Table S1. Detected metabolites extracted from fecal samples collected from KO or WT mice.

					KO						WT					
ID	**ID Confid**	**Ret. Tim**	**m/z**	**Mode**	**D0** (n=11)	**D1** (n=8)	**D2** (n=6)	**D3** (n=6)	**D4** (n=3)	**D5** (n=3)	**D0** (n=11)	**D1** (n=7)	**D2** (n=6)	**D3** (n=6)	**D4** (n=3)	**D5** (n=3)
Fatty Acids and Lipids																
_1_11_UNDECANEDIC	2	5.16	243.1591	NEG	6.41±2.59	1.52±0.84	1.30±1.51	1.54±1.78	0.76±1.31	1.37±1.21	2.31±1.62	0	0	0	0	0
_2_AMINOBUTYRATE	2	0.61	102.055	NEG	21.61±13.87	2.27±0.49	6.84±6.22	7.22±4.92	8.23±1.08	6.41±4.04	11.50±5.05	7.58±2.48	2.43±0.22	1.59±0.26	1.88±1.13	3.18±1.43
_2_AMINOPENTANOA	2	1.06	118.0859	POS	0.11±0.36	0	0	0	0	0.27±0.46	0.76±1.32	0.73±1.26	0	0.51±0.80	0	1.00±0.87
DIHOMO_LINOLEATE_	2	11.18	279.23	NEG	0.64±0.63	0.11±0.31	0.16±0.39	0	0.40±0.69	0.56±0.97	7.79±2.63	0	0	0	0	0
DODECANEDIOATE	2	8.20	229.1433	NEG	6.68±4.11	0.53±0.75	0.11±0.27	1.29±1.62	0.73±1.27	1.23±1.28	15.68±4.50	0.12±0.31	0	0	0	0
ACETOACETATE	2	0.62	101.0243	NEG	2.53±0.48	2.18±0.50	1.54±0.36	1.61±0.34	1.69±0.26	2.06±0.15	2.19±0.74	5.22±0.70	3.98±1.40	3.55±1.77	3.03±0.41	2.89±0.43
lysoPC(15:0)	2	12.95	482.3239	POS	0	1.24±1.02	1.37±0.84	0.52±0.63	1.26±1.13	1.94±1.11	0.93±1.11	14.12±6.08	28.18±16.19	29.20±20.78	19.49±7.51	18.31±16.86
LysoPC(16:0)	2	11.86	496.3397	POS	0.25±0.84	1.66±2.05	6.28±7.38	1.90±1.95	5.43±6.38	2.05±0.11	5.00±4.00	32.60±22.71	55.45±25.27	49.32±19.56	32.50±20.98	40.15±47.12
lysoPC(18:2)	2	11.58	520.3402	POS	0	0.40±1.14	2.86±2.98	0.64±1.14	2.35±2.76	0.55±0.95	4.27±3.89	13.72±11.40	17.64±7.58	15.17±6.27	7.75±7.45	16.04±16.58
PALMITIC_AMIDE	2	10.16	256.2641	POS	1.27±0.86	1.43±0.63	1.67±0.29	1.17±0.97	1.16±1.00	1.64±0.36	0	0	0.23±0.57	1.70±2.77	1.11±1.00	0.47±0.81
PALMITOYL_ETHANOL	2	10.62	300.2897	POS	8.16±5.61	54.84±20.14	33.94±8.28	24.52±13.63	45.76±27.84	47.82±7.88	8.48±3.34	0.44±1.17	7.83±16.36	23.99±34.51	51.12±18.73	33.89±19.41
PALMITOYL_SPHINGO	2	16.97	703.5751	POS	11.30±8.34	33.64±11.56	57.00±26.71	32.92±23.96	50.14±25.47	69.25±7.62	30.92±11.84	47.76±12.28	60.58±31.66	67.68±42.00	81.13±37.30	92.69±38.09
SPHINGANINE	2	10.36	302.3057	POS	2.71±1.61	30.28±16.86	19.55±6.07	11.18±9.87	8.55±1.27	17.39±12.18	2.07±1.53	6.61±4.64	5.99±10.55	3.22±5.03	4.35±5.58	14.71±12.15
SPHINGOSINE	2	13.33	300.2892	POS	1.04±0.70	1.89±0.87	1.91±0.68	1.19±1.19	2.51±0.63	2.03±0.51	2.08±1.07	1.09±0.50	0.79±0.87	0.34±0.53	0.65±0.58	1.24±0.52
STEARAMIDE	2	10.36	284.2949	POS	1.76±1.46	20.83±12.21	13.26±4.45	8.01±7.40	5.27±0.68	12.30±8.18	1.11±1.14	4.74±3.13	4.40±8.01	2.61±4.33	3.94±3.92	10.97±9.98
TOCOPHEROL	3	13.24	417.3722	POS	3.23±2.37	17.93±5.20	16.83±4.47	10.70±7.90	13.03±4.29	17.25±7.40	1.45±3.31	3.58±2.78	2.78±3.12	7.65±8.52	13.36±3.68	21.55±8.73
Amino acids and peptides																
ACETYLHISTIDINE	2	0.61	198.0848	POS	5.21±1.59	2.63±0.83	3.45±0.85	4.23±0.74	4.55±1.43	2.06±0.25	26.81±6.16	4.41±1.53	1.68±0.49	0.52±0.80	3.29±2.68	3.33±2.62
Acetylserine	2	0.91	148.0612	POS	14.49±8.29	4.31±1.00	7.22±4.50	9.10±6.14	9.15±0.53	9.48±3.32	13.19±6.23	15.04±2.77	7.09±0.87	6.04±1.38	5.23±2.79	4.65±2.65
N_ACETYLASPARTATE	2	0.92	174.0396	NEG	4.28±3.06	1.01±1.42	0.09±0.23	0.89±1.30	0.23±0.41	0.25±0.42	5.49±2.42	0.77±0.58	0.21±0.51	0.40±0.63	2.72±0.49	0.82±0.74
N_ACETYLGLUCOSAM	2	0.66	222.0955	POS	2.61±1.19	1.85±0.72	1.03±0.82	1.40±1.23	1.15±1.08	1.56±0.70	2.56±1.53	11.09±2.78	3.40±0.89	0.26±0.65	0.45±0.79	0
Alanine	1	0.92	88.0398	NEG	2.06±0.70	0.90±0.59	1.03±0.62	1.14±1.09	1.85±0.76	1.03±0.56	0.53±0.63	0.13±0.33	0.10±0.25	0.09±0.23	0.15±0.26	0
Arginine	1	0.62	175.119	POS	2.47±0.68	1.62±0.53	1.41±0.72	2.00±1.39	3.25±2.64	1.16±0.42	10.48±3.36	6.46±2.46	8.40±1.03	10.28±5.38	7.37±5.81	5.31±6.42
Aspartic acid	1	0.61	132.0301	NEG	11.39±7.13	2.85±0.69	3.85±1.60	3.95±2.82	6.68±2.19	2.83±2.99	15.02±14.04	13.89±6.29	5.69±2.00	4.47±1.67	6.00±5.73	5.07±2.29
CIS_UROCANATE	2	0.67	139.0515	POS	26.53±16.72	8.31±3.09	5.76±3.38	8.62±6.60	8.06±7.95	9.58±4.07	47.61±20.23	4.80±2.14	4.48±2.66	3.43±2.23	2.14±2.49	2.86±0.94
Creatinine	1	0.89	114.0669	POS	14.30±4.11	12.35±4.33	13.63±1.75	17.82±3.94	14.27±1.18	9.24±3.02	7.33±2.91	6.73±5.06	9.23±1.74	9.17±1.65	8.55±0.25	7.40±2.47
glutamate	1	0.62	148.0614	POS	106.09±73.9	8.98±3.39	28.91±25.52	36.91±29.56	36.22±3.01	23.26±17.23	21.42±7.10	48.15±12.91	21.04±4.16	16.72±6.07	11.06±7.83	13.63±5.18
Iso/Leucine	1	1.20	132.1012	POS	4.96±2.14	2.90±2.09	2.53±1.42	3.18±2.92	2.72±2.58	1.90±2.53	11.45±8.34	3.86±3.69	2.26±2.87	2.34±2.70	1.07±1.86	1.56±1.35
Phenylalanine	1	2.08	120.0811	POS	55.14±18.00	51.10±19.12	40.40±12.56	54.74±18.85	49.75±13.14	42.44±6.81	214.81±92.20	108.27±17.04	69.23±11.50	77.14±32.41	80.22±12.80	68.88±8.67
Proline	1	0.65	116.0714	POS	8.59±5.76	8.57±3.85	6.59±2.51	9.76±1.34	10.15±3.74	7.63±1.85	15.76±5.16	18.50±7.58	7.09±5.47	10.50±8.19	9.47±4.71	7.27±1.14
serine	1	0.59	104.0348	NEG	5.74±1.91	4.72±1.12	2.94±0.35	3.56±0.68	4.86±2.14	3.78±0.65	8.75±2.34	7.54±1.49	4.07±2.35	5.08±3.84	4.69±3.14	4.79±3.64
Threnine	1	0.60	118.0503	NEG	6.48±2.27	5.12±0.95	3.69±1.30	3.99±1.20	4.30±1.06	4.02±0.03	7.20±1.93	11.27±1.53	6.26±2.47	5.33±3.11	6.99±5.05	6.77±3.59
Trans_UROCANATE	2	0.95	139.0522	POS	3.50±3.74	1.24±1.11	1.33±1.17	0.33±0.51	2.19±1.34	1.01±0.90	5.45±2.86	0.97±1.24	1.20±1.05	0.70±1.09	0.65±1.13	0
Tryptophan	1	2.94	188.0713	POS	7.40±3.44	9.94±5.54	9.95±4.38	14.16±14.02	13.73±3.99	15.48±2.05	34.96±12.81	36.33±6.20	22.06±5.86	30.72±13.36	28.14±9.65	22.22±1.70
Tyrosine	1	0.98	136.0745	POS	18.89±7.53	16.15±5.72	14.32±4.79	14.53±2.96	14.04±1.87	19.01±1.95	65.16±18.93	28.55±5.15	16.15±1.81	18.39±5.30	19.06±2.84	17.53±2.15
Valine	1	0.66	118.0869	POS	4.78±4.67	20.63±18.73	16.41±18.37	7.97±9.30	8.90±7.36	25.78±20.10	6.89±2.78	7.38±2.15	3.39±1.74	3.12±2.57	3.96±0.67	5.52±2.15
ISOLEUCYLISOLEUCINE	3	4.60	243.1234	NEG	0.90±1.36	0	0	0.81±1.99	2.26±3.91	0	4.81±1.11	0	0	0	0.52±0.89	0.34±0.59
ISOLEUCYLVALINE	3	3.27	229.1543	NEG	2.80±3.86	0	0	0.56±1.38	1.53±2.65	0	1.81±1.64	0.24±0.64	0.36±0.87	0	0	0.79±0.70
GLYCYLTRYPTOPHAN	3	3.59	260.1034	NEG	5.25±5.73	0.74±0.82	0	0.46±0.75	0	0	7.90±3.07	0.47±0.59	0	0	0	0
ASPARAGYLVALINE	3	0.63	233.1123	POS	0.54±0.66	1.67±0.70	4.11±3.61	2.00±1.87	4.40±5.03	0.99±0.23	0.16±0.53	0.15±0.40	0	0.38±0.93	0	0.48±0.82
ALANYLALANINE	3	0.61	159.0767	NEG	3.12±3.69	2.48±2.29	5.87±2.44	9.40±6.11	10.98±7.29	3.27±3.47	2.26±1.45	1.69±0.57	0.21±0.35	0.12±0.28	1.44±1.27	1.71±1.50
Bacteria-related Compounds																
6-Oxopiperidine-2-car	2	0.97	144.0661	POS	1.03±1.42	0.78±1.19	0	0	0	0.51±0.89	4.34±2.34	5.26±1.22	2.48±1.30	1.08±0.88	0.47±0.82	0.93±0.81
3-phenyllactic acid	1	4.85	165.0552	NEG	9.20±9.61	2.77±1.75	4.09±2.54	3.91±3.33	2.20±2.93	8.28±5.23	24.81±5.97	0	0	0	0	0
N-(2-furoyl)glycine	3	0.61	168.0284	NEG	8.81±4.22	2.30±1.71	2.48±0.98	2.77±1.41	3.04±1.12	6.62±1.50	4.24±1.33	1.64±0.86	0.67±0.76	0.92±0.09	1.46±0.99	2.20±0.79
IMIDAZOLE_PROPION	2	0.62	141.0665	POS	1.93±0.92	1.67±0.80	0.89±0.83	1.34±0.97	1.92±1.12	3.00±0.12	6.70±1.42	2.48±1.95	0.51±0.79	0.38±0.62	1.05±0.99	1.36±0.62
Food Related																
ascorbic acid	1	0.87	175.0237	NEG	1.05±0.61	0.65±0.45	0.36±0.40	0.48±0.40	0.75±0.27	0.69±0.63	0.42±0.57	1.83±0.37	1.26±0.70	0.87±0.53	0.96±0.14	0.74±0.68
Pantothenic_acid	1	2.67	218.103	NEG	13.77±15.58	3.76±2.15	4.11±1.06	5.78±2.07	4.65±1.08	3.04±0.23	4.42±2.80	1.05±0.71	1.73±3.07	1.34±3.28	2.17±3.76	3.05±2.65
DAIDZEIN	3	6.18	253.0493	NEG	4.94±1.87	1.28±1.67	3.14±2.70	2.53±0.88	3.41±1.80	5.43±1.64	99.62±34.24	50.37±22.64	34.51±10.41	28.40±14.86	22.86±8.00	55.79±32.24
Riboflavin	1	3.97	377.1462	POS	14.60±10.17	10.99±5.44	9.67±2.68	12.35±3.46	10.26±0.39	11.15±4.11	17.06±8.76	3.90±10.33	0.75±1.20	1.50±2.42	2.01±1.84	2.40±0.73
STACHYDRINE	3	0.67	144.1037	POS	1.47±1.41	1.56±1.59	0.71±1.10	1.98±1.24	3.01±1.56	5.30±1.30	2.68±4.35	0.58±1.04	0.36±0.89	0.22±0.53	0	0
TRICARBALLYLATE	3	0.70	175.025	NEG	3.14±0.81	1.79±1.59	1.14±0.60	1.61±0.53	1.71±0.26	1.65±0.13	2.96±0.60	3.01±0.59	1.87±0.45	1.32±0.12	1.62±0.29	1.76±0.41
Neucleitides																
_3_7_DIMETHYLURAT	3	0.63	195.0501	NEG	3.01±1.45	7.16±7.89	7.20±5.70	4.40±4.42	10.76±9.09	6.47±4.75	17.74±8.57	91.66±14.71	95.00±12.26	98.83±14.99	89.21±9.89	96.18±12.85
_7_METHYLGUANINE	3	0.92	166.0718	POS	1.94±2.31	1.99±0.91	2.83±1.60	3.34±2.45	3.96±1.88	3.60±0.85	2.86±2.36	5.53±0.83	3.24±1.77	2.82±2.39	5.40±1.90	3.40±2.97
Adenine	1	0.66	136.0621	POS	49.20±25.17	21.86±14.17	14.70±9.27	12.00±6.25	13.84±8.83	22.60±8.54	49.47±17.99	14.81±6.41	6.58±1.45	6.40±1.16	10.52±4.87	9.23±1.97
Cytidine	1	0.61	242.0768	NEG	1.30±0.78	0.82±0.58	0.71±0.66	0.77±0.65	1.50±0.90	1.20±0.39	2.28±1.66	1.68±0.91	1.18±0.70	1.15±0.59	2.87±1.44	2.13±0.83
HYPOXANTHINE	2	0.94	137.0465	POS	140.64±105.	92.07±28.78	79.89±29.25	100.60±26.6	82.16±30.83	81.69±16.69	136.91±57.44	32.40±10.59	7.77±5.88	5.99±0.92	6.95±6.32	11.56±1.92
N-Acetylneuraminic a	3	0.91	308.0977	NEG	13.73±5.39	15.11±7.92	9.03±4.01	7.22±4.36	5.51±3.04	14.91±5.19	0.69±0.71	4.10±1.69	3.86±1.17	1.01±0.90	0	0
NICOTINATE	3	0.71	124.04	POS	24.20±14.78	10.82±3.93	11.13±1.05	14.61±3.69	11.95±2.74	9.60±1.75	19.43±16.97	5.39±1.47	3.96±2.15	5.35±1.10	6.86±0.35	8.71±1.87
OROTATE	3	0.70	155.0018	NEG	2.85±2.71	2.35±1.32	3.43±2.88	3.46±2.03	3.17±0.60	5.45±1.50	3.38±1.04	2.26±0.83	1.82±0.39	1.68±0.17	2.86±1.53	2.30±0.78
Uridine	1	0.95	243.0611	NEG	0.22±0.72	0	0.16±0.40	0.58±0.64	0.51±0.89	0	0.57±0.67	2.71±2.08	4.08±2.29	5.14±1.25	3.26±3.48	3.14±2.73
XANTHINE	1	0.94	153.0416	POS	14.79±4.22	18.84±7.55	13.77±7.95	23.81±12.30	28.95±13.24	18.43±4.34	22.03±9.45	26.25±8.62	9.15±4.12	6.02±4.12	6.07±0.30	9.32±2.00
Oxidative stress																
Betaine	1	0.90	118.0865	POS	2.50±1.10	5.58±5.05	5.30±5.99	2.59±2.66	2.93±1.27	7.48±5.36	1.02±1.43	2.20±2.21	0	0.88±1.40	1.42±2.46	0.84±1.46
Methionine	1	0.93	133.0335	POS	5.86±2.66	4.74±2.06	4.74±1.07	6.80±1.67	6.26±1.14	4.82±0.58	19.62±6.86	7.49±2.07	5.50±1.43	4.50±1.88	4.58±1.16	4.17±0.85
Pyroglutamate	1	0.95	128.0344	NEG	3.88±2.59	0.73±0.70	1.38±0.84	1.56±1.10	0.69±0.60	1.12±1.15	2.79±0.97	4.18±0.57	2.58±0.38	2.75±0.39	3.72±3.97	1.70±1.79
S-Adenosylmethionine	1	0.52	398.9058	POS	3.51±1.11	2.84±0.96	2.81±0.33	4.24±0.70	3.74±1.05	2.07±0.60	5.06±2.36	0.97±0.53	1.26±0.95	0.89±0.51	1.52±0.59	1.49±1.29
Taurine	1	0.60	124.0067	NEG	22.85±30.31	4.21±2.07	3.76±0.93	4.37±0.74	4.94±1.94	2.26±0.90	103.19±29.98	10.93±7.02	2.53±0.69	3.15±0.97	8.08±2.54	8.18±4.22
Carbohydrates and Energy																
_2_HYDROXYGLUTARA	3	0.93	147.0296	NEG	3.71±2.28	0.41±0.60	0.52±0.95	1.25±1.62	1.58±1.41	3.10±4.02	2.87±1.59	0.71±0.53	0.27±0.43	0.23±0.38	1.30±1.17	9.02±9.05
Citric Acid	1	0.94	191.0168	NEG	0.62±0.89	0.93±0.68	0.76±0.60	0.19±0.46	0.90±0.92	1.55±0.20	2.73±1.68	2.49±0.37	2.63±1.68	3.73±1.76	4.94±0.26	3.51±0.81
ERYTHRONATE	3	0.66	135.0297	NEG	2.14±1.96	2.96±3.59	3.10±2.83	1.97±2.74	5.74±3.64	3.02±4.07	2.90±1.27	2.56±1.14	2.09±0.43	2.05±0.46	2.62±0.49	2.37±1.14
Citraconate	3	0.92	129.019	NEG	4.85±2.32	0.86±0.77	2.09±1.24	2.32±1.22	2.67±1.61	3.95±4.53	3.61±1.42	1.04±1.03	1.41±0.88	2.00±0.35	2.03±0.80	9.05±7.69
Anhydroglucitol	3	0.92	163.0589	NEG	1.88±1.95	1.54±1.28	0.46±0.63	0.52±0.80	1.71±1.53	0.91±0.99	0.88±0.60	1.13±0.59	0.73±0.58	0.28±0.43	1.03±0.90	0
Xylonate/Arabinonate	3	0.64	165.0398	NEG	0.41±0.48	6.78±6.78	8.90±7.59	5.73±7.89	15.33±10.94	6.70±9.95	0.73±0.92	27.11±6.38	25.15±8.52	22.28±8.25	41.07±5.82	45.64±19.88
Glutaconate	3	0.66	129.0191	NEG	1.99±1.30	2.49±1.36	3.35±1.23	1.88±1.70	3.11±1.96	2.42±1.51	1.88±0.75	5.10±0.94	4.72±1.01	4.30±0.48	4.29±0.50	6.47±2.03
Fructose	3	0.63	179.0555	NEG	45.22±30.88	38.20±21.74	23.05±16.41	14.64±13.93	30.47±22.58	21.59±9.63	6.22±1.53	16.81±1.72	14.32±3.85	15.63±6.82	15.71±2.31	17.58±4.34
Glucuronate	3	0.89	193.0346	NEG	15.09±4.79	7.70±4.67	5.90±1.64	8.23±1.47	9.44±1.26	8.06±0.42	1.16±0.64	4.44±0.91	2.90±0.96	2.36±1.28	1.28±1.41	1.29±1.51
Quinate	3	0.69	191.0556	NEG	1.39±1.41	0.41±0.47	0.85±0.51	1.11±0.90	0.81±0.70	0.34±0.58	1.31±1.33	7.91±3.41	7.40±2.13	7.37±2.63	7.04±0.84	11.46±3.79
RIBOSE	3	0.73	149.0451	NEG	1.05±0.77	10.25±6.79	7.90±8.71	9.46±10.85	16.13±6.60	9.87±8.95	0.82±0.58	15.60±4.54	16.18±0.66	14.14±1.81	14.80±2.29	15.42±1.58
myo-Inositol/glucose	3	0.87	179.0548	NEG	1.89±1.53	2.38±1.96	2.26±1.23	1.11±1.50	3.21±2.14	2.14±0.81	1.55±0.75	4.15±0.50	4.77±1.23	4.91±1.31	3.58±1.32	3.88±1.64
Glycerol 3-phosphate	3	0.72	171.0035	NEG	2.53±3.68	1.22±0.68	0.76±0.67	0.87±0.59	1.42±0.73	1.22±1.15	6.12±10.81	1.97±0.56	3.03±0.60	2.35±0.76	3.00±0.94	2.52±0.99
Keto-gluconate	3	0.63	193.0349	NEG	2.11±1.06	1.02±0.79	0.54±0.59	1.01±0.59	1.69±0.37	1.36±0.21	16.20±4.82	28.78±10.31	11.03±4.55	8.60±3.05	6.15±2.12	7.49±1.78
Malate	1	0.69	133.0142	NEG	4.80±1.82	4.52±4.42	2.67±1.95	1.83±1.43	2.83±1.36	4.59±2.74	4.80±1.74	1.91±1.53	0.68±0.79	1.68±2.05	1.45±0.35	2.94±1.96
METHYLPHOSPHATE	3	0.69	110.9862	NEG	15.07±5.96	7.10±2.17	5.56±1.49	6.09±2.20	6.69±1.91	9.54±4.71	13.38±4.82	5.26±2.02	2.62±0.19	2.61±0.55	4.04±1.58	3.12±0.29
Pyruvate	1	0.62	87.0028	NEG	4.72±1.72	3.01±1.09	2.37±0.67	2.75±0.56	2.52±0.48	2.99±0.48	3.59±0.76	5.92±0.84	4.04±0.78	2.51±0.63	2.05±0.06	2.22±0.47
Urea Cycle																
citrulline	1	0.62	176.1027	POS	7.14±3.57	3.16±1.03	4.20±0.69	5.71±1.36	4.73±1.19	3.40±0.79	22.24±6.77	12.45±6.87	3.74±0.24	1.67±1.31	2.27±1.98	1.83±1.60
Arginine	1	0.62	175.119	POS	2.47±0.68	1.62±0.53	1.41±0.72	2.00±1.39	3.25±2.64	1.16±0.42	10.48±3.36	6.46±2.46	8.40±1.03	10.28±5.38	7.37±5.81	5.31±6.42
Aspartic acid	1	0.61	132.0301	NEG	11.39±7.13	2.85±0.69	3.85±1.60	3.95±2.82	6.68±2.19	2.83±2.99	15.02±14.04	13.89±6.29	5.69±2.00	4.47±1.67	6.00±5.73	5.07±2.29
glutamate	1	0.62	148.0614	POS	106.09±73.9	8.98±3.39	28.91±25.52	36.91±29.56	36.22±3.01	23.26±17.23	21.42±7.10	48.15±12.91	21.04±4.16	16.72±6.07	11.06±7.83	13.63±5.18
Others																

cortisone	3	10.48	359.1889	NEG	5.00±1.52	2.17±0.49	2.77±0.98	2.61±0.83	1.87±1.73	2.95±0.49	5.75±1.99	0.22±0.59	0	0	0	0.54±0.94
KYNURENATE	3	3.68	190.0501	POS	2.57±1.90	2.09±1.73	3.16±2.72	3.35±2.90	3.32±2.89	4.38±1.37	3.90±3.83	0	0	0	0	0
PYRIDOXAL	3	0.87	168.072	POS	2.22±1.21	1.46±1.15	1.48±0.78	1.64±0.17	1.34±0.24	1.72±0.38	4.19±1.86	2.87±1.29	2.56±0.66	1.61±0.86	0.61±1.06	0.74±1.28

Note: red means significant increases vs that at D0; blue are significant decreases vs D0; cells filled with pink are significant increases in KO mice vs WT and cells with green are significant decreases in KO vs WT at D0 or D5

Annotation confidence levels for each metabolite were provided based on the Metabolomics Standards Initiative (MSI) confidence scheme.

Table S1. Detected metabolites extracted from intestinal content collected from KO or WT mice.

ID	fidence	Ret. Ti	m/z	Mode	KO D0 (n=3)	KO D1 (n=2)	KO D3 (n=3)	KO D5 (n=3)	WT D0 (n=3)	WT D1 (n=2)	WT D3 (n=3)	WT D5 (n=3)
Fatty Acids and Lipids												
HYDROXYPROPANOATE	2	1.00	89.0233	NEG	0.54±0.24	0.62±0.10	1.20±0.11	1.51±1.03	0.91±0.47	2.89±0.10	1.22±0.44	0.84±0.56
Propionic acid	2	1.25	73.0287	NEG	0.11±0.19	0.37±0.01	0.31±0.15	0.53±0.20	0.39±0.16	0	0.12±0.21	0.28±0.01
AMINOBUTYRATE	2	0.65	102.0548	NEG	0.95±0.09	1.54±0.78	1.92±0.79	2.63±1.47	1.81±0.20	2.35±0.11	1.31±0.37	2.30±0.31
AMINOPENTANOATE	2	1.21	116.0699	NEG	1.00±0.13	0.79±0.01	0.75±0.28	0.78±0.23	0.90±0.28	0	0.36±0.31	0.69±0.09
Aminopentanoic acid	2	6.38	118.0869	POS	0.07±0.13	0.08±0.12	0	0.13±0.12	0.12±0.11	0.33±0.47	0.06±0.11	0.04±0.07
PHENYLPROPIONATE	2	4.10	149.06	NEG	0.35±0.05	0.33±0.14	0.19±0.17	0.17±0.16	0.21±0.02	1.73±0.26	1.30±1.21	0.46±0.08
Azelaic acid	1	5.94	187.0967	NEG	0.40±0.09	0.20±0.29	0.17±0.15	0.09±0.16	0.06±0.11	2.94±2.03	1.38±2.10	0
MYRISTOLEATE__14	2	6.98	225.18	NEG	0.53±0.12	0.54±0.07	0.56±0.26	0.79±0.19	0.19±0.07	0	0.29±0.25	0.44±0.19
Arachidonate	2	11.62	303.2316	NEG	1.21±0.46	0.30±0.20	0.44±0.19	0.99±0.89	0.71±0.13	0.75±0.01	0.35±0.30	1.40±1.09
Arachidonate	2	14.73	303.2319	NEG	0.33±0.07	0.71±0.49	0.87±0.72	0.83±0.07	0.36±0.20	3.17±0.14	2.41±2.08	2.40±0.61
DIHOMO_LINOLEATE	2	15.22	279.2313	NEG	0.33±0.58	0.37±0.12	0.71±0.64	0.93±0.32	0.41±0.20	0	2.29±3.96	9.83±2.01
DOCOSAHEXAENOATE	2	14.63	327.2317	NEG	0.11±0.19	0.81±0.57	0.77±0.62	0.84±0.10	0.22±0.19	4.89±0.04	2.38±1.69	2.25±0.41
EICOSENOATE	2	13.41	309.278	NEG	0.02±0.04	0.04±0.06	0.43±0.69	0.25±0.31	0.10±0.07	0	0.22±0.20	1.26±0.55
Epiandrosterone sulfate	2	15.71	369.1739	NEG	0	0.12±0.09	0.03±0.06	0.28±0.12	0	0.73±0.07	0.08±0.09	0.58±0.03
HEXADECANEDIOATE	2	11.32	285.2068	NEG	0.09±0.07	0.20±0.09	0.11±0.19	0.08±0.13	0.07±0.12	0	0	0.05±0.09
HYDROXYPHENYL_PROPI	2	10.54	167.0707	POS	0.39±0.12	0.31±0.10	0.38±0.22	0.38±0.17	0.21±0.03	0	0.26±0.09	0.12±0.11
METHYLMYRISTIC_ACID	2	11.38	241.2134	NEG	0.07±0.12	0	0.19±0.34	0.10±0.17	0.08±0.15	1.02±0.28	0.07±0.12	0.31±0.12
METHYLPALMITATE	2	12.54	269.2463	NEG	0.23±0.32	0.26±0.07	1.72±2.72	1.33±1.50	0.23±0.08	0.22±0.32	1.06±0.95	5.11±0.88
METHYLSTEARATE	2	13.66	297.279	NEG	0.11±0.19	0.26±0.03	1.46±2.19	0.99±1.19	0.42±0.16	0	0.68±1.05	2.04±0.79
LINOLENATE_ALPHA	2	12.10	277.2171	NEG	0.26±0.10	0.35±0.07	0.21±0.08	0.15±0.14	0.50±0.03	0	0.17±0.16	0.13±0.22
Acetoacetate	2	0.68	101.0238	NEG	0.32±0.01	0.30±0.05	0.32±0.03	0.20±0.08	0.28±0.08	2.83±0.92	0.75±0.63	0.24±0.07
Acetylcarnitine	1	0.72	204.1255	POS	1.56±0.56	2.47±0.02	1.81±0.90	2.02±1.37	0.87±0.26	2.59±1.50	0.83±0.22	1.29±0.31
Oleoyl carnitine	1	11.80	426.3578	POS	1.16±0.28	0.90±0.37	1.85±0.17	1.33±0.33	0.73±0.27	2.91±2.22	2.85±1.06	3.03±0.50
Palmitoyl carnitine	1	11.52	400.342	POS	1.37±0.15	1.80±0.86	2.90±0.62	2.51±1.11	0.86±0.12	4.70±3.10	4.83±2.81	4.52±0.34
LysoPC(14:0)	2	10.91	468.3087	POS	9.88±1.72	6.53±1.21	6.91±1.43	7.19±3.93	6.27±1.03	4.20±2.34	12.70±7.11	6.68±1.23
LysoPC(15:0)	2	11.48	482.3238	POS	7.96±0.40	6.22±2.46	9.98±2.84	7.91±1.39	6.24±0.56	5.45±1.65	12.61±4.28	13.26±1.92
LysoPC(16:0)	2	12.05	496.3402	POS	290.64±70.	319.88±10.61	294.94±45.51	345.80±44.18	250.22±95.16	185.78±40.42	423.89±62.93	402.58±89.07
LysoPC(16:1)	2	11.34	494.3242	POS	38.50±11.5	14.95±11.64	17.01±2.19	24.31±11.08	13.31±1.83	6.48±2.99	31.42±22.87	20.60±4.53
LysoPC(17:0)	2	12.60	510.3558	POS	5.00±3.06	6.51±1.06	16.94±11.23	16.15±3.01	6.93±1.34	9.01±3.95	20.18±19.18	43.21±7.77
LysoPC(18:0)	2	13.17	524.371	POS	115.44±66.	174.44±73.49	271.72±20.49	293.99±67.89	211.04±33.97	158.28±18.05	311.14±167.08	374.51±56.85
LysoPC(18:1)	2	12.43	522.3558	POS	40.48±31.0	33.89±0.19	43.08±35.40	53.41±16.06	25.40±8.72	26.04±15.02	63.53±50.24	151.16±17.75
LysoPC(18:2)	2	11.57	520.3399	POS	67.21±33.1	24.14±2.33	36.62±9.00	41.41±12.03	23.82±21.53	0	61.97±64.77	46.04±11.07
LysoPC(18:2)	2	11.77	520.34	POS	104.02±46.	56.36±4.42	53.93±24.20	78.09±9.35	59.21±6.64	22.56±1.59	83.99±40.82	126.77±27.00
LysoPC(20:0)	2	14.27	552.4023	POS	1.50±1.54	3.36±2.93	7.94±6.13	8.26±0.89	3.88±1.51	2.01±2.84	6.70±5.93	14.73±2.06
LysoPC(20:1)	2	13.48	550.387	POS	1.96±1.42	4.25±2.42	8.12±5.66	7.06±0.83	3.39±1.44	2.23±1.23	6.48±4.15	18.21±2.23
LysoPC(20:2)	2	12.78	548.3713	POS	1.20±0.61	1.49±0.50	3.79±2.24	3.06±0.30	1.83±0.63	1.18±0.45	3.66±1.95	8.24±0.60
LysoPC(20:4)	2	11.67	544.3398	POS	31.45±14.4	10.41±0.56	15.31±5.13	19.17±8.90	15.68±9.35	4.99±2.60	12.52±10.22	21.43±4.64
LysoPC(20:4)	2	12.43	544.338	POS	3.63±2.96	3.28±0.36	3.32±1.52	5.17±1.18	3.07±1.54	1.61±1.06	4.68±1.69	6.71±1.29
LysoPC(22:6)	2	11.70	568.3398	POS	15.89±4.46	7.45±2.57	10.22±3.85	15.10±7.04	10.04±2.21	1.12±1.59	10.08±9.29	18.18±7.39
LysoPC(22:6)	2	11.86	568.3398	POS	7.67±2.14	6.92±2.21	8.90±3.76	7.98±1.78	10.39±2.06	3.61±0.02	12.69±6.99	17.77±3.50
LysoPE(18:0)	2	13.13	482.3245	POS	29.38±31.0	50.34±0.07	113.09±38.80	153.01±29.08	84.29±10.24	80.26±4.04	121.30±95.08	176.40±55.74
2-Arachidonoylglycerop	2	11.86	544.3402	POS	7.42±2.24	6.25±2.89	7.67±2.85	6.88±1.67	6.72±3.43	4.16±0.77	10.40±6.83	13.47±2.57
PC(36:5)	2	17.34	780.5531	POS	1.15±1.80	5.64±1.83	17.84±25.91	74.31±106.05	0.69±0.95	22.37±19.03	72.26±105.12	294.95±70.48
PC(38:6)	2	17.51	806.5696	POS	0.07±0.12	0.88±0.36	0.66±0.70	4.48±4.77	0	3.03±0.80	2.95±4.26	17.73±15.76
N-(2-furoyl)glycine	3	0.65	168.0279	NEG	0.62±0.14	0.40±0.17	0.73±0.08	0.58±0.31	0.56±0.08	3.08±0.64	0.63±0.10	0.84±0.18
OLEIC_ETHANOLAMIDE	2	13.96	326.3051	POS	0.29±0.10	0.07±0.10	0.68±0.41	0.26±0.23	0.21±0.06	1.33±1.43	1.05±0.70	0.35±0.27
PALMITIC_AMIDE	2	14.03	256.2628	POS	2.26±0.48	2.09±0.87	2.26±1.01	1.73±0.27	1.91±0.88	8.02±2.28	3.03±0.79	1.49±0.12
Linoleamide	2	9.86	280.2641	POS	0.11±0.10	0.36±0.08	0.51±0.22	0.76±0.47	0.07±0.12	0.70±0.99	0.58±0.50	1.65±0.63
PALMITOYL_ETHANOLAN	2	10.13	300.2901	POS	0.24±0.03	0.64±0.37	1.38±0.27	2.28±1.64	0.31±0.04	4.07±0.60	2.26±1.36	4.80±1.56
PALMITOYL_SPHINGOMY	2	17.07	703.5743	POS	36.46±37.9	100.15±9.94	170.85±66.23	260.38±67.66	98.06±15.86	374.69±18.56	189.37±106.61	364.26±35.35
SPHINGANINE	2	10.68	302.3055	POS	0.24±0.14	1.06±0.44	2.09±1.43	1.94±0.91	0.49±0.28	20.27±4.49	1.80±1.27	2.80±1.22
STEARAMIDE	2	15.22	284.2951	POS	1.46±0.23	1.12±0.05	1.62±0.16	1.49±0.33	1.51±0.47	6.48±1.02	1.89±0.88	1.73±0.15
STEARAMIDE 1	3	10.67	284.2949	POS	0.19±0.19	1.03±0.20	1.48±0.81	1.59±0.84	0.37±0.20	11.81±1.85	1.35±0.95	2.21±0.69
STEARAMIDE 2	3	12.39	284.2946	POS	0.07±0.12	0.17±0.03	0.29±0.16	0.34±0.15	0.18±0.10	1.61±0.03	1.14±1.81	0.21±0.18
STEARATE__18	2	12.86	283.2631	NEG	0.34±0.31	0.36±0.14	2.10±3.19	1.61±0.99	0.61±0.03	0	2.17±1.68	7.05±2.97
STEAROYL_ETHANOLAMI	2	14.77	328.3202	POS	0.06±0.05	0.04±0.05	0.12±0.10	0.07±0.06	0.04±0.04	1.41±0.29	0.18±0.19	0.23±0.01
TOCOPHEROL	3	13.60	417.3728	POS	0.27±0.05	0.91±0.56	1.81±0.60	1.39±0.26	0.51±0.11	9.13±1.84	5.16±4.89	5.12±1.50
TRIMETHYLLYSINE	3	9.37	189.163	POS	0.73±0.05	0.58±0.20	0.33±0.24	0.18±0.19	0.28±0.02	0.33±0.46	0.34±0.29	0.12±0.11
Amino acids and peptides												
Alanine	1	0.65	88.0396	NEG	0.34±0.06	0.70±0.17	0.65±0.29	0.95±0.55	0.49±0.10	0.70±0.04	0.52±0.02	0.86±0.10
ALLO_THREONINE	2	0.65	118.0499	NEG	0.50±0.10	0.50±0.05	0.47±0.20	0.59±0.12	0.51±0.20	4.39±0.74	2.00±1.57	0.52±0.05
Arginine	1	0.62	175.119	POS	10.89±3.01	19.09±3.81	11.74±0.35	12.25±1.15	12.47±1.60	2.28±0.92	10.75±5.06	8.74±0.79
ASPARAGINE	1	0.68	131.0425	NEG	0.19±0.19	0.93±0.73	0.59±0.49	0.84±0.74	0.29±0.14	2.72±0.37	1.49±1.31	0.44±0.08
Aspartic acid	1	0.66	132.0294	NEG	1.57±0.59	6.04±1.81	4.05±1.78	6.71±3.15	3.13±1.35	2.25±0.99	3.63±1.05	6.50±1.36
Creatinine	1	0.67	114.0668	POS	2.50±1.27	3.98±1.97	2.58±1.11	1.89±0.50	1.82±0.07	7.20±2.18	5.45±3.28	1.26±0.46
Glutamate	1	0.70	128.0345	NEG	1.29±0.15	1.65±0.55	2.28±0.95	3.74±2.16	2.24±0.53	3.62±0.08	1.73±0.81	2.51±0.35
HOMOSERINE	2	0.70	120.0661	POS	0.92±0.41	0.75±0.01	0.34±0.31	0.43±0.46	0.17±0.29	2.36±0.23	0.61±0.18	0.19±0.17
Iso/leucine	1	1.33	132.1021	POS	9.14±1.61	15.27±2.14	7.78±3.08	10.87±2.50	6.26±1.67	6.53±1.45	8.46±3.39	9.27±1.83
Leucine	1	1.37	130.0864	NEG	2.28±0.14	3.45±0.05	2.86±0.21	3.72±1.34	2.67±0.58	2.72±0.79	2.87±0.89	4.11±1.39
Lysine	1	3.30	145.0974	POS	0.62±0.61	0.31±0.43	0.75±0.47	0.44±0.40	0.89±0.20	0	0.35±0.40	0
Norleucine	2	2.62	132.1022	POS	4.50±0.44	3.28±1.36	3.59±1.47	3.89±0.98	3.58±0.09	1.98±0.16	2.43±2.53	1.29±0.18
Phenylalanine	1	2.24	120.081	POS	367.36±66.	425.91±6.35	361.83±105.84	341.60±66.83	270.00±7.03	207.73±41.49	232.46±110.67	279.66±42.19
Proline	1	0.68	116.0706	POS	9.05±2.12	22.88±1.13	9.80±0.64	12.87±4.68	12.55±2.39	34.53±10.89	12.29±3.48	11.76±4.55
Threonic acid	1	0.72	137.0463	POS	8.13±0.85	14.10±2.86	9.51±1.64	10.05±3.53	7.00±2.44	13.48±4.73	7.65±0.26	6.98±0.24
Tryptophan	1	3.06	188.0711	POS	160.91±28.	235.69±77.90	88.57±18.91	134.79±75.77	113.81±45.09	143.47±7.09	125.91±62.63	132.63±19.75
Tyrosine	3	1.05	180.0654	NEG	5.92±1.31	9.53±1.98	9.11±1.54	9.65±5.07	9.17±1.65	5.39±0.09	6.49±4.69	7.63±2.62
N_ACETYLASPARTATE	3	0.99	174.0397	NEG	0.14±0.25	0.49±0.04	0.65±0.20	0.40±0.37	0.43±0.10	0	0.29±0.32	0.55±0.09
N_ACETYLGLUTAMINE	3	1.90	189.0871	POS	0.13±0.22	0	0.12±0.21	0.26±0.24	0.44±0.14	0	0.21±0.37	0.05±0.09
N_ACETYLNEURAMINATE	3	0.69	308.0986	NEG	0	0.13±0.19	0.29±0.20	0.39±0.20	0.10±0.09	11.86±6.26	1.04±1.59	0.26±0.04
N_ACETYLPHENYLALANIN	3	4.84	206.081	NEG	0.56±0.26	0.33±0.04	0.43±0.19	0.17±0.15	0.30±0.08	2.94±0.31	2.30±2.41	0.22±0.20
N_Acetylserine	3	1.88	130.0504	POS	1.52±0.21	0.92±0.05	1.15±0.52	0.87±0.34	1.22±0.23	0	0.62±0.76	0.24±0.21
N_ACETYLTRYPTOPHAN	3	5.20	245.0921	NEG	1.06±0.29	0.79±0.12	0.94±0.41	0.39±0.37	0.65±0.04	12.39±1.22	5.91±7.52	0.75±0.09
Alanylalanine	3	0.68	159.0755	NEG	0.08±0.07	0.17±0.11	0.18±0.08	0.29±0.16	0.21±0.06	0	0.12±0.14	0.16±0.05
ALANYLISOLEUCINE	3	2.31	201.1234	NEG	1.32±0.56	2.28±0.06	1.95±0.28	2.83±0.31	1.71±0.27	0.27±0.38	0.74±0.69	1.46±0.51
ALANYLLEUCINE	3	1.42	201.1235	NEG	0.46±0.08	0.72±0.01	0.81±0.16	0.92±0.30	0.67±0.25	0	0.50±0.51	0.54±0.17
ALANYLLEUCINE	3	1.75	201.1238	NEG	0.73±0.11	0.55±0.04	0.70±0.70	0.47±0.19	0.61±0.21	0	0.43±0.63	0.03±0.06
Alanylleucine	3	2.67	203.1391	POS	1.12±0.43	0.78±0.43	1.10±0.81	1.48±0.73	0.47±0.42	0	0.66±0.98	0.17±0.15
ALANYLLEUCINE	3	2.64	201.1234	NEG	2.18±1.13	3.01±2.09	2.15±1.16	2.16±0.89	2.41±1.32	0	0.43±0.74	0.11±0.19

ALANYLPHENYLALANINE	3	3.08	235.1079	NEG	0.58±0.21	1.57±0.92	1.05±0.38	0.96±0.25	1.52±0.68	0	0.05±0.08	0.40±0.17
ALANYLTYROSINE	3	2.90	251.1033	NEG	0.79±0.63	1.03±0.65	0.92±0.24	1.36±0.56	1.39±0.31	0	0.10±0.18	0.40±0.12
ALANYLVALINE	3	2.67	187.1079	NEG	1.96±0.49	1.88±1.11	1.67±0.47	2.48±0.94	1.80±0.91	0.44±0.62	0.51±0.89	0.82±0.18
ALANYLVALINE/Acetyllys	3	1.18	187.1079	NEG	1.55±0.47	1.83±0.53	2.18±0.38	2.42±0.18	1.61±0.56	0	1.07±0.47	1.53±0.51
Arginylleucine	3	1.07	322.1871	POS	0.38±0.54	1.60±0.04	0.77±0.68	1.61±0.37	1.11±0.42	0	0.17±0.15	0.87±0.25
Arginylvaline	3	0.67	274.1873	POS	0.30±0.21	1.10±0.51	0.77±0.29	1.40±0.07	0.90±0.03	0	0.45±0.45	0.71±0.10
ASPARTYLPHENYLALANIN	3	1.97	279.0976	NEG	0.05±0.09	0.30±0.00	0.39±0.06	0.29±0.27	0.16±0.28	0	0.42±0.24	0.44±0.10
GLUTAMINE_ISOLEUCINE	3	2.79	258.1449	NEG	0.74±0.18	0.48±0.07	0.44±0.42	0.54±0.23	0.60±0.19	0	0.39±0.18	0.18±0.16
Glutamylglutamate	3	0.71	277.1021	POS	0.99±0.41	0.90±0.01	0.58±0.19	0.45±0.16	0.48±0.12	2.37±0.49	0.98±0.80	0.26±0.10
GLUTAMYLISOLEUCINE	3	3.44	259.1288	NEG	1.61±0.49	4.39±2.20	1.95±0.88	3.09±1.75	1.69±0.57	2.30±0.96	1.27±0.55	4.00±1.63
GLUTAMYLISOLEUCINE	3	3.44	261.1449	POS	7.53±2.23	8.32±1.90	6.28±2.94	12.17±7.24	5.91±3.71	7.74±2.93	5.85±3.83	7.94±2.15
GLUTAMYLISOLEUCINE	3	2.76	259.1289	NEG	2.03±0.95	1.69±1.03	2.10±0.95	2.41±0.72	2.89±1.21	0	0.82±0.41	0.87±0.14
GLUTAMYLISOLEUCINE	3	1.52	259.1289	NEG	0.67±0.59	0.77±0.19	1.65±0.38	1.59±0.17	0.79±0.69	0	0.76±0.66	0.83±0.05
GLUTAMYLLEUCINE	3	1.37	259.1291	NEG	0.75±0.37	1.36±0.14	1.21±0.33	1.74±0.63	1.05±0.13	0	1.15±1.00	0.89±0.43
GLUTAMYLPHENYLALANI	3	2.46	295.1297	POS	1.92±0.76	0.87±0.31	1.21±0.84	1.07±0.37	0.97±0.42	0	0.92±0.91	0.91±0.22
GLUTAMYLPHENYLALANI	3	2.42	293.113	NEG	0.57±0.53	0.55±0.21	0.76±0.24	1.14±0.09	0.95±0.06	0	0.48±0.54	0.46±0.05
Glutamyltryptophan	3	4.11	334.1406	POS	3.21±0.65	1.72±0.16	1.51±0.59	3.72±0.94	1.99±1.10	2.30±0.68	1.42±0.44	1.42±0.16
Glutamyltyrosine	3	2.50	311.1247	POS	3.00±1.85	1.62±0.03	1.25±0.72	1.66±0.46	1.51±0.81	0.87±1.24	0.85±0.78	0.96±0.26
Glutamyltyrosine	3	2.37	311.1258	POS	0.42±0.73	0.88±0.21	0.32±0.56	0.48±0.41	0.43±0.47	0	0.67±0.63	0.55±0.30
GLUTAMYLTYROSINE	3	2.45	309.1089	NEG	0.55±0.11	0.60±0.10	0.36±0.06	0.80±0.36	0.35±0.36	0	0.16±0.27	0
GLUTAMYLVALINE	3	0.99	245.1135	NEG	0.82±0.08	0.46±0.03	0.85±0.51	1.56±0.89	1.02±0.21	0	0.79±0.72	0.78±0.71
Glutamylvaline	3	3.05	247.128	POS	0.97±0.98	0.74±0.07	0.71±0.35	0.10±0.17	0	0.22±0.32	2.26±2.75	0.26±0.23
GLUTAMYLVALINE	3	1.21	245.1135	NEG	1.53±0.57	1.58±0.78	2.00±0.83	2.98±0.77	1.51±0.45	0.28±0.39	0.87±0.47	1.10±0.95
GLYCYLLEUCINE	3	4.74	189.1236	POS	0.15±0.27	0.19±0.27	0	0.21±0.18	0.13±0.23	0	0	0.26±0.08
GLYCYLPHENYLALANINE	3	1.97	221.0926	NEG	0.31±0.05	0.46±0.03	0.64±0.09	0.49±0.06	0.59±0.08	0	0.30±0.27	0.45±0.18
GLYCYLPHENYLALANINE	3	2.99	223.1088	POS	0.65±0.61	0.27±0.39	0.48±0.44	0.66±0.69	0.53±0.47	0.46±0.65	0.30±0.52	0.87±0.03
GLYCYLPHENYLALANINE	3	3.01	221.0924	NEG	1.71±0.46	2.60±2.19	1.54±0.33	2.31±1.13	2.19±0.76	0	0.48±0.42	1.62±0.41
GLYCYLPROLINE	3	2.58	173.0933	POS	0.32±0.02	0.16±0.23	0.08±0.15	0.33±0.05	0.27±0.24	0	0.35±0.09	0.04±0.07
GLYCYLTHREONINE	3	0.68	175.0715	NEG	0.18±0.05	0.23±0.07	0.09±0.15	0.44±0.27	0.26±0.07	0.31±0.44	0.12±0.20	0.18±0.03
GLYCYLTYROSINE	3	1.53	237.0878	NEG	0.30±0.02	0.56±0.03	0.73±0.21	1.01±0.53	0.57±0.19	0	0.26±0.23	0.41±0.09
GLYCYLTYROSINE	3	1.36	237.0872	NEG	0.22±0.13	0.47±0.22	0.42±0.09	0.65±0.19	0.35±0.31	0	0.12±0.20	0.40±0.21
GLYCYLVALINE	3	1.19	173.0922	NEG	1.17±0.20	1.72±0.69	0.87±0.79	2.01±0.34	0.96±0.16	0	0.99±0.89	1.17±0.36
HISTIDYLISOLEUCINE	3	1.02	269.1605	POS	2.35±0.61	1.21±1.72	2.90±1.33	3.94±2.77	3.29±1.75	0.29±0.41	0.69±0.86	1.07±0.53
HISTIDYLISOLEUCINE	3	1.03	267.1447	NEG	0.77±0.43	0.71±0.21	0.77±0.46	0.49±0.47	2.18±0.91	0	0	0.12±0.21
HISTIDYLPROLINE	3	3.11	253.13	POS	0.10±0.18	0.17±0.24	0.28±0.14	0	0.07±0.13	0	0.08±0.14	0.06±0.10
ISOLEUCYLISOLEUCINE	3	3.72	243.1704	NEG	1.73±0.34	1.07±1.52	1.61±0.66	0.63±1.09	0.67±1.16	1.15±0.09	0.44±0.52	0.91±0.24
ISOLEUCYLPHENYLALANI	3	4.50	277.155	NEG	0.81±0.42	0.81±0.48	0.69±0.28	0.37±0.40	0.96±0.84	0	0.19±0.32	0
ISOLEUCYLSERINE	3	2.20	217.1185	NEG	1.16±0.62	1.89±0.19	2.00±0.16	3.40±1.27	2.10±0.29	0	1.03±0.51	1.09±0.11
ISOLEUCYLSERINE	3	5.02	219.1342	POS	0.29±0.26	0.19±0.27	0.36±0.34	0.38±0.06	0.48±0.19	0.27±0.38	0.52±0.64	0.12±0.21
ISOLEUCYLTHREONINE	3	1.20	231.1331	NEG	1.02±0.46	1.10±0.46	1.08±0.28	1.64±0.22	0.79±0.18	0	0.56±0.48	0.70±0.10
ISOLEUCYLVALINE	3	2.90	229.1547	NEG	2.55±0.62	2.23±0.38	2.70±0.71	2.18±0.58	3.27±0.32	0.70±0.99	1.18±0.35	1.62±0.44
LEUCYLSERINE	3	2.45	217.1188	NEG	0.40±0.35	0.55±0.78	0.54±0.34	1.06±0.95	0.62±0.68	0	0.23±0.40	0
LYSYLLEUCINE	3	0.71	260.1971	POS	1.50±0.91	3.49±0.60	1.99±0.31	2.99±0.64	2.53±0.13	0	0.96±0.85	2.00±0.14
PHENYLALANYLPHENYLA	3	12.14	313.1553	POS	0.68±0.18	0.55±0.31	0.82±0.44	0.65±0.08	0.20±0.19	0.57±0.81	1.81±0.26	0.48±0.18
PHENYLALANYLVALINE	3	6.45	265.1554	POS	3.47±1.40	5.33±0.39	2.48±0.76	0.55±0.67	1.09±1.17	0.93±1.31	4.43±2.68	0.48±0.13
PHENYLALANYLVALINE	3	3.84	263.1392	NEG	0.92±0.82	1.64±1.65	0.92±0.64	1.09±0.39	1.33±0.23	0	0	0.40±0.12
PROLYLPHENYLALANINE	3	3.45	261.1271	NEG	0.63±0.26	0.20±0.28	0.66±0.80	0.08±0.15	0.46±0.44	0	0.14±0.24	0.14±0.25
PROLYLPHENYLALANINE	3	5.03	263.1394	POS	1.17±0.29	0.99±0.40	0.71±0.47	0.99±0.27	1.31±0.29	0.24±0.33	0.52±0.56	0.54±0.05
SERYLPROLINE	3	3.30	203.1034	POS	2.54±2.59	3.46±0.08	3.13±0.49	2.92±0.70	3.70±0.40	0.79±1.12	1.86±0.66	2.25±0.16
THREONYLPHENYLALANI	3	1.97	265.1185	NEG	0.05±0.08	0.18±0.03	0.39±0.10	0.32±0.06	0.27±0.04	0	0.35±0.17	0.24±0.10
THREONYLSERINE	3	2.30	241.0823	NEG	0.91±0.27	1.13±0.28	1.11±0.28	1.08±0.70	0.60±0.33	1.83±0.33	1.12±0.30	0.84±0.15
THREONYLVALINE	3	4.41	219.1354	POS	0.53±0.04	0.65±0.15	0.62±0.19	0.66±0.07	0.58±0.04	0.51±0.73	1.64±1.76	0.33±0.29
TRYPTOPHYLVALINE	3	4.13	302.1498	NEG	0.48±0.21	0.60±0.17	0.54±0.31	0.38±0.34	0.61±0.34	0	0.15±0.16	0.43±0.34
Val-Val	3	1.97	215.1392	NEG	0.99±0.23	1.62±0.15	2.14±0.51	2.14±0.69	2.08±0.38	0.58±0.13	1.07±0.56	1.35±0.36
Val-Val-Val	3	4.72	314.2071	NEG	0.80±0.48	0.91±0.24	0.95±0.47	1.02±0.97	2.87±1.93	0.20±0.28	0.30±0.35	0.52±0.11
VALYLVALINE	3	1.99	217.1546	POS	0.72±0.25	0.43±0.62	0.86±0.60	0.86±0.18	0.80±0.53	0.29±0.41	0.38±0.51	0.58±0.19
Bacteria-related Compounds												
Dihydroxyisoflavone	3	5.21	253.0496	NEG	40.37±5.86	19.34±22.46	27.46±18.21	12.03±11.69	23.43±3.52	3.73±1.03	63.45±38.76	22.79±7.35
homoveratric acid sulfate	2	4.14	275.0224	NEG	0.20±0.01	0.17±0.24	0.15±0.13	0.59±0.55	0.12±0.10	36.05±6.19	0.68±0.70	2.40±1.71
HYDROXYBENZALDEHYDE	3	1.05	123.0444	POS	64.55±5.29	79.89±12.18	57.44±15.37	60.95±4.41	49.48±6.34	24.06±0.02	44.53±32.87	46.29±5.25
HYDROXYBENZOATE	3	5.44	137.0236	NEG	0	0.42±0.31	0.17±0.16	0.57±0.78	0	0	0	0
HYDROXYCINNAMATE	3	1.05	163.0392	NEG	1.75±0.36	2.34±0.18	2.05±0.19	1.52±0.47	2.29±0.20	1.38±0.28	1.24±0.54	1.78±0.53
indoxyl sulfate	2	4.23	212.0029	NEG	0.29±0.19	0.18±0.04	0	0.14±0.12	0.48±0.35	0	0	0
OXOPIPERIDINE_2_CARB	3	7.11	142.0521	NEG	0.33±0.06	0.35±0.03	0.30±0.26	0.49±0.18	0.21±0.19	0	0.26±0.23	0.50±0.07
3-Phenyllactic acid	1	4.32	165.0551	NEG	0.06±0.11	0	0.12±0.21	0.43±0.21	1.52±1.16	8.54±2.66	0.23±0.41	0
PIPERINE	3	6.40	286.1442	POS	0	0	0	0	0.23±0.20	0	0	0.06±0.10
Food related												
Ascorbic acid	1	0.76	175.0237	NEG	0.30±0.45	1.50±1.24	0.77±1.16	5.68±4.16	0.72±0.48	2.85±0.22	0.31±0.30	1.11±1.27
Caffeic acid	1	3.43	179.034	NEG	0.20±0.18	0.10±0.13	0.14±0.25	0.16±0.28	0	0.74±1.05	0.82±0.49	0.21±0.19
FERULATE	3	4.11	193.0496	NEG	2.99±0.63	2.57±0.70	2.28±0.91	1.66±0.92	1.53±0.21	12.92±4.20	10.06±9.32	3.97±0.44
Homostachydrine	3	7.94	156.1035	NEG	0.04±0.07	0.13±0.19	0.06±0.11	0.15±0.13	0.05±0.09	0	0.16±0.14	0.26±0.06
Pantothenic_acid	1	2.78	218.1022	NEG	0.71±0.51	3.23±1.97	1.60±0.97	5.73±2.87	1.62±0.38	2.30±0.59	1.43±1.80	3.02±0.28
PYRIDOXAL	3	0.68	168.0678	POS	0.20±0.18	0.16±0.22	0.23±0.10	0.04±0.07	0.07±0.12	2.27±0.06	0.30±0.31	0.08±0.07
DAIDZEIN	3	5.74	253.0494	NEG	37.50±3.09	24.04±0.01	26.15±19.78	12.60±10.26	27.62±7.46	163.87±147.45	64.62±40.40	37.22±8.58
Riboflavin	1	4.06	377.1465	POS	7.16±0.32	7.13±2.02	4.27±1.23	12.09±1.92	5.82±0.98	20.15±22.92	5.73±3.27	6.55±0.46
TRICARBALLYLATE	3	4.39	175.0242	NEG	0.74±0.28	0.84±0.20	0.55±0.20	0.21±0.22	0.13±0.22	0	1.37±1.07	0.74±0.26
Neucleitides												
1,3-Dimethylurate	3	0.67	195.05	NEG	2.55±0.40	3.07±0.99	4.11±0.84	4.14±2.01	3.44±1.03	25.95±0.05	10.47±10.57	4.32±1.31
8-Hydroxy-2-deoxyguanc	1	1.25	282.0833	NEG	0.53±0.25	0.43±0.06	0.17±0.15	1.06±0.52	0.20±0.18	0.49±0.69	1.06±1.22	0.61±0.06
Adenosine	1	1.35	136.0615	POS	7.26±1.04	12.58±1.42	9.41±3.07	6.19±3.63	6.08±3.61	7.80±3.75	7.75±4.77	4.40±0.53
Deoxycytidine	1	0.72	228.09	POS	0.31±0.29	0.40±0.16	0.25±0.05	0.25±0.07	0.08±0.13	0.25±0.36	0.48±0.19	0.22±0.02
Deoxygunosine	1	1.40	268.1057	POS	0.17±0.30	0.48±0.02	0.12±0.21	0.21±0.19	0.16±0.14	0	0.40±0.08	0.05±0.09
DEOXYINOSINE	1	1.52	251.0774	NEG	1.82±1.09	3.70±0.41	3.40±0.55	2.69±1.45	1.30±0.88	2.62±2.38	3.50±2.19	1.91±0.64
Hydroxypyridine	3	0.70	96.0447	POS	0.18±0.15	0.15±0.21	0.06±0.10	0	0	1.92±1.22	0	0
Hypoxanthine	1	1.33	137.0463	POS	9.80±2.74	11.10±3.24	7.56±2.65	6.63±6.32	5.79±1.60	8.76±1.90	7.75±4.72	3.99±0.69
Inosine	1	1.55	137.0462	POS	7.80±3.11	11.65±2.14	7.81±2.33	5.99±3.02	3.92±2.17	5.00±2.69	8.61±1.89	3.40±0.26
METHYLXANTHINE	3	0.67	165.0394	NEG	0.89±0.08	0.65±0.01	0.87±0.22	0.58±0.41	1.03±0.32	8.73±0.15	2.99±3.23	0.96±0.19
NICOTINATE	3	0.76	124.0401	POS	1.12±0.12	1.07±0.06	1.33±0.37	0.78±0.39	0.85±0.41	5.34±1.93	1.21±0.46	0.77±0.07
PSEUDOURIDINE	3	0.75	243.0619	NEG	0.34±0.07	0.30±0.07	0.26±0.22	0.14±0.12	0.06±0.10	0	0.72±0.72	0.20±0.17
Uric acid	1	0.95	167.02	NEG	2.68±0.64	4.64±0.03	4.20±1.30	7.40±3.78	3.56±0.92	2.26±0.14	2.16±1.95	4.17±1.13
Uridine	1	1.04	243.062	NEG	1.03±0.40	0.76±0.12	0.40±0.35	0.52±0.47	0.53±0.47	2.71±0.04	1.44±0.61	0.95±0.31
UROCANATE	3	0.62	137.0356	NEG	0.10±0.08	0.23±0.14	0.22±0.10	0.31±0.17	0.23±0.02	0	0.12±0.12	0.23±0.04
Xanthine	1	1.70	153.0415	POS	0.18±0.31	0.41±0.58	0.21±0.27	0.52±0.35	0.23±0.07	0.56±0.79	0.18±0.16	0.25±0.07

Oxidative stress												
Betaine	1	0.67	118.0864	POS	4.00±0.82	21.84±6.47	8.87±2.34	11.49±4.58	5.53±2.25	2.94±4.16	7.98±5.39	6.31±1.66
GSH-Oxidized	1	0.73	613.1561	POS	0.04±0.07	0	0.02±0.04	0.08±0.07	0.02±0.04	0	0	0.06±0.02
Methionine	1	1.00	133.0325	POS	6.87±4.41	5.57±3.91	6.11±1.36	5.06±1.09	4.02±2.87	3.64±0.45	9.05±4.01	7.70±5.57
Pyroglutamate	1	1.06	128.0344	NEG	1.10±0.46	3.35±0.03	2.76±1.29	6.48±3.63	2.04±1.36	3.91±0.17	2.50±1.61	3.39±0.98
SAMe	1	0.59	399.1395	POS	0.12±0.10	0	0	0.10±0.09	0.17±0.06	0	0	0
Taurine	1	0.65	124.0067	NEG	2.97±1.05	6.25±3.39	8.56±5.61	12.18±3.02	8.44±2.29	11.92±2.04	5.30±1.96	8.07±2.47
Carbohydrates and Energy												
Frutose	3	0.68	179.0554	NEG	0.94±0.12	1.04±0.47	0.81±0.14	0.51±0.19	0.71±0.17	9.05±0.94	2.64±2.43	1.03±0.19
Citraconate/glutaconate	3	0.71	129.0185	NEG	0.57±0.06	0.53±0.15	0.50±0.11	0.23±0.21	0.46±0.40	3.50±0.71	1.13±1.16	0.36±0.32
Ribose	3	0.75	149.0443	NEG	0.49±0.07	0.35±0.02	0.68±0.27	0.32±0.27	0.46±0.28	4.65±0.76	1.55±1.27	0.51±0.11
Glucuronate	3	0.66	193.0351	NEG	0.24±0.02	0.26±0.01	0.35±0.08	0.34±0.11	0.25±0.04	7.12±2.46	1.45±1.76	0.47±0.09
Citric acid	1	1.02	191.0181	NEG	0.53±0.47	0.80±0.01	0.85±0.09	0.83±0.24	1.04±0.37	3.21±0.31	1.11±0.60	0.66±0.22
Glycerol 3-phosphate	3	0.82	171.006	NEG	0.27±0.08	0.44±0.12	0.15±0.03	0.14±0.13	0.32±0.02	1.36±0.78	0.72±0.83	0.29±0.10
Malate	1	0.77	133.0138	NEG	0.95±0.42	1.89±1.02	2.87±1.81	4.22±1.62	3.38±1.17	2.12±1.31	0.86±0.81	2.59±1.13
Methylmalonic acid	3	1.24	117.0183	NEG	1.23±0.55	2.33±0.04	2.16±0.81	3.32±1.32	2.63±0.33	3.64±2.08	1.27±1.24	2.87±0.82
METHYLPHOSPHATE	3	2.48	110.9846	NEG	1.05±0.30	1.41±0.16	1.61±0.24	0.90±0.45	1.50±0.73	2.25±0.47	1.51±0.99	1.62±0.07
Pyruvate	1	0.74	87.0083	NEG	0.32±0.25	0.62±0.43	0.27±0.46	1.38±0.73	0.29±0.25	3.24±1.33	0.48±0.52	0.38±0.21
Urea Cycle												
Citruline	1	0.68	176.1028	POS	0.26±0.45	0	0.70±0.63	0.32±0.56	0.24±0.21	2.37±0.06	0.61±0.64	0.53±0.46
Arginine	1	0.62	175.119	POS	10.89±3.01	19.09±3.81	11.74±0.35	12.25±1.15	12.47±1.60	2.28±0.92	10.75±5.06	8.74±0.79
Aspartic acid	1	0.66	132.0294	NEG	1.57±0.59	6.04±1.81	4.05±1.78	6.71±3.15	3.13±1.35	2.25±0.99	3.63±1.05	6.50±1.36
Fumarate	1	0.77	115.0032	NEG	0.61±0.35	1.08±0.77	1.33±0.83	2.44±1.17	1.90±0.67	1.06±1.50	0.57±0.05	1.07±0.22
Glutamate	1	0.70	128.0345	NEG	1.29±0.15	1.65±0.55	2.28±0.95	3.74±2.16	2.24±0.53	3.62±0.08	1.73±0.81	2.51±0.35
Fumarate	1	0.77	115.0032	NEG	0.61±0.35	1.08±0.77	1.33±0.83	2.44±1.17	1.90±0.67	1.06±1.50	0.57±0.05	1.07±0.22
GUANIDINOBUTANOATE	3	6.99	144.0795	NEG	0.09±0.16	0.39±0.15	0.35±0.04	0.37±0.11	0.18±0.16	0	0.10±0.17	0.20±0.17
Others												
Cefo	1	5.60	188.034	NEG	0	4.41±1.34	8.50±3.07	2.18±3.78	0	14.26±15.63	15.56±14.15	4.91±4.36
Cefoperazone	1	5.62	530.1346	POS	0.38±0.66	27.54±10.39	46.98±37.67	8.99±15.15	0.05±0.08	76.98±84.78	57.13±26.02	13.64±11.83
Cefoperazone	1	5.62	646.1496	POS	0.10±0.17	7.80±3.55	14.03±12.25	2.41±4.04	0	24.49±27.91	20.06±15.78	4.11±3.59

Note: red means significant increases vs that at D0; blue are significant decreases vs D0; cells filled with pink are significant increases in KO mice vs WT and cells with green are significant decreases in KO vs WT at D0 or D5

Annotation confidence levels for each metabolite were provided based on the Metabolomics Standards Initiative (MSI) confidence scheme

Table S1. Detected metabolites extracted from cecal content collected from KO or WT mice.

					KO				WT			
ID	SI ID Le	Ret. Tim	m/z	Mode	D0 (n=3)	D1 (n=2)	D3 (n=3)	D5 (n=3)	D0 (n=3)	D1 (n=2)	D3 (n=3)	D5 (n=3)
Fatty Acids and Lipids												
_2_AMINOBUTYRATE	2	0.64	102.0551	NEG	4.62±1.03	2.22±0.72	7.74±2.70	5.09±1.70	4.84±0.51	2.11±0.30	1.45±1.11	2.14±0.77
_2_HYDROXYGLUTARATE	2	0.97	147.0295	NEG	2.45±1.41	1.35±1.18	0.91±0.27	1.56±1.82	0.88±0.54	0	0.17±0.15	6.49±5.82
_3_PHENYLPROPIONATE	2	4.04	149.0601	NEG	0	0	0	0	0	0.20±0.28	1.73±1.20	3.35±1.40
Propionic acid	2	1.21	73.0289	NEG	0.74±0.68	3.77±1.80	2.53±1.02	3.01±2.96	0.38±0.65	0.38±0.11	0	4.97±4.31
sebacic acid	1	6.79	201.1125	NEG	5.20±0.94	3.25±0.50	5.14±1.23	3.41±1.58	3.39±0.93	0	0	0
Azelaic acid	1	5.88	187.0968	NEG	6.90±2.45	3.80±1.09	5.25±0.94	4.52±1.84	8.00±0.84	0.28±0.39	1.89±1.22	2.47±0.46
undecanedionic acid	2	7.65	215.1278	NEG	3.21±2.18	1.53±0.68	2.31±0.87	2.05±1.12	0.96±0.90	0	0	0
DODECANEDIOATE	2	8.32	229.1432	NEG	35.71±8.51	23.16±7.13	30.15±8.57	28.97±14.12	30.19±4.02	0	0	0
TETRADECANEDIOATE	2	9.74	257.1749	NEG	2.37±1.26	1.59±0.09	1.65±0.87	2.06±0.91	2.70±0.77	0	0	0
_12_METHYLTRIDECANOIC_	2	10.78	227.2004	NEG	0.20±0.35	0.61±0.86	1.02±0.44	0.51±0.88	0.60±0.05	0	0	0
_2_HYDROXYMYRISTATE	2	11.93	243.1958	NEG	0.19±0.34	0	0	0.25±0.43	0.51±0.48	0.11±0.15	0	0
HEXADECANEDIOATE	2	11.28	285.2045	NEG	1.21±0.52	0.44±0.01	0.22±0.38	0.37±0.64	1.07±0.29	0.27±0.03	0.13±0.22	0
Linoleic acid	2	11.32	279.231	NEG	1.27±0.18	2.09±0.09	1.09±0.35	1.27±1.51	8.80±0.67	0	0	0
Linoleic acid Isomer 1	3	14.68	279.231	NEG	0.91±0.06	0.83±0.25	0.94±0.19	1.10±0.20	0.64±0.06	0.50±0.36	0.81±0.36	0.81±0.14
Linoleic acid Isomer 2	3	13.05	279.2315	NEG	0	2.07±1.14	1.84±0.74	2.88±1.37	0.16±0.28	0	0	0
Linoleic acid Isomer 3	3	12.15	279.2319	NEG	0	1.99±0.95	0.67±0.95	1.82±0.67	2.52±1.22	0	0	0
DIHOMO_LINOLEATE__20_	2	11.58	279.2309	NEG	0.38±0.66	4.87±2.02	3.25±1.93	5.35±2.68	1.31±1.39	0	0	0
Arachidonate (20:4n6)	2	14.66	303.2314	NEG	3.02±1.37	2.64±1.19	3.95±0.52	4.13±1.33	4.26±2.06	2.11±1.42	2.73±1.21	3.14±1.27
Docosahexaenoic acid	2	14.57	327.2318	NEG	5.06±2.60	4.36±0.05	5.96±2.33	5.95±1.80	3.30±0.94	2.98±2.30	3.94±1.58	3.42±2.10
EICOSAPENTAENOATE	2	14.03	301.2148	NEG	1.35±0.16	1.32±0.09	1.78±0.47	1.78±0.72	1.99±0.92	1.11±0.93	0.83±0.28	1.29±0.40
EICOSENOATE__20_1N9	2	16.83	309.2787	NEG	0.07±0.09	0.72±1.02	0.17±0.15	0.13±0.23	0.02±0.03	0	0	0.42±0.57
ISOPALMITIC_ACID	2	15.12	255.2316	NEG	0.23±0.21	0.30±0.43	0.36±0.31	0.55±0.08	0	0.09±0.12	0.22±0.19	0
PALMITOLEATE__16_1N7_	2	14.30	253.2163	NEG	0.10±0.18	0.30±0.14	0.25±0.05	0.07±0.12	0	0	0	0
OLEATE__18_1N9_	2	15.43	281.2475	NEG	0.36±0.03	0.44±0.14	0.50±0.05	0.64±0.09	0.37±0.14	0.11±0.15	0.49±0.39	0.49±0.27
LysoPC(14:0)	2	10.86	468.3087	POS	5.51±0.75	9.95±2.13	9.69±3.85	7.62±4.54	15.00±7.49	4.83±1.83	7.48±3.64	4.12±2.63
LysoPC(15:0)	2	11.43	482.3238	POS	2.11±0.50	17.30±5.41	14.55±9.09	10.02±7.45	13.38±7.94	4.20±0.96	2.86±2.65	3.32±0.90
LysoPC(16:0)	2	12.00	496.3401	POS	33.65±15.37	393.97±15.2	397.53±138.8	295.57±147.68	231.83±159.68	213.97±154.34	169.98±179.5	98.88±62.01
LysoPC(16:1)	2	11.35	494.3243	POS	2.13±0.92	6.59±0.42	7.12±3.72	3.93±3.60	20.02±9.91	9.77±0.45	6.59±2.35	2.54±1.51
LysoPC(17:0)	2	12.56	510.3551	POS	2.04±0.51	25.17±8.47	16.92±5.33	16.06±11.03	9.22±6.17	7.75±4.86	4.95±3.62	6.07±1.02
LysoPC(18:0)	2	13.12	524.3711	POS	35.01±16.30	302.61±116.5	211.60±36.79	248.12±164.00	118.88±82.82	310.83±98.17	223.11±53.21	144.75±56.71
LysoPC(18:1)	2	12.38	522.3554	POS	1.27±0.52	19.08±0.34	18.52±14.00	7.81±5.84	14.19±13.11	17.01±16.50	5.92±5.26	8.33±2.58
LysoPC(18:2)	2	11.72	520.3394	POS	0	4.38±1.61	7.75±8.90	5.62±5.13	30.36±10.48	78.36±68.81	8.65±6.34	6.03±2.40
lysoPC(18:2)	2	11.83	568.34	POS	3.43±0.67	2.95±1.02	2.08±0.57	2.64±1.21	3.74±0.45	16.14±13.09	5.39±7.39	3.20±2.43
LysoPC(20:0)	2	14.24	552.402	POS	0.99±0.46	5.45±3.82	3.15±0.39	4.61±2.48	1.50±0.78	2.68±1.10	2.71±1.03	2.38±0.84
LysoPC(20:1)	2	13.44	550.3863	POS	0.35±0.31	4.23±0.30	2.19±0.39	2.49±2.14	0.98±0.95	3.03±0.72	2.56±0.87	1.73±1.87
lysoPC(20:4)	2	11.77	544.3404	POS	0.70±0.61	0.58±0.82	1.06±1.83	1.13±1.14	2.20±0.31	9.52±3.23	2.29±3.97	2.18±0.12
LysoPE(18:0)	2	13.08	482.324	POS	22.48±9.18	111.91±60.8	84.52±25.91	81.58±49.89	27.28±13.59	108.94±46.19	109.91±25.76	98.40±27.70
palmitoyl-2-oleyl-glycero-3-	2	17.97	760.5856	POS	0.17±0.21	1.26±1.14	1.07±1.16	1.08±0.73	0.16±0.05	0.07±0.10	3.40±3.18	7.14±0.90
ACETOACETATE	2	0.71	101.024	NEG	1.28±0.50	0.74±0.09	0.96±0.19	1.04±0.10	1.99±0.01	0.21±0.06	0.88±0.78	1.56±0.38
palmitoyl_carnitine	1	11.44	400.3416	POS	0	0.67±0.95	1.96±1.51	1.40±1.31	0.56±0.49	1.85±0.10	2.36±1.77	2.74±1.86
N-(2-furoyl)glycine	3	0.64	168.0265	NEG	4.65±0.56	2.25±0.05	3.63±0.50	3.08±1.07	5.15±0.18	0.69±0.06	0.44±0.10	1.55±0.97
OLEIC_ETHANOLAMIDE	2	13.92	326.3057	POS	1.27±0.68	1.41±0.08	0.77±0.22	0.48±0.47	0.59±0.22	0.48±0.57	0.64±0.08	0.43±0.42
PALMITIC_AMIDE	2	13.99	256.2609	POS	2.19±0.21	3.77±1.50	3.17±0.90	3.19±0.90	2.41±1.36	1.09±1.03	1.03±1.13	1.14±1.04
PALMITOYL_ETHANOLAMID	2	13.46	300.2902	POS	0.43±0.40	1.05±0.03	0.17±0.30	0.81±0.20	0.26±0.46	0.32±0.25	0.58±0.17	0.71±0.28
PALMITOYL_SPHINGOMYEL	2	17.04	703.575	POS	62.16±41.78	244.41±117.5	75.60±6.58	196.73±122.52	56.31±18.01	130.27±54.91	202.28±43.46	246.87±76.26
Sphinegosine	2	10.07	300.29	POS	0.57±0.54	3.90±0.98	1.24±1.42	1.47±1.27	0	0.50±0.01	0.99±1.13	1.45±1.26
STEARAMIDE	2	15.19	284.2949	POS	1.87±0.28	5.51±2.19	3.62±1.64	2.62±0.56	2.16±0.29	1.31±0.07	0.84±1.04	0.61±0.53
STEARAMIDE	2	12.32	284.2955	POS	0.68±0.29	2.41±1.21	1.55±0.39	1.78±0.90	0.80±0.35	0	0.91±0.82	1.34±0.40
STEAROYL_ETHANOLAMIDE	2	11.76	328.321	POS	0.19±0.34	3.41±1.33	1.51±0.52	1.94±0.40	0.12±0.21	0	0.69±0.93	3.52±3.05
TOCOPHEROL	3	13.52	417.3723	POS	4.72±0.69	22.48±5.17	11.63±5.85	18.14±6.83	4.91±0.69	0.74±0.13	9.42±6.55	18.98±5.25
Amino acids and peptides												
Alanine	1	0.66	88.0398	NEG	0.89±0.17	0.66±0.05	0.25±0.44	0.60±0.52	0.90±0.10	0.67±0.11	0.45±0.40	0.69±0.16
Arginine	1	0.64	175.1192	POS	3.73±1.22	1.96±1.15	2.85±0.74	4.27±1.82	9.73±1.44	24.95±0.84	17.76±17.50	11.03±1.32
Aspartic acid	1	0.65	132.03	NEG	4.81±1.75	2.41±1.69	5.34±1.61	4.54±2.16	3.27±1.14	4.46±1.17	2.41±2.18	2.69±0.52
Histidine	1	0.74	156.0761	POS	1.30±0.17	1.12±0.26	1.28±0.24	1.69±0.44	1.76±0.12	2.86±0.39	2.40±1.01	2.39±0.51
Leucine	1	1.31	132.102	POS	2.41±1.23	2.68±0.32	2.73±0.34	4.15±1.46	5.85±0.91	15.94±0.17	12.63±10.53	8.99±0.98
Methionine	1	0.98	133.0323	POS	6.85±2.37	5.14±1.37	5.71±0.29	10.81±4.46	15.09±1.01	26.21±2.24	20.26±18.49	14.56±0.43
Phenylalanine	1	2.23	120.0811	POS	104.86±48.5	90.42±9.02	87.31±40.48	131.42±59.60	263.66±37.57	518.78±12.33	394.18±322.1	254.00±40.59
Proline	1	0.68	116.0707	POS	4.05±1.08	3.59±0.52	3.81±0.52	5.50±1.83	5.74±0.98	9.58±1.13	17.76±3.29	11.57±5.90
Threonic acid	1	0.78	137.0464	POS	25.23±1.77	27.19±3.77	30.46±7.00	10.84±6.99	26.43±7.08	2.85±4.03	0	3.11±2.72
Tryptophan	1	3.03	188.071	POS	26.29±9.53	32.79±2.71	31.32±4.54	37.51±7.81	62.62±8.01	244.50±40.80	183.04±173.1	89.70±35.15
Tyrosine	1	1.01	182.0812	POS	5.03±2.44	3.76±0.23	4.76±1.57	5.53±0.89	9.33±0.85	14.49±1.20	14.57±7.29	8.93±2.78
Valine	1	0.77	118.0863	POS	1.45±0.28	5.96±0.08	3.00±1.70	4.06±7.03	1.19±0.60	6.99±0.59	6.94±5.67	2.25±1.62
Creatinine	1	0.72	114.0671	POS	2.81±0.61	2.68±0.52	3.57±0.88	2.90±0.98	4.07±1.09	2.10±0.75	5.11±1.97	6.00±2.45
ALLO_THREONINE	2	0.64	118.0502	NEG	1.08±0.17	1.46±0.28	0.56±0.41	0.64±0.30	3.08±0.62	0.87±0.56	2.16±1.41	2.47±0.86
N-acetylcarnosine	3	9.50	267.1026	NEG	0	0	0	0	0	0	0	0
UROCANATE	3	0.73	139.0511	POS	5.78±2.72	2.77±2.20	3.92±1.33	3.79±2.34	8.88±0.58	0.73±0.65	1.37±0.35	1.28±1.11

_3_METHYL_2_OXOVALERA	3	3.98	129.0555	NEG	1.04±0.96	0	0.25±0.43	1.26±0.69	3.44±0.89	0	0	0
METHYL_PROLINE	3	0.54	130.0868	POS	2.63±1.30	1.62±0.03	1.35±0.36	2.07±1.01	7.20±0.99	10.67±0.49	10.05±9.04	4.47±1.71
N_ACETYLASPARTATE__NA	3	0.97	174.0397	NEG	4.20±2.29	1.18±0.90	3.03±2.53	0.65±0.57	2.84±0.43	0.32±0.13	0.27±0.28	0.58±0.53
N_ACETYLGLUTAMATE	3	1.07	188.0555	NEG	3.18±1.13	0.67±0.95	1.78±1.55	1.42±0.55	3.06±0.32	0.05±0.07	0	1.28±1.11
N_ACETYLPHENYLALANINE	3	4.79	206.0815	NEG	0	0	0.18±0.32	0.48±0.83	0	0.57±0.38	3.25±2.35	3.24±0.84
N_ACETYLTRYPTOPHAN	3	5.12	245.0922	NEG	0	2.31±1.23	0.70±0.69	2.41±2.57	0	1.27±1.05	7.58±5.70	9.99±3.01
ALANYLALANINE	3	0.65	159.0765	NEG	0.10±0.17	0.24±0.34	0	0.19±0.33	0.27±0.24	0.13±0.18	0.08±0.14	0.37±0.34
ALANYLGLUTAMATE	3	0.72	217.0813	NEG	0.27±0.29	0	0.13±0.23	0.13±0.22	1.07±0.09	0.10±0.14	0.09±0.16	0.07±0.13
ALANYLISOLEUCINE	3	2.28	201.1236	NEG	0	0	0	0	0.21±0.37	2.19±0.17	0.69±0.62	0.34±0.59
ALANYLISOLEUCINE	3	2.99	203.1397	POS	0	0	0	0	0	1.35±0.26	0.41±0.47	0.29±0.50
ALANYLVALINE	3	2.45	187.1082	NEG	1.06±0.61	0	0.41±0.35	0.29±0.51	1.77±0.31	1.37±0.31	0.91±0.22	2.37±1.05
ASPARTYLPHENYLALANINE	3	5.73	281.1162	POS	3.70±0.46	3.30±2.48	4.72±0.17	3.39±1.40	0.28±0.48	0	0	0
GLUTAMYLISOLEUCINE	3	3.40	259.1294	NEG	0	0	0.16±0.28	0.44±0.76	0.61±0.57	3.30±0.77	1.51±2.08	0.36±0.62
GLUTAMYLPHENYLALANINE	3	3.64	293.1154	NEG	0	0.23±0.32	0.10±0.18	0.25±0.43	0.36±0.63	0.92±1.30	1.22±0.18	0.55±0.96
GLUTAMYLVALINE	3	0.96	245.1134	NEG	0.38±0.41	0	0	0	0.51±0.44	0.74±0.27	0.35±0.61	0.10±0.17
GLYCYLTRYPTOPHAN	3	3.67	260.1035	NEG	0.17±0.29	1.28±0.64	1.33±0.33	0	5.51±0.48	0	0	0
ISOLEUCYLISOLEUCINE	3	3.97	243.1694	NEG	1.80±1.56	0	0	0.35±0.30	1.74±0.54	1.46±0.63	0	3.04±2.90
ISOLEUCYLSERINE	3	2.14	217.1189	NEG	0	0	0.11±0.19	0	0.25±0.43	2.59±1.05	1.17±0.81	0.66±0.67
ISOLEUCYLVALINE	3	2.90	231.1705	POS	1.09±0.95	0	0.43±0.38	0	2.45±0.73	3.71±1.22	2.34±0.36	3.42±0.20
ISOLEUCYLVALINE	3	2.89	229.1548	NEG	1.02±0.88	0	0.30±0.27	0	1.78±1.55	2.44±0.06	1.32±0.77	1.70±1.63
ISOLEUCYLVALINE	3	3.06	229.155	NEG	2.02±1.75	0	0.72±0.65	0	2.55±0.48	2.04±0.50	0.93±1.26	3.18±2.04
LYSYLPROLINE	3	4.28	244.1663	POS	1.02±1.77	0	0	0	6.40±0.09	0.82±1.16	1.15±1.32	0.31±0.54
PHENYLALANYLSERINE	3	3.36	253.1192	POS	3.77±0.83	0.49±0.69	5.45±1.20	1.14±1.00	6.96±1.01	0	0	0.35±0.60
THREONYLVALINE	3	4.43	219.1354	POS	0.36±0.63	0	0.23±0.40	0	1.19±0.12	0.54±0.77	2.43±1.33	2.44±0.45
VAL_VAL_VAL	3	4.89	314.2074	NEG	0.92±0.80	0	0.19±0.32	0.18±0.32	2.10±0.40	0.52±0.12	0.11±0.20	0.65±0.58
Val-Val	3	1.88	215.1395	NEG	0.60±0.52	0	0.48±0.08	0.14±0.24	1.08±0.30	1.79±0.58	0.61±0.55	1.05±0.15
Bacteria-related Compounds												
_2_OXINDOLE_3_ACETATE	2	4.47	190.0502	NEG	2.35±1.78	4.99±2.12	5.15±1.82	4.58±1.65	4.18±0.68	0	0	0.31±0.28
_3_4_DIHYDROXYBENZOAT	3	2.44	153.0185	NEG	0	0	2.17±0.70	2.87±1.66	7.56±0.67	0	0	0
HYDROXYBENZALDEHYDE	3	7.11	123.0445	POS	0.66±1.14	1.35±0.11	0	0.46±0.79	3.85±1.24	0	0	0
Hydroxyhippurate	3	2.17	194.0479	NEG	0.08±0.14	0	0.14±0.12	0	1.17±0.22	0	0	0
IMIDAZOLE_PROPIONATE	3	0.68	141.0666	POS	1.99±0.22	1.98±1.28	1.44±0.61	1.98±1.01	1.06±0.36	0.20±0.28	0	0.88±0.76
3,4-Dihydroxyhydrocinnami	3	3.14	181.0496	NEG	0	0.30±0.42	0	0.34±0.58	0	0.20±0.08	1.65±2.34	1.27±1.11
AMINOBENZOATE	3	3.30	138.0555	POS	1.26±0.38	1.50±0.42	0.45±0.78	0.93±1.61	0	2.89±4.08	14.61±10.11	21.48±6.29
ENTEROLACTONE	3	7.73	297.1132	NEG	18.11±7.05	5.79±3.56	8.08±1.54	7.07±4.27	84.32±74.09	0	0.03±0.06	0
HYDROXYISOVALERATE	3	3.02	117.0546	NEG	0.28±0.25	0.29±0.40	0	0	0	0	0	3.29±2.88
Indolelactate	3	5.19	204.0659	NEG	0	0.55±0.09	1.18±2.04	0.81±1.40	0	0	1.16±2.01	1.99±1.84
METHYL_4_HYDROXYBENZ(	3	6.14	153.0551	POS	0.48±0.42	2.72±2.37	1.35±1.44	2.27±2.03	0	0	0	0
3-phenyllactic acid	1	4.26	165.055	NEG	0	0.62±0.88	0	1.73±3.00	0	0.37±0.14	0.40±0.34	0
TYROSOL	3	3.37	137.0599	NEG	3.26±2.80	16.87±0.91	13.21±21.17	27.12±13.04	3.47±2.73	0.11±0.15	0.14±0.25	0
Food related												
Ascorbic acid	1	0.79	175.0246	NEG	0.69±0.15	0.63±0.10	0.44±0.02	0.66±0.17	0.80±0.17	0.63±0.50	0.54±0.48	0.80±0.21
caffeic acid	1	3.38	179.0343	NEG	0	0	0	0	0	0.13±0.18	1.19±0.93	0.69±1.19
FERULATE	2	4.04	193.0494	NEG	0	0	0	0.16±0.27	0	3.29±2.01	22.27±16.21	38.85±19.45
Pantothenic_acid	1	2.74	218.1024	NEG	8.22±1.92	3.67±0.29	8.06±1.03	4.39±0.58	13.54±3.48	1.30±0.72	0.70±1.22	3.77±2.52
DAIDZEIN	3	6.26	253.0495	NEG	5.66±4.51	1.10±0.00	3.01±1.10	8.23±7.13	65.28±26.99	3.87±0.65	12.48±8.81	37.11±18.04
Riboflavin	1	4.03	377.1461	POS	17.39±6.52	9.96±6.83	11.75±5.13	6.97±2.45	21.21±3.18	7.35±1.71	4.64±4.96	5.67±0.67
Neucleitides												
_2__DEOXYINOSINE	2	1.45	251.0776	NEG	4.03±1.32	3.01±2.58	2.38±0.95	6.19±5.96	3.43±1.00	3.15±1.64	3.90±1.72	1.81±2.58
_3_HYDROXYPYRIDINE	3	0.96	96.0442	POS	2.39±0.67	1.48±0.28	2.18±0.42	2.91±0.45	2.69±0.75	0.25±0.36	0.71±0.23	0.93±0.30
_7_METHYLGUANINE	3	0.96	166.0728	POS	3.49±1.39	2.41±0.26	2.04±0.94	4.49±2.13	1.90±0.27	0.71±0.58	1.24±0.43	4.58±3.09
Adenosine	1	1.28	136.0622	POS	4.46±1.00	7.22±2.51	6.38±4.10	13.13±4.74	2.24±2.07	7.50±2.81	9.76±13.13	2.21±1.92
Adenosine/DEOXYGUANOS	1	1.34	266.088	NEG	0.37±0.33	1.20±0.81	0.25±0.44	0.84±0.75	0.79±0.16	2.60±1.80	2.71±0.72	1.02±1.77
Cytidine	1	0.65	242.0784	NEG	0.51±0.17	0.81±0.42	0.49±0.10	1.05±0.94	0.48±0.42	0.45±0.14	0.63±0.11	0.99±0.41
Hypoxanthine	1	0.97	137.0464	POS	150.52±31.7	140.37±38.3	132.58±6.38	149.27±60.18	170.62±23.13	13.60±8.26	5.09±5.42	24.01±5.24
Xanthine	1	0.99	153.0411	POS	17.39±2.71	19.71±3.52	19.71±0.29	25.55±4.09	20.59±3.63	3.50±0.81	3.07±2.79	6.64±1.49
Inosine	1	1.28	137.0462	POS	26.70±8.87	29.20±5.13	32.78±7.73	45.33±3.88	26.78±5.30	6.81±4.06	13.97±1.21	11.73±4.67
THYMIDINE	3	2.32	241.0818	NEG	0.86±0.23	0	0.37±0.43	0.78±0.21	0.27±0.47	1.87±1.23	2.60±0.84	0
THYMINE	3	2.31	127.0508	POS	1.54±1.48	2.21±0.36	2.23±1.02	3.90±3.35	1.24±1.07	3.95±3.18	5.63±2.20	1.30±1.55
Uracil	1	1.02	113.035	POS	1.98±0.22	3.22±0.14	2.86±0.25	3.36±0.23	1.90±0.71	0.39±0.09	1.93±0.97	1.92±1.32
Uric acid	1	0.92	167.0208	NEG	0.38±0.08	0.75±0.04	0.62±0.54	0.83±0.45	1.02±0.16	4.89±0.65	2.64±2.95	1.42±0.60
PSEUDOURIDINE	3	0.72	243.0599	NEG	1.36±0.33	1.24±0.62	0.88±0.35	1.37±0.27	1.20±0.37	0.30±0.01	1.17±0.59	1.49±1.34
Uridine	1	1.00	243.0618	NEG	1.05±0.09	1.48±0.50	1.38±0.38	1.72±0.07	1.22±0.52	1.27±0.07	3.79±1.60	2.84±3.14
Dimethylurate	3	1.02	195.0514	NEG	0	0.10±0.15	0.05±0.08	0	0	0	0.49±0.43	0.64±0.17
Oxidative stress												
GSH	1	0.73	308.0976	NEG	1.18±0.07	0.60±0.13	0.88±0.29	0.77±0.67	0.30±0.26	0.39±0.08	1.92±2.13	0.20±0.35
Pyroglutamate	1	1.01	128.0343	NEG	2.62±0.84	1.09±0.30	2.14±0.70	2.65±1.39	2.47±0.21	2.13±0.66	2.81±1.01	4.79±2.11
SAMe	1	0.71	399.1311	POS	0	0.22±0.32	0.37±0.34	0.34±0.29	0	0.12±0.17	0.14±0.24	0.31±0.53
Methionine	1	0.98	133.0323	POS	6.85±2.37	5.14±1.37	5.71±0.29	10.81±4.46	15.09±1.01	26.21±2.24	20.26±18.49	14.56±0.43
Taurine	1	0.85	124.0069	NEG	0.42±0.04	3.11±3.69	0.56±0.10	5.56±3.17	1.70±0.20	1.85±2.16	1.74±1.25	3.60±1.68
Carbohydrates and Energy												
Anhydroglucitol	3	0.72	163.0577	NEG	0.94±0.29	0.30±0.42	0.18±0.31	0.83±0.93	1.52±0.16	0	0.14±0.24	0.69±0.29

Glucuronate	3	0.65	193.0353	NEG	2.15±0.32	1.98±0.60	2.03±0.23	3.52±1.09	2.16±0.25	0.57±0.06	2.09±1.62	2.22±0.86
Arabinonate	3	0.65	165.0399	NEG	0	0.48±0.08	0.47±0.04	2.36±3.09	0	1.31±0.57	7.19±5.00	13.40±0.86
Gulonate	3	0.65	195.05	NEG	2.18±1.14	0.79±0.53	0.92±0.64	2.55±2.82	1.74±0.47	4.43±1.62	18.18±11.78	26.10±7.63
Quinate	3	0.67	191.0556	NEG	0.10±0.17	0	0.12±0.21	0.22±0.20	0.12±0.21	0.84±0.02	2.10±1.22	8.30±2.42
Ribose	3	0.74	149.0449	NEG	0.25±0.24	0.55±0.07	0.34±0.29	3.43±2.61	0.31±0.27	1.13±0.59	4.24±2.73	8.14±1.20
Frutose	3	0.67	179.0556	NEG	3.81±1.82	4.00±2.30	1.34±0.36	5.57±5.35	3.02±0.88	0.90±0.30	3.35±2.39	11.62±3.78
Citraconate/glutaconate	3	0.95	129.0188	NEG	2.73±1.55	1.63±1.49	1.29±0.69	2.30±2.21	2.06±0.26	0.15±0.21	0.96±0.55	9.33±6.99
ERYTHRONATE	3	0.66	135.0298	NEG	1.89±0.96	0.70±0.31	0.38±0.33	1.25±1.61	0.84±0.12	0.37±0.13	0.90±0.40	2.20±1.15
Citric acid	1	0.98	191.0187	NEG	1.04±0.05	1.11±0.06	1.17±0.29	1.73±0.39	1.22±0.58	1.03±0.09	2.15±0.90	3.27±0.55
Glutamate	1	0.79	148.0606	POS	9.98±2.13	5.89±2.93	14.17±2.44	7.77±4.15	11.78±1.34	4.44±0.79	4.66±1.39	5.29±1.41
Glycerol 3-phosphate	3	0.76	171.0054	NEG	0.53±0.24	1.72±0.92	0.74±0.35	0.92±0.39	1.25±0.94	0.19±0.08	0.51±0.31	0.69±0.20
Malate	1	0.76	133.0137	NEG	8.11±0.08	14.73±10.13	18.97±0.77	14.39±5.45	6.53±1.37	1.68±0.27	1.29±1.74	7.86±7.11
METHYLPHOSPHATE	3	0.77	110.989	NEG	3.78±0.46	2.21±0.24	3.00±0.51	3.01±0.59	3.01±0.26	0.66±0.04	1.49±0.28	2.93±0.26
Pyruvate	1	0.75	87.0122	NEG	0.85±0.15	0.56±0.06	0.67±0.11	0.83±0.25	0.88±0.05	0.32±0.11	0.60±0.58	0.55±0.55
Urea Cycle												
Aspartic acid	1	0.65	132.03	NEG	4.81±1.75	2.41±1.69	5.34±1.61	4.54±2.16	3.27±1.14	4.46±1.17	2.41±2.18	2.69±0.52
Arginine	1	0.64	175.1192	POS	3.73±1.22	1.96±1.15	2.85±0.74	4.27±1.82	9.73±1.44	24.95±0.84	17.76±17.50	11.03±1.32
Citrulline	1	0.78	176.1025	POS	2.85±1.77	1.57±0.02	2.51±0.93	1.70±0.94	6.78±0.79	1.05±1.48	0.65±0.56	0.80±0.83
Fumarate	1	0.77	115.003	NEG	2.53±0.31	4.02±2.62	5.75±0.59	4.29±2.05	2.24±0.58	0.84±0.24	0.82±0.40	3.15±2.63
Putrescine	1	0.53	88.9869	POS	0.92±0.38	0.81±0.02	0.75±0.07	1.28±0.41	1.22±0.54	0.95±0.32	0.85±0.29	0.97±0.29
spermidine	1	0.56	146.1648	POS	0.54±0.12	0.86±0.09	0.78±0.04	0.79±0.14	0.82±0.36	0	0	0.08±0.15
Others												
GLYCERATE	3	0.68	105.0198	NEG	1.82±0.31	1.56±0.12	1.74±0.43	1.58±0.51	2.20±0.08	0.07±0.09	0.19±0.16	2.77±1.86
HEPTAETHYLENE_GLYCOL	3	16.58	325.1832	NEG	2.14±0.90	2.14±1.39	1.29±0.11	1.04±0.44	1.81±0.16	0.34±0.13	0.16±0.27	0.24±0.41
KYNURENATE	3	5.54	188.0344	NEG	0	0	0	0	0	7.43±1.21	24.84±14.53	7.22±12.51

Note: *red means significant increases vs that at D0; blue are significant decreases vs D0; cells filled with pink are significant increases in KO mice vs WT and cells with green are significant decreases in KO vs WT at D0 or D5.*

Annotation confidence levels for each metabolite were provided based on the Metabolomics Standards Initiative (MSI) confidence scheme