Essent. Oil	--	--	
0	LINALOOL-B-OXIDE	Rhizome Essent. Oil	--	--	
0	LINALOOL-OXIDE	Root	--	--	
0	LINOLEIC-ACID-ETHYL-ESTER	Root	--	--	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	LINOLEIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--	
0	LINOLENIC-ACID-ETHYL-ESTER	Root	--	--	Duke, J. A. Writeups or information summaries on approximately 2,000 economic plants, USDA, ARS, Beltsville, MD 20705.
0	LINOLENIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--	
0	LIQCOUMARIN	Root	23	23	
0	LIQUIRAZIDE	Root	--	--	
0	LIQUIRIDIOLIC-ACID	Plant	--	--	J.S. Glasby Dict.Pls Containing 2ndary Metabolite. 1991.
1	LIQUIRITIC-ACID	Root	--	--	
12	LIQUIRITIGENIN	Root	140	140	-1
3	LIQUIRITIN	Root	--	2300	-1
3	LIQUIRITIN	Rhizome	100	470	-1
0	LIQUIRITINIC-ACID	Plant	--	--	
0	LIQUIRITOGENIN-4'-O-BETA-D-GLUCOSYL-APIOSIDE	Root	--	--	
0	LIQUIRITOGENIN-CHALCONE	Plant	--	--	
0	LIQUORIC-ACID	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
21	LUPEOL	Tissue Culture	--	--	
65	MAGNESIUM	Root	1515	9650	3.771799621373545
15	MALIC-ACID	Root	--	--	=ICMR(Indian Council of Medical Research).1976.Medicinal Plants of India.Vol.1.Indian Council of Med. Res.Cambridge Printing Works, New Delhi.487 pp;ICMR.1987.Medicinal Plants of India.Vol.2.Indian Council of Med. Res.Cambr. Printing Works,New Delhi.600pp
11	MALTOL	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
11	MALTOL	Root Essent. Oil	--	--	
2	MALTOSE	Root	--	--	
14	MANGANESE	Root	0.7	4.7	-0.48975099372786696
18	MANNITOL	Plant	--	--	
18	MANNITOL	Root	--	--	
0	METHOXYPHASEOLLIN	Root	--	--	
1	METHYL-ETHYL-KETONE	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
1	METHYL-ETHYL-KETONE	Root Essent. Oil	--	--	
0	METHYL-HEXADECANOATE	Root	1	1	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-HEXANOATE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
21	METHYL-SALICYLATE	Plant	--	--	
0	MUCIN	Plant	--	--	
5	MYRTENAL	Root	--	--	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-METHYL-2-PYRROLIDONE	Root	5	5	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
1	N-NONACOSANE	Root	--	--	
0	N-TETRADECANE	Root	--	--	
56	NARINGENIN	Shoot	--	--	
1	NEOSOLIQUIRITIN	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
0	NEOLICUROSIDE	Rhizome	--	--	
1	NEOLIQUIRITIN	Root	--	--	
0	NEOSOLIQUIRITIN	Root	--	--	
39	NIACIN	Root	11	70	0.5727223514607939
11	NICOTINIC-ACID	Leaf	100	1000	0.4235889253321141
0	NONADECANE	Root	0.1	2	-1
2	NONANOIC-ACID	Root	2	2	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
2	NONANOIC-ACID	Root Essent. Oil	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	O-ACETYL-SALICYLIC-ACID	Root	1500	1636	
0	O-ACETYL-SALICYLIC-ACID	Rhizome	1500	1636	
6	O-CRESOL	Root	--	--	
0	O-METHOXY-PHENOL	Root	--	--	
0	O-METHOXY-PHENOL	Root Essent. Oil	--	--	
0	O-TOLUNITRILE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	OCT-1-EN-3-OL	Root	--	--	
0	OCT-1-EN-3-OL	Rhizome Essent. Oil	--	--	
0	OCTACOSAN-1-OL	Root	--	--	
0	OCTACOSANE	Root	4	34	
0	OCTADECANAL	Root	--	15	
0	OCTADECANE	Root	--	--	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
5	OCTANOIC-ACID	Rhizome Essent. Oil	114000	114000	
5	OCTANOIC-ACID	Root	7	7	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
5	OCTANOIC-ACID	Root Essent. Oil	--	--	
0	ONOCERIN	Plant	--	--	
0	ONOCERIN	Root	--	--	Bisset, N.G., ed. 1994. Herbal Drugs and Phytopharmaceuticals. CRC Press. Boca Raton, FL. 566 pp.
2	ONONIN	Root	320	320	-0.657145526853552
9	OXALIC-ACID	Plant	--	--	
16	P-CYMENE	Root	--	--	
0	P-CYMENOL	Root	--	--	
13	P-HYDROXY-BENZOIC-ACID	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
1	P-METHOXY-PHENOL	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
1	P-METHOXY-PHENOL	Root Essent. Oil	--	--	
20	PAEONOL	Rhizome Essent. Oil	89000	89000	
13	PALMITIC-ACID	Root	--	--	Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
1	PALMITIC-ACID-ETHYL-ESTER	Root	--	--	
1	PALMITIC-ACID-ETHYL-ESTER	Root Essent. Oil	--	--	
24	PECTIN	Shoot	58000	58000	1
24	PECTIN	Root	14130	90000	-0.41908391872501777
0	PENTACOSANE	Root	0.1	41	
0	PENTADECANE	Root	--	--	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
1	PENTADECANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	PENTAN-1-OL	Root	--	--	
0	PENTAN-1-OL	Rhizome Essent. Oil	--	--	
0	PENTANOIC-ACID	Root	4	4	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	PHASEOLLINISOFLAVAN	Root	27	--	
0	PHASEOLLINISOFLAVAN	Rhizome	--	27	
6	PHENETHYL-ALCOHOL	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
6	PHENETHYL-ALCOHOL	Rhizome Essent. Oil	--	--	
26	PHENOL	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
26	PHENOL	Root Essent. Oil	--	--	
2	PHENYL-ACETALDEHYDE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	PHENYL-ETHYL-ALCOHOL	Root	--	--	
1	PHENYL-PROPIONIC-ACID	Root	--	--	
1	PHENYL-PROPIONIC-ACID	Root Essent. Oil	--	--	
4	PHOSPHORUS	Root	124	790	-0.47928982526561387
9	PINOCEMBRIN	Shoot	9500	9700	1.4141550732358925
9	PINOCEMBRIN	Plant	--	--	
0	POLYSACCHARIDE	Shoot	--	8000	
14	POTASSIUM	Plant	11400	11400	-0.7250936985389107 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
14	POTASSIUM	Root	1790	11400	-0.3206295233680915
0	PRENYLLICOFLAVONE-A	Root	--	--	
0	PRIMULA-ACID-A	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
6	PROPIONIC-ACID	Root	--	--	
6	PROPIONIC-ACID	Root Essent. Oil	--	--	
0	PROTEIN	Root	17270	110000	-0.09447587485319071
2	PRUNETIN	Leaf	--	--	
2	PRUNETIN	Plant	--	--	
0	PSEUDOIONONE	Root	1	1	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	PYRAZOLE	Root	--	--	
0	PYRAZOLE	Root Essent. Oil	--	--	
176	QUERCETIN	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
176	QUERCETIN	Shoot	--	--	
176	QUERCETIN	Root	--	--	
0	RESIN	Plant	--	--	

Chemical Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0 RHAMNOISOLIQIRITIN	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
0 RHAMNOLIQUIRITIN	Root	--	--	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
15 RIBOFLAVIN	Root	0.3	1.6	-0.5415349954750799
34 SALICYLIC-ACID	Root	--	567	0.9999999999999998
34 SALICYLIC-ACID	Rhizome	567	567	
5 SAPONINS	Root	20000	150000	1.936393086666112
1 SCHAFTOSIDE	Root	--	--	
60 SELENIUM	Root	--	0.1	-0.3553393095282933
0 SHINFLAVANONE	Root	--	--	
0 SHINPTEROCARPIN	Root	--	--	
4 SILICON	Root	2.5	15.8	-0.2703244255424574
9 SINAPIC-ACID	Plant	--	--	
1 SODIUM	Root	1284	8180	3.295958210940695

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
4	SOYASAPONIN	Root	1000	7100	
0	SOYASAPONIN-B	Seed	--	3600	Abstract (See species file)
0	SOYASAPONIN-I	Tissue Culture	--	--	
0	SOYASAPONIN-II	Tissue Culture	--	--	
0	SOYASAPONINS	Seed	--	--	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
5	STARCH	Root	7850	200000	-0.48414866409480584
5	STARCH	Shoot	15000	15000	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
12	STIGMASTEROL	Root	--	--	
14	SUCROSE	Root	24000	91700	-0.3296593573923472
0	SUGAR	Root	30000	140000	1.6410189969506086 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	SUGARS	Root	12560	120000	0.15600769178456209
0	TERPIN-1-EN-4-OL	Root	--	--	

Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	TERPIN-1-EN-4-OL	Rhizome Essent. Oil	--	--	
23	TERPINEN-4-OL	Rhizome Essent. Oil	72000	72000	
0	TETRACOSAN-1-OL	Root	--	--	
0	TETRACOSANE	Root	0.1	39	
0	TETRADECANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	TETRAHYDRO-2-METHYL-FURAN-3-ONE	Root	--	--	
22	TETRAMETHYL-PYRAZINE	Root	--	--	
31	THIAMIN	Root	2.1	2.1	-0.40693378797942115 Pedersen, M. 1987. Nutritional Herbology. Pederson Publishing. Bountiful, Utah. 377 pp.
0	THIAMINE	Root	0.3	2.1	-0.4414330190617021
17	THUJONE	Root	--	--	
71	THYMOL	Root	--	--	
0	TIGLALDEHYDE	Root	--	--	

Chemical Plant Part		Low PPM	High PPM	StdDev	Reference Citation
0	TIGLALDEHYDE	Root Essent. Oil	--	--	
4	TIN	Root	4	24	0.7637747609302243
0	TRICOSANE	Root	0.1	34	
0	TRIDECANE	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
2	TRIDECANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gogeikagaku Kaishi 61(9): 1119-1122.
0	TRIMETHYL-PYRAZINE	Root	--	--	
0	TRIMETHYL-PYRAZINE	Root Essent. Oil	--	--	
22	UMBELLIFERONE	Root	--	--	
0	UNDECANE	Root	--	--	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
0	UNDECANOIC-ACID	Root	--	--	Kameoka, H. and Nakai, K. 1987. Components of essential oil from the root of Glycyrrhiza-glabra. Nippon Gokeikagaku Kaishi 61(9): 1119-1122.
0	URALENIC-ACID	Shoot	15000	15000	
0	URALOZIDE-ACID	Shoot	15000	15000	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
0	URALSAPONIN-B	Rhizome	--	8130	
0	URALSAPONIN-B	Root	--	8130	
18	VITEXIN	Plant	--	--	Stitt, Paul. Why George should eat broccoli.
0	WATER	Root	--	843000	0.48274597416633663
43	XANTHOTOXIN	Shoot	--	--	
77	ZINC	Root	0.1	0.3	-1.0458068487141465