

Supplementary Table S3. Results of comparative analysis

				Concentration (nmol/g)														Comparative Analysis	
ID	Metabolite	PubChem CID	HMDB ID	treatment					Control					treatment		Control		treatment vs Control	
				whye2	whye3	whye4	whye5	whye6	casein2	casein3	casein4	casein5	casein6	Mean	S.D.	Mean	S.D.	Ratio [†]	p-value [‡]
A_0009	2-Hydroxybutyric acid	440864	HMDB00000008	0.6	N.D.	1.8	1.1	N.D.	1.2	2.8	N.D.	2.1	1.6	1.2	0.6	1.9	0.7	0.6	0.2
A_0035	2-Oxoglutaric acid	51	HMDB00000208	N.D.	N.D.	4.5	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	4.5	N.A.	N.A.	N.A.	1<	N.A.
A_0013	2-Oxoisovaleric acid	49	HMDB00000019	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0070	2-Phosphoglyceric acid	439278	HMDB00000391	4.2	N.D.	2.5	2.6	1.0	N.D.	2.6	1.9	0.8	N.D.	2.6	1.3	1.8	0.9	1.5	0.4
A_0008	3-Hydroxybutyric acid	441	HMDB00000111 HMDB00000357 HMDB00000442	37	15	51	31	26	23	49	44	95	12	32	14	44	32	0.7	0.5
A_0071	3-Phosphoglyceric acid	439183	HMDB00000807	29	4.5	17	16	6.0	14	16	13	5.4	7.5	14	9.8	11	4.5	1.3	0.5
A_0112	6-Phosphogluconic acid	91493	HMDB0001316	8.7	1.5	4.1	2.4	1.3	N.D.	N.D.	0.4	1.4	2.6	3.6	3.1	1.5	1.1	2.4	0.2
A_0144	Acetyl CoA, _divalent	444493		N.D.	N.D.	0.2	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	0.2	N.A.	N.A.	N.A.	1<	N.A.
C_0068	Adenine	190	HMDB00000034	0.3	0.08	0.7	0.2	0.2	0.06	0.10	0.09	0.07	0.08	0.3	0.2	0.08	0.02	4.1	0.1
C_0187	Adenosine	60961	HMDB00000050	6.4	0.5	109	3.4	3.5	1.3	2.2	2.0	1.2	0.7	25	47	1.5	0.6	16.6	0.3
A_0148	ADP	6022	HMDB0001341	12	2.1	152	5.9	3.8	4.9	5.4	3.1	3.6	2.8	35	66	3.9	1.1	9.0	0.3
C_0011	Ala	602	HMDB0000161 HMDB00001310	110	75	133	98	81	89	110	92	87	120	99	23	99	14	1.0	1.0
A_0130	AMP	6083	HMDB00000045	32	26	170	34	67	70	110	74	62	47	66	60	73	23	0.9	0.8
C_0071	Anthrnic acid	227	HMDB0001123	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
C_0119	Arg	6322	HMDB0000517 HMDB00003416	23	6.1	34	9.6	15	12	13	11	13	13	17	11	13	0.9	1.4	0.4
C_0063	Asn	236	HMDB0000168 HMDB00033780	16	5.9	25	10	9.2	8.4	11	9.6	9.7	10	13	7.3	9.7	0.8	1.4	0.3
C_0067	Asp	424	HMDB0000191 HMDB00006483	44	26	61	31	24	27	55	32	44	35	37	16	39	11	1.0	0.9
A_0159	ATP	5957	HMDB00000538	6.6	0.3	188	1.5	0.5	0.7	0.8	0.3	0.4	0.2	39	83	0.5	0.2	82.2	0.4
C_0036	Betaine	247	HMDB00000043	48	9.6	117	21	9.9	13	12	10	7.9	12	41	45	11	2.0	3.7	0.2
C_0040	Betaine aldehyde, +H2O	249		2.0	0.4	1.2	1.5	0.7	0.8	0.2	0.4	0.5	1.5	1.2	0.6	0.7	0.5	1.7	0.2
A_0127	cAMP	6076	HMDB00000058	N.D.	N.D.	1.0	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1.0	N.A.	N.A.	N.A.	1<	N.A.
C_0158	Carnosine	439224	HMDB00000033	2.9	0.3	28	0.6	0.2	0.5	0.3	0.3	0.05	0.3	6.4	12	0.3	0.2	21.6	0.3
A_0142	CDP	6132	HMDB00001546	N.D.	N.D.	0.9	N.D.	N.D.	N.D.	N.D.	0.3	N.D.	N.D.	0.9	N.A.	N.A.	N.A.	1<	N.A.
A_0129	cGMP	24316	HMDB0001314	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
C_0024	Choline	305	HMDB00000097	123	27	196	63	55	45	42	30	40	38	93	67	39	5.5	2.4	0.1
A_0062	cis-Aconitic acid	643757	HMDB00000072	2.1	0.8	4.3	1.2	0.7	1.7	1.6	1.7	1.7	1.3	1.8	1.5	1.6	0.2	1.2	0.7
A_0081	Citric acid	311	HMDB00000094	48	24	113	38	19	34	37	30	35	24	48	38	32	5.2	1.5	0.4
C_0121	Citrulline	9750	HMDB00000004	8.3	4.8	17	8.7	6.7	9.4	8.7	6.9	6.8	6.7	9.1	4.8	7.7	1.3	1.2	0.6
A_0124	CMP	6131	HMDB00000095	2.9	2.5	9.8	4.5	3.3	4.6	5.5	3.9	4.5	4.5	4.6	3.0	4.6	0.6	1.0	1.0
A_0138	CoA, _divalent	87642		0.3	1.7	0.3	0.5	0.4	N.D.	N.D.	N.D.	N.D.	N.D.	0.6	0.6	N.A.	N.A.	1<	N.A.
C_0064	Creatine	586	HMDB00000064	262	62	875	98	71	131	84	60	84	65	273	346	85	28	3.2	0.3
C_0031	Creatinine	588	HMDB000000562	2.7	0.8	5.1	1.1	1.0	1.9	2.0	2.6	4.1	0.9	2.1	1.8	2.3	1.2	0.9	0.9
A_0155	CTP	6176	HMDB00000082	N.D.	N.D.	1.6	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1.6	N.A.	N.A.	N.A.	1<	N.A.
C_0043	Cys	594	HMDB00000574 HMDB00003417	0.11	N.D.	0.09	N.D.	N.D.	N.D.	0.09	N.D.	0.07	N.D.	0.10	0.02	0.08	0.011	1.2	0.4
C_0169	Cytidine	6175	HMDB00000089	8.1	1.9	7.1	3.9	2.2	3.0	2.0	1.4	2.0	2.0	4.6	2.9	2.1	0.5	2.2	0.1
C_0028	Cytosine	597	HMDB000000630	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0158	dATP	15993	HMDB0001532	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0153	dCTP	65091	HMDB00000098	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0056	Dihydroxyacetone phosphate	668	HMDB0001473	13	1.9	25	4.6	2.0	2.4	1.4	1.2	3.6	4.0	9.3	9.9	2.5	1.3	3.7	0.2
A_0141	dTDP	164628	HMDB0001274	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0122	dTMP	9700	HMDB0001227	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0154	dTTP	64968	HMDB0001342	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0087	Erythrose 4-phosphate	122357	HMDB0001321	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0128	Fructose 1,6-diphosphate	172313	HMDB0001058	29	0.6	54	6.4	1.1	6.3	1.5	1.4	4.4	4.8	18	23	3.7	2.2	5.0	0.2
A_0107	Fructose 6-phosphate	603	HMDB00000124	12	0.4	11	2.1	1.4	1.1	N.D.	0.5	1.9	2.4	5.5	5.8	1.5	0.8	3.8	0.2
A_0012	Fumaric acid	444972	HMDB0000134	13	N.D.	18	9.1	4.0	5.9	8.4	N.D.	6.3	5.8	11	6.0	6.6	1.2	1.7	0.2
C_0021	GABA	119	HMDB0000112	2.1	1.6	19	2.2	2.2	2.0	2.5	1.0	2.6	1.6	5.3	7.4	1.9	0.7	2.8	0.4
A_0150	GDP	8977	HMDB0001201	2.1	0.7	6.2	1.8	2.0	1.1	2.1	1.2	1.7	1.2	2.6	2.1	1.5	0.4	1.8	0.3
C_0089	Gln	738	HMDB0000641 HMDB00003423	240	127	553	180	148	135	155	132	126	144	250	175	139	11	1.8	0.2
C_0090	Glu	611	HMDB0000148 HMDB00003339	258	116	498	193	139	106	264	112	169	111	241	154	152	67	1.6	0.3
A_0086	Gluconic acid	10690	HMDB00000625	5.2	3.7	7.6	4.7	2.5	2.6	4.0	3.1	3.9	3.2	4.8	19	3.4	0.6	1.4	0.2
A_0106	Glucose 1-phosphate	65533	HMDB0001586	7.7	0.7	8.6	2.4	1.2	1.8	1.2	1.5	1.4	2.1	4.1	3.7	1.6	0.4	2.6	0.2
A_0110	Glucose 6-phosphate	5958	HMDB0001401	5.7	1.8	3.3	8.8	5.2	0.9	0.9	0.8	6.5	11	21	24	4.1	4.7	5.2	0.2
C_0205	Glutathione (GSH)	124886	HMDB0000125	16	9.1	25	22	13	0.3	0.2	3.1	1.0	7.1	17	6.4	2.4	2.9	7.1	0.0
C_0204	Glutathione (GSSG), _divalent	65359		76	13	167	43	34	32	56	32	40	35	66	61	39	10	1.7	0.4
C_0006	Gly	750	HMDB0000123	289	65	418	140	94	88	90	79	65	70	201	149	78	11	2.6	0.1
A_0057	Glyceraldehyde 3-phosphate	729	HMDB0001112	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0059	Glycerol 3-phosphate	439162	HMDB0000126	210	36	257	114	75	45	70	53	62	61	138	93	58	9.7	2.4	0.1
A_0002	Glycolic acid	757	HMDB0000115	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0001	Glyoxylic acid	760	HMDB0000119	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A_0135	GMP	6804	HMDB0001397	8.2	7.0	32	13	18											

C_0035	Val	1182	HMDB0000883	38	18	53	29	26	20	24	20	18	19	33	14	20	2.3	1.6	0.1
C_0010	β-Ala	239	HMDB0000056	8.0	3.9	27	5.1	4.9	2.4	4.6	3.0	3.1	3.5	9.7	9.6	3.3	0.8	3.0	0.2

N.A.: Not Available; N.D.: Not Detected
¶ The ratio of the detected mean values between the two groups.
|| Welch's t-test (*p<0.05, **p<0.01, ***p<0.001)