

Table S2. Raw data of metabolomics-HFD groups

Index	Platform	Name	H01pre	H02pre	H03pre	H04pre	H05pre	H06pre	H07pre	H08pre	H09pre	H01post	H02post	H03post	H04post	H05post	H06post	H07post	H08post	H09post	H10post	H11post
1	GC	2-Hydroxy-3-methylbutyric acid	43608	51423	43445	43633	35470	43964	41816	46430	53275	27134	22306	26340	20086	28967	28883	23228	24126	44992	27152	24119
2	GC	2-Hydroxybutyric acid	37964	33656	36151	35451	25869	43635	29022	51610	48214	11783	12330	8991	5716	13243	12617	8114	14859	52494	8948	8437
3	GC	2-Hydroxypyridine	33584	57598	36645	36804	34162	43242	30997	37259	37690	26246	42666	38289	36350	37308	88508	37328	38933	44493	40833	34351
4	GC	3-Methyl-2-oxovaleric acid	10878	9036	9630	6427	5194	11101	11581	13148	13793	10763	13406	7136	8070	11244	9730	7694	10381	15067	9968	11416
5	GC	Acetylglycine	17231	13023	17225	15375	13799	15804	15723	19760	15318	4988	5443	4799	5662	7790	3434	3164	7030	7695	6839	4309
6	GC	Alpha-ketoisovaleric acid	826	593	620	636	711	635	388	869	982	582	716	644	411	502	550	576	585	925	522	732
7	GC	Aminomalonic acid	4873	9686	8892	5247	8237	7241	3317	9213	8032	7074	7647	10781	18290	9675	15062	11442	17647	9247	9756	6681
8	GC	Arachidonic acid	8304	8476	6834	3942	4281	7691	6720	7796	7846	4811	3449	3231	5055	3883	5858	5918	6948	5084	5802	4716
9	GC	Benzoic acid	2927	1977	5836	4927	2482	2679	2674	3380	3366	1537	3410	4577	2630	2525	2486	2750	3685	2504	2420	2908
10	GC	Beta-Alanine	2543	2631	1437	1987	1585	2397	2116	1288	1157	1351	1270	1170	782	1641	2051	1108	1102	658	1107	1111
11	GC	Cholesterol	191335	195946	163742	153070	163729	207250	173802	193197	207532	224564	199706	184769	150996	146817	228132	175196	165659	190850	181807	206425
12	GC	cis-4-Hydroxy-L-proline	11714	15862	11565	14142	16101	14928	13123	9663	11675	12605	11989	7128	19459	14037	3186	16714	16505	10836	12212	21437
13	GC	Citrulline	6302	7648	4810	6418	7821	7090	6121	6704	5288	5790	5801	6186	5582	4770	6524	5624	5119	6543	5130	6425
14	GC	Creatinine	270242	199059	162302	209997	192959	188957	224549	192302	190475	134522	168853	92374	133689	88230	90615	66664	132886	225497	82352	115845
15	GC	D-Galactose	6143	5596	4965	5174	4113	6276	8554	5301	3697	3021	2304	1963	3053	2776	2342	2167	2001	2404	1697	2137
16	GC	D-Mannose	4470	3694	9019	6702	2063	5657	6722	4944	5098	6639	4743	9391	8155	8093	7152	5328	11281	2965	7070	7633
17	GC	Docosahexaenoic acid	4268	4699	3413	2389	2330	3885	3003	3086	3105	1936	2956	1364	1684	1392	2038	1860	2092	2625	2261	1591
18	GC	Dodecanoic acid	353259	483506	435164	283299	370293	523789	349974	397089	461422	16604	34949	17563	34633	46550	28296	42571	44813	49976	65492	27752
19	GC	D-Threitol	3431	3389	2557	2635	2376	2973	5933	2828	2567	3246	2767	3300	2057	2215	6981	3499	3232	1805	3201	3026
20	GC	D-Xylose	45266	54199	49590	14711	41419	33129	39215	41410	61157	40699	44855	56295	51350	63363	59173	54923	44509	28356	26415	35922
21	GC	Elaidic acid	182333	191087	206674	131008	126774	185196	155924	156955	162620	120519	140409	71198	116584	115414	165011	123034	110627	106290	109069	103847
22	GC	Ethanolamine	33575	26254	25616	27266	22831	30041	27924	23534	21960	29783	23900	25210	20764	24124	29128	21853	22355	25403	18498	21920
23	GC	Fumaric acid	5153	3850	3023	3904	2344	5380	4459	2717	3109	3749	2746	2938	1845	2174	3859	2842	3067	1888	2018	3434
24	GC	Galactonic acid	2586	3028	2482	3227	2180	3285	2756	2827	1150	2260	2642	1355	1552	2164	1903	1435	829	1911	1732	1543
25	GC	Gluconolactone	82652	16956	141776	20787	47528	159655	76883	33439	48674	71194	102108	37105	197937	51014	32515	35743	44237	123500	36867	75948
26	GC	Glutaric acid	1359	1431	1018	1394	928	988	1385	1166	1179	800	1034	995	417	557	813	756	969	627	682	772
27	GC	Glyceric acid	1790	1979	1822	2169	1797	2643	4032	3850	3745	978	1623	1836	2023	1968	4669	2881	2633	2449	3095	5712
28	GC	Glycerol	731945	1021545	823275	501283	579420	743272	820681	441978	725121	574775	880272	88716	469045	666398	736866	568410	629288	420768	596141	648349
29	GC	Glycerol 3-phosphate	21591	21407	15201	13669	12455	13280	10497	11972	11510	14444	12480	12449	12532	11174	16664	13345	13288	11349	11432	13547
30	GC	Glycine	386331	380897	310482	386243	382518	484615	320237	434067	308240	459692	376177	425760	448709	441890	606588	406321	463913	288502	446274	541904
31	GC	Glycolic acid	46990	70687	57120	60877	73985	56478	96994	60346	53964	44945	62713	64602	56542	66632	75527	71082	70889	27862	68856	56019
32	GC	Heptadecanoic acid	398816	408686	583370	592668	671352	732684	619491	557094	596491	548595	572806	237963	526079	691605	724418	523185	606578	512321	631877	570584
33	GC	Isocitric acid	158867	258011	118218	120898	121409	129943	181200	142943	199134	80506	131820	173265	68454	109011	127376	128424	167232	106273	141490	146521
34	GC	Ketoleucine	1009	691	811	941	840	1200	1208	1584	1443	1182	610	809	575	1015	623	787	987	1255	1102	1149
35	GC	L-Alanine	300548	176178	237769	254863	215733	184512	207432	235928	213733	526024	536649	358699	548605	314381	169463	419115	377262	256130	355352	346851
36	GC	L-Alpha-aminobutyric acid	13732	8456	12912	13075	13436	11304	9797	15846	13673	9228	12266	5695	7896	7844	5539	6567	12293	17137	7324	7719

37	GC	L-Arabinose	1593	1784	1597	2444	2208	2474	2751	2828	3343	1901	3292	2751	3089	2918	6015	3273	3292	2407	3827	4184
38	GC	L-Arabitol	1155	2687	1528	2913	2169	2346	2251	2628	2242	2967	3391	5099	5480	4551	9594	6864	4669	2002	5769	5555
39	GC	L-Arginine	13256	11361	10834	13983	18038	26169	22144	16524	12301	15925	14400	13640	14140	8653	11928	17058	14699	14164	12524	16151
40	GC	L-Aspartic acid	13300	12775	8783	12372	10022	8762	7167	6580	7581	14256	6540	9762	9881	9579	14452	10632	8656	8199	10006	11307
41	GC	L-Glutamic acid	7136	7064	3905	5909	4648	5955	5183	4315	4116	5882	3884	4717	4250	4455	8754	7204	5638	4232	4735	6843
42	GC	L-Glutamine	313744	311009	272593	320961	408011	412941	282015	325508	303059	228229	288122	397431	322310	296103	411660	350529	396492	487458	364591	493137
43	GC	Linoleic acid	20343	33240	28605	28332	18787	28928	22689	18924	25440	11596	6203	6098	12607	15718	8414	15370	14087	6146	14339	11087
44	GC	L-Lactic acid	678901	776865	1274137	549425	531737	1592968	944681	1437833	1435691	1159218	443984	1704619	2064733	1279830	328764	1445135	1185246	456923	741091	2091886
45	GC	L-Leucine	131105	105451	101633	113364	117874	170013	103228	149755	134266	102636	124590	66782	98682	102703	46965	100284	95966	144467	68297	76954
46	GC	L-Lysine	158356	129122	101115	132834	154400	150938	117218	127524	110910	210525	108537	170804	192679	138893	224822	181864	177344	153029	150674	199543
47	GC	L-Methionine	23365	25097	19916	25862	27144	27996	24861	25975	25953	31161	26704	20396	29579	23524	21229	31598	26812	24731	24010	23609
48	GC	L-Phenylalanine	31047	34778	25086	30948	31279	43045	29252	34449	31333	37352	29261	27977	28263	28910	29241	33013	29512	41044	24347	28641
49	GC	L-Pipecolic acid	7803	5403	6314	5581	5951	7116	11956	9675	8429	7160	5804	6024	8332	5596	815	4971	6753	3880	6221	5505
50	GC	L-Proline	149861	120573	109230	144646	191521	118658	130016	138574	123002	187356	117025	126831	181263	119048	66846	207027	126290	111787	123278	138546
51	GC	L-Serine	77991	68384	57976	64238	72300	75461	57828	73261	64562	94625	70325	80289	103662	64983	71920	92021	95703	60693	80495	94087
52	GC	L-Sorbose	145673	30247	267972	197345	86708	272426	135837	36289	86292	144063	225983	67036	351732	85587	61696	81796	106475	19550	123507	141195
53	GC	L-Threonine	89696	69916	63136	73151	83159	77052	66749	81399	82393	98985	78503	76497	99490	73603	54920	98141	102734	79564	78190	76588
54	GC	L-Tryptophan	74180	73283	48700	82033	67866	59323	43086	63768	71860	115277	116990	114883	102797	107536	104293	114370	114393	83081	108479	119799
55	GC	L-Tyrosine	64755	53047	37926	60840	65217	59026	53120	51530	66953	76673	63202	55228	76166	57285	52814	94820	73712	40817	54501	63974
56	GC	L-Valine	275315	161486	207122	200966	218091	257476	179227	269085	255805	232745	234457	140566	230548	217007	82753	231261	188484	146080	149391	153176
57	GC	Maleic acid	9901	10488	8793	7578	7583	18312	3150	8857	9047	4773	7725	4504	4516	4989	7292	4088	1190	5906	4384	4617
58	GC	Malic acid	50462	38529	30277	38783	23060	29818	35650	24781	28554	36035	26370	27407	19337	21782	25626	21407	32139	17765	19126	34642
59	GC	Methylmalonic acid	2168	2622	1738	1625	1418	1363	2107	1757	2256	1369	1810	1594	1337	1515	1458	1407	1573	1582	1280	1439
60	GC	MG(18:0(9Z)/0:0/0:0)	2244	3290	2607	2379	2234	2461	2118	4100	3389	1602	2197	1449	2179	899	1935	1157	1613	1716	1818	1585
61	GC	Myristic acid	277060	336533	343640	194128	261657	354837	238613	283655	319740	23388	25499	20093	33622	66328	34727	55656	56906	57226	68798	39520
62	GC	Myristoleic acid	11700	14263	12195	7966	10195	13721	8123	12064	12705	1784	1064	1681	1921	3635	2284	1767	2574	2947	3131	1579
63	GC	Nonadecanoic acid	1469	1692	1584	1225	1324	1679	1527	1551	1538	1456	1497	1032	1506	1421	1883	1369	1513	1316	1366	1435
64	GC	Oleic acid	15960	11171	19610	11070	10937	15067	11121	10168	23150	9147	13560	7087	9499	15613	5998	13233	11942	11751	8806	7750
65	GC	O-Phosphoethanolamine	5502	7870	2990	5673	5129	6703	3806	4161	3137	5466	3494	4258	2288	5671	9065	3919	2981	4882	3294	5708
66	GC	Oxalic acid	9737	15686	7947	14885	14936	15472	19691	24134	22275	12273	19895	15028	19642	16282	25639	21545	23643	24787	22825	23458
67	GC	Oxoglutaric acid	11208	12030	8545	4533	8433	5007	9577	8195	7875	6266	7254	8526	4664	6688	3827	5452	6929	3559	4320	6253
68	GC	Palmitic acid	677966	630656	698319	487988	518070	704682	535340	636571	653110	384336	545531	280559	376835	522703	552042	509074	454267	441054	452093	387192
69	GC	Palmitoleic acid	102156	113709	90953	62078	88957	104836	59493	99113	110084	32979	80351	25872	25977	82309	51113	60219	48898	55623	46671	44729
70	GC	Pantothenic acid	712	817	459	1009	618	913	857	944	991	987	985	838	891	755	1182	824	731	825	753	871
71	GC	Pelargonic acid	3260	2461	5022	3514	4921	4003	2868	5327	2574	3325	3347	4198	3968	4411	3798	4519	2431	2268	5059	2307
72	GC	Petroselinic acid	231590	246831	231069	148537	175935	250707	179734	200029	234590	106589	158181	81804	101704	172151	179057	173779	148594	166784	137775	118483
73	GC	Phosphoric acid	517524	471634	506284	608771	567758	653842	595458	654440	637617	595096	634933	514450	517460	552422	641085	633195	664716	647747	657140	689552
74	GC	Pyroglutamic acid	303880	402400	234675	289701	300791	299552	252703	250715	239236	353461	223084	271792	266945	266096	466501	275686	284262	308041	252154	361395
75	GC	Pyruvic acid	57803	65045	40719	52183	46327	51249	53269	44779	51848	64397	48636	60590	39149	51913	50156	47322	41224	32799	49210	51823
76	GC	Rhamnose	8539	12148	8722	7569	7978	9592	10266	9725	9609	10436	9480	9386	10558	7501	13187	7788	9478	6595	8567	10448

77	GC	Sorbitol	5044	3188	2733	3067	2623	1785	3680	5481	4168	2650	3749	3812	1845	2591	2856	4550	4102	1504	3206	4114
78	GC	Taurine	358998	363774	268951	301504	310749	6733	22913	92108	115461	408586	52420	190920	216751	240414	105087	21422	57607	107340	105384	120682
79	GC	Uracil	3676	3008	2072	4429	2323	3534	597	1899	1919	3196	1286	1609	1487	1929	2655	1643	2098	3072	1415	2711
80	GC	Urea	126404	132647	4031	126473	99553	196724	172783	94864	106398	104546	98437	174453	69088	127952	189252	126831	54152	119599	113097	138985
81	GC	Uric acid	10754	13218	9073	6399	10051	5594	7248	7703	6976	11016	6404	11131	8669	12512	16876	9758	7003	8471	5405	7120
82	BA	CA	5.33	11.25	8.28	59.25	22.49	17.95	29.10	97.04	43.43	47.43	4.93	1.81	29.14	23.85	16.44	14.80	52.56	1.25	15.98	41.78
83	BA	aMCA	53.74	72.06	15.58	237.08	66.35	61.05	159.70	675.33	280.76	149.10	34.30	5.08	49.88	9.12	15.78	9.18	136.89	2.93	11.16	81.47
84	BA	bMCA	122.43	93.49	41.26	360.69	185.70	142.04	101.13	644.34	302.47	95.40	72.00	33.74	106.47	107.01	119.51	101.51	777.42	22.80	84.41	227.54
85	BA	wMCA	72.35	78.39	65.58	94.91	85.69	70.32	72.67	108.52	75.18	80.02	69.31	64.19	76.37	64.65	64.84	63.81	84.61	63.54	66.66	72.70
86	BA	DCA	30.29	36.40	24.04	96.36	108.99	24.97	15.50	138.14	78.90	28.60	17.21	7.51	96.01	45.36	28.84	30.64	287.29	12.41	14.33	44.61
87	BA	LCA	204.20	1896.11	1304.55	1252.18	1733.55	105.06	253.69	1675.00	2325.66	554.14	108.47	1188.73	1826.80	1217.54	155.10	613.23	1235.47	317.10	600.79	360.62
88	BA	UDCA	9.60	5.79	5.14	21.98	28.60	3.24	5.97	46.13	18.92	6.33	3.10	2.44	17.20	2.92	4.27	2.27	117.00	2.10	3.69	20.90
89	BA	HDCA	30.75	48.71	29.72	148.48	133.85	118.36	54.33	650.39	399.13	41.82	44.12	14.58	203.42	81.70	44.19	72.23	644.62	2.47	68.57	102.94
90	BA	DHCA	43.68	121.59	112.02	106.67	187.62	32.15	38.68	67.39	53.53	71.54	37.17	65.42	174.06	90.82	55.13	68.43	113.37	53.88	52.03	51.50
91	BA	7 ketoDCA	197.11	1406.84	780.17	1174.63	1434.32	24.24	151.09	575.33	396.18	479.37	26.79	520.92	1102.34	413.70	47.23	131.32	413.94	30.12	62.17	181.20
92	BA	12 ketoCDCA	92.55	38.13	17.63	257.57	104.28	48.59	99.49	49.39	55.92	7.15	50.77	0.72	0.31	0.48	2.18	14.03	2.41	0.99	3.53	0.35
93	BA	dehydro_LCA	0.22	1.45	0.28	0.14	0.10	0.23	0.32	15.41	0.74	0.29	0.77	0.59	14.10	0.35	0.55	0.24	3.17	1.12	0.90	0.08
94	BA	23_nor_DCA	25.63	10.98	16.56	4.06	9.56	8.38	8.40	15.47	15.36	2.88	10.41	11.72	4.88	6.85	30.58	2.28	8.09	23.95	35.60	10.81
95	BA	6 ketoLCA	19.77	22.07	27.06	52.86	76.19	15.21	12.73	71.99	28.54	31.62	11.22	13.04	88.42	20.47	9.06	9.28	72.79	6.25	6.17	48.65
96	BA	7 ketoLCA	153.33	137.13	135.79	149.27	147.63	111.56	94.13	119.75	93.41	123.68	100.44	123.82	123.29	123.67	99.04	120.13	123.78	109.77	94.11	126.12
97	BA	12 ketoLCA	0.01	0.12	0.00	4.73	0.02	0.05	0.00	13.66	0.00	0.30	0.00	0.00	0.12	0.84	0.00	0.27	32.16	0.12	0.42	0.00
98	BA	apo_CA	3.34	4.54	0.23	2.78	2.46	4.01	0.12	11.48	7.16	1.15	0.20	0.47	19.45	5.79	2.06	0.09	16.44	0.40	0.09	3.15
99	BA	muroCA	2.96	0.87	4.26	19.19	0.39	0.91	4.72	20.89	6.40	9.24	1.04	5.66	0.89	1.03	0.59	6.28	30.85	1.69	2.76	9.29
100	BA	beta-UDCA	18.93	26.57	10.66	44.53	117.88	2.42	1.11	78.45	12.23	12.60	0.15	0.11	58.89	2.60	0.64	1.49	40.53	0.75	2.60	29.53
101	BA	3-ketoCA	124.42	156.37	125.60	191.56	146.81	143.14	124.86	296.36	207.80	138.00	120.03	106.19	486.41	147.26	124.88	136.76	498.17	104.02	127.07	153.89
102	BA	ACA	436.74	456.99	285.08	785.95	879.03	149.23	155.12	856.36	399.72	327.60	133.09	166.58	816.79	215.07	178.91	113.51	823.20	33.11	50.11	502.33
103	BA	TCA	167.44	501.40	151.67	533.32	700.51	30.96	69.98	486.84	590.84	431.25	34.09	494.09	1526.50	477.73	129.11	253.63	758.22	286.68	243.56	248.42
104	BA	TCDCA	3.70	4.66	3.46	6.50	3.83	2.53	2.79	3.53	3.55	2.34	1.86	2.76	3.46	2.56	2.96	3.38	4.20	2.31	2.19	2.90
105	BA	TaMCA	39.42	161.69	37.64	178.15	163.66	6.09	16.27	84.20	149.48	84.42	12.98	18.81	222.37	108.14	25.33	49.53	192.97	21.28	43.70	31.66
106	BA	TbMCA	576.72	1099.43	340.89	940.54	914.41	424.07	579.65	3016.05	2095.36	348.89	393.83	562.29	938.17	1111.80	438.80	794.78	1866.32	532.05	713.99	383.12
107	BA	TwMCA	41.85	105.07	86.53	69.82	233.12	29.79	78.41	258.00	348.45	59.57	72.93	58.95	198.83	118.14	34.56	53.33	155.75	36.82	98.16	62.16
108	BA	TDCA	7.87	8.51	10.83	13.91	16.99	9.06	10.88	11.06	6.76	7.50	8.75	8.45	13.72	10.35	8.05	11.54	13.69	10.97	6.49	7.99
109	BA	TLCA	0.32	0.29	0.23	1.78	2.80	0.29	0.54	0.65	0.28	1.51	0.46	0.62	0.39	0.30	16.18	0.29	0.39	0.29	0.20	0.37
110	BA	TUDCA	78.16	108.33	69.94	489.96	265.04	126.06	92.74	418.36	254.18	321.45	52.81	61.54	314.80	99.81	111.94	140.77	1062.03	10.30	134.60	351.98
111	BA	THCA	13.91	264.84	121.52	162.00	160.46	29.94	34.06	534.32	298.84	111.07	18.72	118.20	340.40	216.50	41.77	76.94	506.44	84.29	121.76	40.29
112	BA	THDCA	11.23	11.35	11.15	11.55	11.48	11.30	11.31	13.04	11.46	11.18	11.15	11.34	11.34	11.34	34.44	11.29	11.89	11.48	11.19	11.37
113	BA	GCDCA	422.76	1613.93	868.40	2726.37	1871.01	538.10	686.09	3671.23	1987.89	1450.95	457.43	182.02	893.85	188.48	137.12	139.66	2042.44	21.17	516.51	638.43
114	BA	GDCA	0.61	0.10	0.63	0.90	0.08	0.62	0.28	0.15	0.37	0.24	0.84	0.66	0.09	0.66	0.09	0.13	1.49	5.19	0.26	0.21
115	BA	GLCA	3.22	1.61	0.15	89.02	69.00	1.40	22.08	255.74	11.41	2.95	0.12	0.17	0.12	0.18	23.01	0.29	107.59	2.14	30.12	12.96
116	BA	GUDCA	157.63	168.71	154.03	296.47	192.49	158.38	159.84	251.38	169.98	190.97	150.91	139.11	165.84	152.20	151.66	140.80	275.49	136.13	157.51	165.84