Supporting Information

Testing Results and Methods References for Nutritional and Contaminant Testing of Goldenseal (*Hydrastis canadensis* L.) Root Powder from Three Commercial Suppliers

Physical and Nutritional Testing

Supplier[a]	Protein[b] (g/100 g)	Moisture[c] (g/100 g)	Total fat (g/100 g)	Ash (g/100 g)	Crude fiber (g/100 g)	Dietary fiber (g/100 g)
Ac	9.4	6.3	1.2	8.1	17.2	17.9
Bc	11.1	10.0	1.5	6.0	6.4	21.6
Cc	10.5	10.3	1.6	7.9	8.5	24.5

[a]Suppliers names are confidential. [b]Dumas method. [c]70 °C vacuum oven.

Vitamins Testing[a]

Component	Supplier A[b]	Supplier B[b]	Supplier C[b]	Component	Supplier A	Supplier B	Supplier C
Beta carotene by HPLC (mg/100 g)	<0.061	<0.061	<0.061	Choline chloride, chemical (mg/100 g)	59.5	95.4	94.1
Vitamin A from carotene (IU/100 g)	<105	<105	<105	Folic acid (mg/100 g)	0.0977	0.0999	0.186
Vitamin A by HPLC (IU/100 g)	<100	<100	<100	Riboflavin (mg/100 g)	0.06	0.06	0.08
Vitamin A, total (IU/100 g)	<100	<100	<100	Niacin (mg/100 g)	1.59	1.12	2.11
Vitamin E (IU/100 g)	1.97	2.23	2.46	Vitamin B12 (μg/100 g)	<0.12	<0.12	<0.12
Pyridoxine HCl (mg/100 g)	1.05	1.23	2.02	Pantothenic acid (mg/100 g)	0.90	0.95	1.12
Biotin (mg/100 g)	0.0109	0.0133	0.0112				

[a]Any value with < was below the shown detection limit. [b] Supplier names are confidential.

Amino Acids[a]

Component	Supplier A[b]	Supplier B[b]	Supplier C[b]	Component	Supplier A	Supplier B	Supplier C
Aspartic acid	970	1220	1130	Methionine	100	110	100
Threonine	230	270	240	Isoleucine	200	270	220
Serine	320	400	320	Leucine	440	560	430
Glutamic acid	750	1000	750	Tyrosine	130	130	80
Proline	260	280	250	Phenylalanine	300	410	280
Glycine	270	320	290	Histidine	120	150	150
Alanine	290	350	320	Lysine	320	430	390
Cystine	90	90	110	Arginine	520	770	590
Valine	290	360	290	Tryptophan	40	50	40

[a]All results reported as mg/100 g. [b]Supplier names are confidential.

Fatty Acids[a, b, c]

Component	Supplier A[d]	Supplier B[d]	Supplier C[d]	Component	Supplier A	Supplier B	Supplier C
8:0 Caprylic acid	<0.002	<0.002	<0.002	18:0 Stearic acid	0.015	0.016	0.016
10:0 Capric acid	<0.002	<0.002	<0.002	18:1 Oleic acid	0.052	0.054	0.041
12:0 Lauric acid	<0.002	<0.002	<0.002	18:2 Linoleic acid	0.292	0.410	0.531
14:0 Myristic acid	<0.002	<0.002	<0.002	Gamma linolenic acid	<0.002	0.002	<0.002
14:1 Myristoleic acid	<0.002	<0.002	<0.002	18:3 Linolenic acid	0.028	0.038	0.052
15:0 Pentadecanoic acid	0.003	0.003	0.004	20:0 Arachidic acid	0.004	0.005	0.005
15:1 Pentadecenoic acid	<0.002	<0.002	<0.002	20:1 Eicosenoic acid	0.004	0.005	0.004
16:0 Palmitic acid	0.131	0.179	0.175	20:2 Eicosadienoic acid	<0.002	<0.002	0.002
16:1 Palmitoleic acid	0.003	0.004	0.004	20:4 Arachidonic acid	<0.002	<0.002	<0.002
17:0 Heptadecanoic acid	0.007	0.010	0.012	20:3 Eicosatrienoic acid	<0.002	<0.002	<0.002
17:1 Heptadecenoic acid	0.005	0.007	0.007	22:0 Behenic acid	0.014	0.011	0.014

[a]Fatty acids reported as triglycerides. [b]All results reported as g/100 g. [c] Any value with < was below the shown detection limit. [d]Supplier names are confidential.

Inorganics and Metals[a, b]

Component	Supplier A[c]	Supplier B[c]	Supplier C[c]	Component	Supplier A	Supplier B	Supplier C
Chloride	54	15	24	Cobalt	0.263	<0.200	1.02
Iodine[d]	26.5	22.2	28.3	Copper	1.56	1.43	1.35
Lead	0.622	0.190	0.092	Iron	163	75.8	136
Mercury	0.0039	<0.0025	<0.0025	Magnesium	264	308	307
Selenium	0.0097	0.0060	0.0071	Manganese	17.8	17.0	18.2
Silver	<0.030	<0.030	<0.030	Phosphorus	165	196	134
Sulfur	313	375	518	Potassium	738	899	840
Thallium	<0.0050	<0.0050	<0.0050	Sodium	27.7	<20.0	<20.0
Cadmium	<0.200	<0.200	<0.200	Vanadium	0.264	<0.200	0.268
Calcium	491	317	363	Zinc	6.03	5.73	5.15
Chromium	<0.400	<0.400	1.08				

[a]All results except iodine reported as mg/100 g. [b]Any value with < was below the shown detection limit. [c]Supplier names are confidential. [d]Reported as μg/100 g.

Aflatoxins[a]

Assay	Supplier A[b]	Supplier B[b]	Supplier C[b]
Aflatoxin B1	< 0.10 μg/100 g	0.137 μg/100 g	< 0.10 μg/100 g
Aflatoxin B2	< 0.10 μg/100 g	< 0.10 μg/100 g	< 0.10 μg/100 g
Aflatoxin G1	< 0.10 μg/100 g	< 0.10 μg/100 g	< 0.10 μg/100 g
Aflatoxin G2	< 0.10 μg/100 g	< 0.10 μg/100 g	< 0.10 μg/100 g

[a]Any value with < was below the shown detection limit. [b]Supplier names are confidential.

Nitrosamines[a]

Assay	Supplier A[b]	Supplier B[b]	Supplier C[b]
N-Nitrosodibutylamine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
N-Nitrosodiethylamine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
N-Nitrosodimethylamine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
N-Nitrosomorpholine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
N-Nitrosopiperidine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
N-Nitrosopyrrolidine	< 0.00010 mg/100g	< 0.00010 mg/100g	< 0.00010 mg/100g
% Recovery	103	103	107

[a]Any value with < was below the shown detection limit. [b]Supplier names are confidential.

Organophosphate and Organochlorine Pesticides[a]

Assay	Supplier A[b]	Supplier B[b]	Supplier C[b]
Vapona	< 15.0 ppb	< 15.0 ppb	< 15.0 ppb
Methamidophos	< 15.0 ppb	< 15.0 ppb	< 15.0 ppb
Mevinphos	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Acephate	< 40.0 ppb	< 40.0 ppb	< 40.0 ppb
Omethoate	< 35.0 ppb	< 35.0 ppb	< 35.0 ppb
Thimet	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Demeton-S	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Fonofos	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Diazinon	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Disulfoton	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Dimethoate	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Propetamphos	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Dichlofenthion	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Chlorpyrifos-methyl	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Ronnel	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Parathion-methyl	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Pirimphos-methyl	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Chlorpyrifos-ethyl	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Fenitrothion	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Malathion	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Parathion-ethyl	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Chlorfenvinphos	< 40.0 ppb	< 40.0 ppb	< 40.0 ppb
Methidathion	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Prothiophos	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Ethion	< 20.0 ppb	< 20.0 ppb	< 20.0 ppb
Trithion	< 30.0 ppb	< 30.0 ppb	< 30.0 ppb
Phosmet	< 35.0 ppb	< 35.0 ppb	< 35.0 ppb
EPN	< 40.0 ppb	< 40.0 ppb	< 40.0 ppb
Azinphos-methyl	< 40.0 ppb	< 40.0 ppb	< 40.0 ppb
Phosalone	< 40.0 ppb	< 40.0 ppb	< 40.0 ppb
Coumaphos	< 50.0 ppb	< 50.0 ppb	< 50.0 ppb
Tecnazene	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Hexachlorobenzene (HCB)	< 6.50 ppb	< 6.50 ppb	< 6.50 ppb
Alpha-BHC	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Propyzamide	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
DCNA	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
PCNB	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Gamma-BHC (Lindane)	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Beta-BHC	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb

Organophosphate and Organochlorine Pesticides[a] (Continued)

Assay	Supplier A[b]	Supplier B[b]	Supplier C[b]
Heptachlor	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Chlorothalonil	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Delta-BHC	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Vinclozolin	< 25.0 ppb	< 25.0 ppb	< 25.0 ppb
Aldrin	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
DCPA	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
Heptachlor epoxide	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Endosulfan I	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Dieldrin	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Captan	< 50.0 ppb	< 50.0 ppb	< 50.0 ppb
Folpet	< 31.5 ppb	< 31.5 ppb	< 31.5 ppb
p, p'-DDE	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Endrin	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
Oxadiazon	< 37.5 ppb	< 37.5 ppb	< 37.5 ppb
Endosulfan II	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
p, p'-DDD	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
p, p'-DDT	< 25.0ppb	< 25.0ppb	< 25.0ppb
Endosulfan sulfate	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
Captafol	< 31.5 ppb	< 31.5 ppb	< 31.5 ppb
Dicofol	< 31.5 ppb	< 31.5 ppb	< 31.5 ppb
Mirex	< 12.5 ppb	< 12.5 ppb	< 12.5 ppb
Tetradifon	< 18.5 ppb	< 18.5 ppb	< 18.5 ppb
Methoxychlor	< 31.5 ppb	< 31.5 ppb	< 31.5 ppb
Permethrin	< 62.5 ppb	< 62.5 ppb	< 62.5 ppb
Cypermethrin	< 94.0 ppb	< 94.0 ppb	< 94.0 ppb
Toxaphene	< 625 ppb	< 625 ppb	< 625 ppb
PCB	< 250 ppb	< 250 ppb	< 250 ppb
Technical chlordane	< 250 ppb	< 250 ppb	< 250 ppb

[a]Any value with < was below the shown detection limit. [b]Supplier names are confidential.

Method References

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