Supplementary Information

Metabolome and Gut Microbiota Variations of Long-term Intake of Panax Ginseng Extracts on Rats

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Supplementary Figures

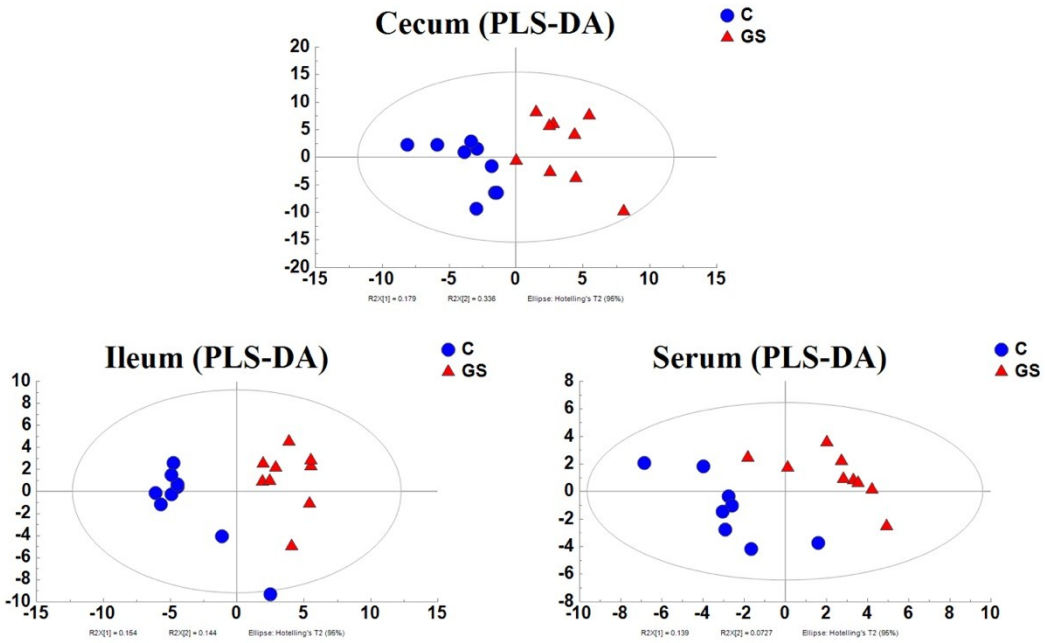

Fig.S1 PLS-DA scores plot based on the cecum, ileum, serum metabolic profiling of administration of GS group compared with C group. cecum (R2X= 0.642, Q2 = 0.663), ileum (R^2X= 0.674, R^2Y = 0.975, Q^2 = 0.528), serum (R^2X=0.317, R^2Y = 0.935, Q^2 = -0.0224)

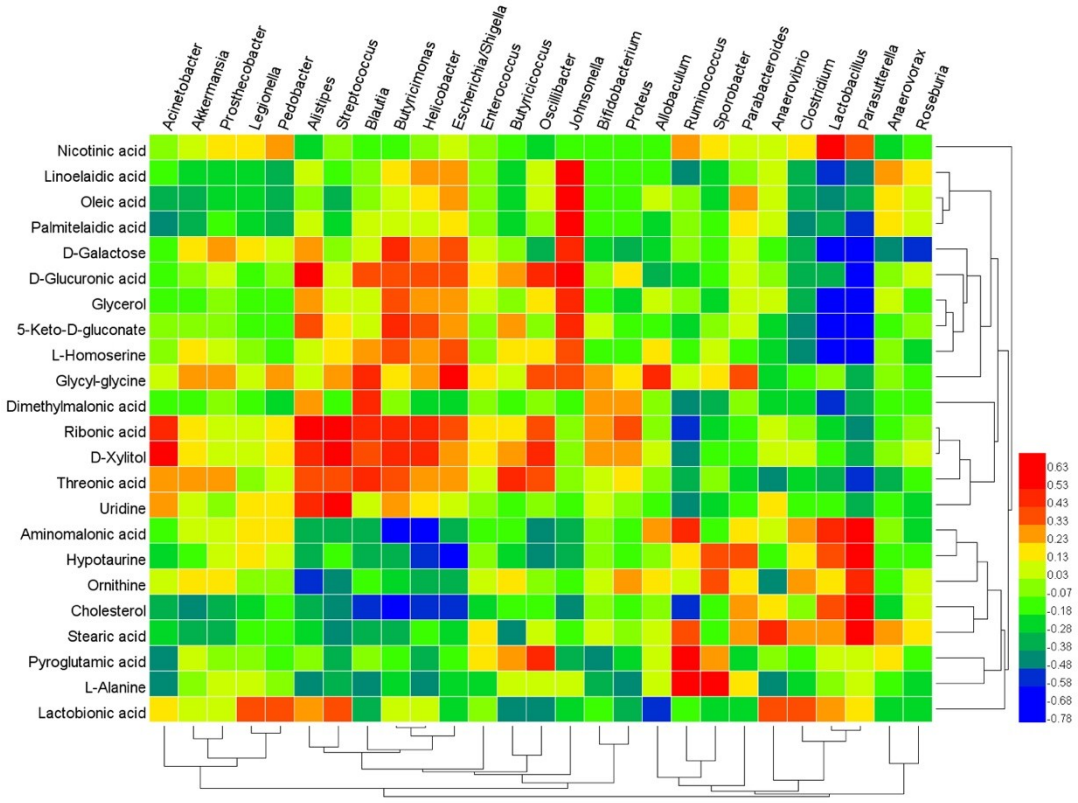

Fig.S2 Spearman correlation coefficient analysis of cecum microbiota and metabolites

Note. The Spearman correlation coefficient was calculated by R. The value > 0 indicating positive correlations between gut microbiota and metabolites, while value < 0 indicating negative correlations.

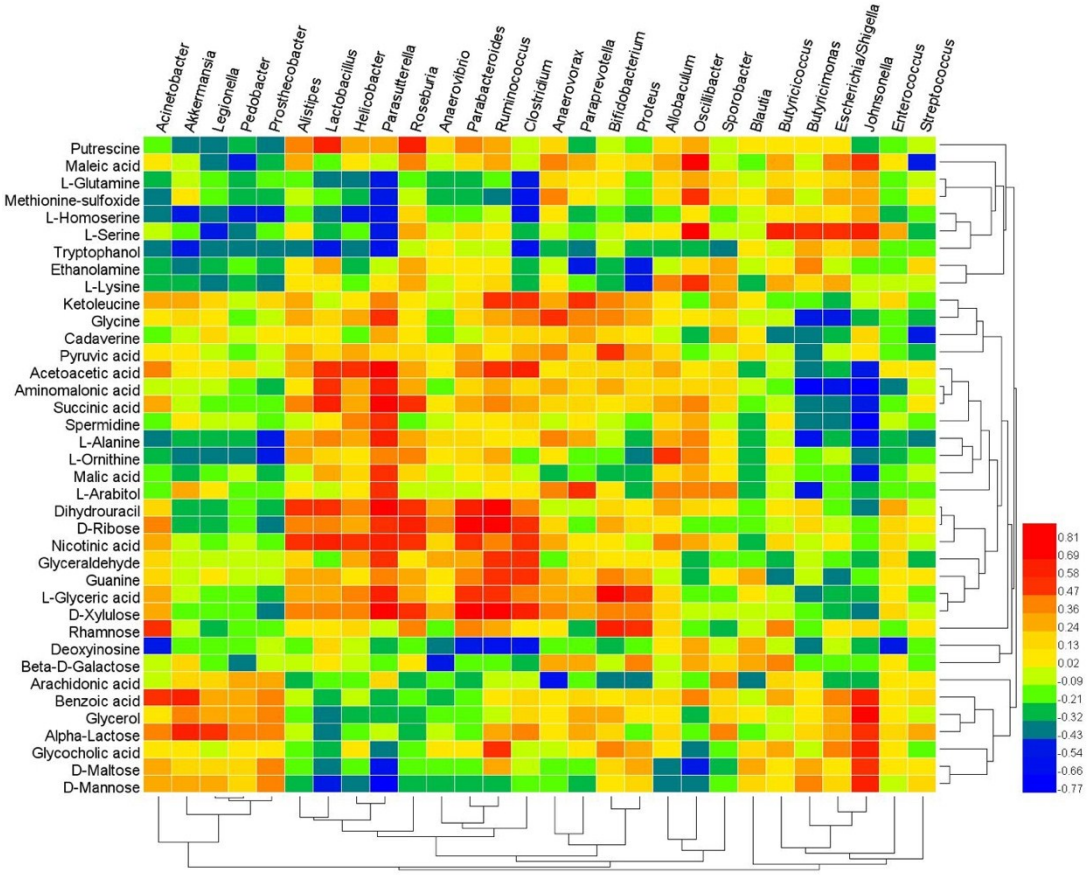

Fig.S3 Spearman correlation coefficient analysis of ileum microbiota and metabolites

Note. The Spearman correlation coefficient was calculated by R. The value > 0 indicating positive correlations between gut microbiota and metabolites, while value < 0 indicating negative correlations.

Supplementary Tables

Table S1. Differential cecum metabolites to be accountable for the separation between administration of GS group and C group

No.	Metabolites	FC[a]	P (t test)	VIP[b]
1	Glycerol	0.51	0.003	2.02
2	L-Alanine	1.61	0.005	1.98
3	Hypotaurine	9.58	0.012	1.84
4	L-Homoserine	0.63	0.006	2.06
5	Pyroglutamic acid	1.76	0.048	1.17
6	L-Ornithine	1.36	0.027	1.50
7	D-Galactose	0.23	0.002	2.05
8	D-Glucuronic acid	0.58	0.003	2.01
9	5-Keto-D-gluconate	0.34	0.003	1.84
10	Linoelaidic acid	0.55	0.002	1.87
11	Stearic acid	1.47	0.022	1.56
12	Oleic acid	0.58	0.007	1.61
13	Palmitelaidic acid	0.53	0.003	1.67
14	Aminomalonic acid	1.77	0.001	2.35
15	Nicotinic acid	1.24	0.034	1.19
16	Lactobionic acid	6.93	0.030	1.43
17	Dimethylmalonic acid	0.77	0.013	1.06
18	Ribonic acid	0.56	0.005	1.86
19	Threonic acid	0.69	0.014	1.95
20	Uridine	0.54	0.025	1.59
21	D-Xylitol	0.56	0.018	1.65
22	Glycyl-glycine	0.54	0.033	1.35
22	Cholesterol	2.24	0.015	1.79

[a]Fold change was obtained by calculating the relative concentration between administration of GS group compared with Control Group. [b]Variable importance in the projection (VIP) was obtained from PLS-DA with a threshold of 1.0.

Table S2. Differential ileum metabolites to be accountable for the separation between administration of GS group and C group

No.	Metabolites	FC[a]	P (t test)	VIP[b]
1	Glycerol	0.62	0.030	1.57
2	L-Arabitol	1.86	0.009	1.30
3	Ethanolamine	2.07	0.083	1.16
4	Putrescine	1.45	0.075	1.28
5	Cadaverine	4.82	0.078	1.14
6	Spermidine	3.85	0.010	1.61
7	L-Alanine	3.08	0.002	2.07
8	Glutamine	0.63	0.077	1.28
9	L-Glycine	2.92	0.018	1.53
10	Homoserine	0.56	0.031	1.48
11	L-Lysine	1.32	0.102	1.09
12	L-Ornithine	2.55	0.032	1.62
13	Glyceraldehyde	3.89	0.066	1.20
14	D-Maltose	0.22	0.004	2.03
15	Beta-D-Galactose	0.38	0.076	1.14
16	D-Ribose	1.46	0.118	1.05
17	Rhamnose	1.74	0.067	1.06
18	Alpha-Lactose	0.73	0.058	1.00
19	D-Xylulose	3.06	0.043	1.38
20	Arachidonic acid	2.87	0.023	1.45
21	Ketoleucine	2.72	0.099	1.07
22	Acetoacetic acid	2.51	0.002	2.10
23	Aminomalonic acid	4.60	0.004	1.97
24	Succinic acid	2.06	0.011	1.67
25	Glycocholic acid	0.62	0.008	1.67
26	L-Glyceric acid	2.99	0.018	1.53
27	Malic acid	2.42	0.022	1.61
28	Nicotinic acid	1.40	0.052	1.30
29	Pyruvic acid	2.55	0.078	1.10
30	Deoxyinosine	5.56	0.056	1.26
31	Dihydrouracil	1.94	0.033	1.57
32	Guanine	1.75	0.104	1.06
33	Methionine sulfoxide	0.52	0.058	1.22

[a]Fold change was obtained by calculating the relative concentration between administration of GS group compared with Control Group. [b]Variable importance in the projection (VIP) was obtained from PLS-DA with a threshold of 1.0.

Table S3. Differential serum metabolites to be accountable for the separation between administration of GS group and C group

No.	Metabolites	FC[a]	P (t test)	VIP[b]
1	Glycerol	0.74	0.025	1.69
2	L-Threitol	1.36	0.034	1.54
3	L-Threonine	0.79	0.007	2.22
4	Docosahexaenoic acid (DHA)	0.55	0.010	2.12
5	Conjugated linoleic acid (CLA)	0.76	0.020	1.76
6	Eicosapentaenoic acid (EPA)	0.61	0.007	2.08
7	Elaidic acid	0.75	0.043	1.62
8	4-Deoxyerythronic acid	0.68	0.048	1.53
9	2-Ethylhydracrylic acid	1.48	0.016	1.86
10	Lactic acid	0.65	0.024	1.39
11	Glycerol phosphate calcium salt	0.71	0.020	1.83
12	Oleamide	1.94	0.006	1.54
13	4-Hydroxyproline	0.72	0.050	1.80
14	Cholesterol	0.57	0.040	1.71

[a]Fold change was obtained by calculating the relative concentration between administration of GS group compared with Control Group. [b]Variable importance in the projection (VIP) was obtained from PLS-DA with a threshold of 1.0.