Supplementary Table 1

Supplemental Table 1 Composition of diets fed to mice

Ingredient	MD10% Fat	MD45% Fat
Casein	18.96	23.31
L-cystein	0.28	0.35
Corn starch	29.86	8.48
Maltodextrin	3.32	11.65
Sucrose	33.17	20.14
Cellulose	4.74	5.83
Soybean oil	2.37	2.91
Lard	1.9	20.68
Mineral Mix	0.95	1.16
Phosphate dicalcium	1.23	1.51
Carbonate calcium	0.5	0.64
Potassium citrate, H_2O	1.56	1.92
Vitamin Mix	0.95	1.16
Choline bitartrate	0.19	0.23
Total	99.98	99.97
Energy Composition	100	100
Protein	20	20
Carbohydrate	70	35
Fat	10	45

Supplementary Table 2

Supplemental Table 2 Sequence of primers used in quantitative real-time PCR

Gene	Sense primer	Antisense primer
TNFα	AGCCCACGTCGTAGCAAACCAC	ACACCCATTCCCTTCACAGAGC
IL-6	TCCAGTTGCCTTCTTGGGAC	GGTCTGTTGGGAGTGGTATCC
NF-κB	CCCTACGGAACTGGGCAAAT	GCGGAATCGAAATCCCCTCT
β-actin	ATGTGGATCAGCAAGCAGGA	AAGGGTGTAAAACGCAGCTCA

Supplementary Table 3

Supplementary Table 3 Differentially Expressed Hepatic Metabolites

id	Peak	Similarity	R.T.	Count	Mass	MEAN HFD	MEAN RA	VIP	P-VALUE	Q-VALUE	FOLD CHANGE	LOG_FOLDCHANGE
28	2-hydroxypyridine	853	6.94215,0	36	152	0.702769561	0.311178792	2.212984173	0.002567117	0.046270315	2.258410854	1.175307968
151	3-Cyanoalanine	365	11.6733,0	34	141	0.016144178	0.01187354	1.48377897	0.029146328	0.170056235	1.359676851	0.443263813
61	3-Hydroxypyridine	711	8.54356,0	18	152	0.063318468	2.62618E-08	1.999641559	0.006760082	0.070824208	2411047.442	21.20122861
212	4-aminobutyric acid 1	806	13.642,0	36	174	0.192800069	0.131409033	1.381656463	0.036105688	0.187465271	1.467175156	0.553041115
592	5-alpha-Cholestan-3-one 1	390	28.7333,0	23	129	0.000353308	0.004843162	1.249600385	0.043178083	0.201624623	0.072949773	-3.776952696
257	allose 1	524	15.0173,0	36	204	0.037548503	0.091724729	1.886399243	0.006483186	0.06985489	0.409360744	-1.288555335
182	Aminomalonic acid	787	12.8656,0	36	147	0.328119222	0.222022395	1.544152865	0.026909713	0.163508621	1.477865427	0.563514905
17	Analyte 19	0	6.66507,0	24	121	0.058140888	0.021892042	1.710535826	0.037982205	0.19152211	2.655800156	1.409146591
191	Analyte 214	212	13.1575,0	18	128	0.534992446	2.62618E-08	2.000829506	0.005452056	0.065702879	20371499.92	24.28004887
220	Analyte 246	242	13.7768,0	36	245	0.011050018	0.02324854	2.002306066	0.00665053	0.070447185	0.475299414	-1.073091472
354	Analyte 397	337	18.5411,0	17	204	0.057698137	1.079520516	2.15334586	0.002520992	0.045906109	0.05344793	-4.225722127
426	Analyte 472	277	20.4197,0	35	56	0.021411656	0.049192226	1.743590428	0.019426489	0.137025003	0.435265043	-1.200033934
483	Analyte 533	388	21.8823,0	35	211	0.012669924	0.016519881	1.310816063	0.044514986	0.203986883	0.766950061	-0.382795453
492	Analyte 542	318	22.2181,0	14	73	0.003607544	0.051821656	1.65477546	0.040082567	0.195794084	0.069614606	-3.844466148
5	Analyte 6	0	6.19019,0	36	152	0.012102907	0.017010274	1.806002886	0.008486364	0.079117335	0.711505678	-0.491052825
62	Analyte 69	392	8.63944,0	27	89	0.068862349	0.017259686	1.196974973	0.033497953	0.181410409	3.989780033	1.996309209
6	Analyte 7	0	6.21361,0	36	147	0.020408001	0.028860357	1.773212135	0.010529065	0.091828208	0.707129189	-0.499954283
73	Analyte 82	241	8.94562,0	35	221	0.007664906	0.005941381	1.327132181	0.040793581	0.197180345	1.290088307	0.367469822
199	asparagine 4	844	13.3522,0	36	115	0.36717214	0.189459062	1.913782704	0.000687129	0.028810166	1.938002526	0.954570451
237	beta-Glutamic acid 1	442	14.4764,0	36	188	0.019689186	0.13024878	2.257440552	0.004705306	0.062024254	0.151165989	-2.725794515
166	Biuret 3	311	12.2171,0	30	86	0.015527998	0.003779932	1.227997087	0.000257839	0.017427592	4.108009796	2.038439622

180	Citraconic acid 3	258	12.7741,0	18	87	0.007288933	2.62618E-08	2.438735569	0.009852926	0.087806437	277548.7813	18.08238183
262	cycloserine	258	15.2032,0	29	128	0.117486421	0.008155796	1.659386477	0.002536922	0.046032735	14.40526721	3.848524517
160	DL-Anabasine 1	382	12.0065,0	27	239	0.01061283	0.001511073	1.661865594	0.000995353	0.032793844	7.023375594	2.812164589
172	Erythrose 2	523	12.4299,0	36	201	0.012750273	0.022009067	1.594381015	0.03783537	0.191213124	0.579319095	-0.787569876
102	Ethanolamine	864	10.1674,0	36	174	0.440096251	0.266013603	1.759271792	0.005314663	0.065074189	1.654412581	0.726319062
362	Galactonic acid	326	18.6451,0	35	204	0.01944824	0.04538195	2.100961298	0.001507058	0.03662743	0.428545708	-1.222479006
326	glucose 2	518	18.0855,0	13	235	2.45578E-08	0.027133374	1.774560982	0.034269255	0.183254876	9.05077E-07	-20.075456
246	glutamic acid	791	14.7007,0	36	246	0.516521204	0.281451126	1.520402432	0.006517874	0.06997933	1.835207455	0.875943157
474	glutathione 2	307	21.6393,0	31	101	0.020300281	0.043694755	1.404848481	0.039368203	0.194371421	0.464593095	-1.105960381
224	L-cysteine	760	13.9296,0	36	220	0.086462218	0.144671865	1.584963587	0.014092612	0.112274239	0.597643629	-0.742642623
83	malonic acid 1	384	9.31636,0	35	147	0.011416058	0.007505645	1.950606301	0.001660615	0.037414127	1.520996243	0.605016589
319	mannose 2	608	17.6948,0	11	55	2.45578E-08	0.040686401	2.071409602	0.015308278	0.118463103	6.03587E-07	-20.6599342
571	melibiose 2	538	26.0852,0	16	73	2.45578E-08	0.01725352	2.050645336	0.025651521	0.159581277	1.42335E-06	-19.42227828
205	methionine 1	822	13.501,0	36	176	0.231548935	0.36962273	2.008353217	0.000943216	0.03224443	0.626446687	-0.67473636
295	methionine sulfoxide 2	431	16.5453,0	34	128	0.108845187	0.013874156	1.350399388	1.57008E-06	0.000424493	7.845175523	2.971805725
394	myo-inositol	794	19.6022,0	36	305	0.121637248	0.274161085	1.387083723	0.037378417	0.190242549	0.443670728	-1.172438724
360	N-alpha-Acetyl-L-ornithine 1	402	18.613,0	36	174	0.025634186	0.037533553	1.481386556	0.027787489	0.166141899	0.682967197	-0.550111807
89	N-cyclohexylformamide 2	208	9.55167,0	36	227	0.015772897	0.006378909	2.105839	0.000999398	0.03283481	2.4726638	1.306066094
421	noradrenaline	451	20.2493,0	19	174	0.001598411	0.008204574	1.317533233	0.022417845	0.148571972	0.19481949	-2.359790082
302	ornithine 1	781	16.8938,0	36	142	1.591054198	1.208460017	1.7925514	0.005671192	0.066665547	1.316596474	0.396813239
133	oxamide	299	11.0945,0	33	215	0.028945389	0.008567194	2.264837839	1.68043E-05	0.002271632	3.378631133	1.756438851
266	ribose	771	15.3364,0	36	307	0.416542423	0.304626132	2.027440035	0.004851269	0.062796592	1.367389004	0.451423729
503	saccharopine 2	207	22.646,0	22	168	2.45578E-08	0.193715082	2.074588036	0.006319701	0.069256254	1.26773E-07	-22.91125191
54	sarcosine	786	8.33757,0	36	116	0.064149792	0.099636053	1.460027597	0.03347694	0.181359502	0.64384116	-0.635223284
146	serine 1	811	11.4611,0	26	340	0.002801664	0.010324581	1.321474396	0.024945553	0.157294491	0.271358623	-1.881727343

252	toluenesulfonic acid	433	14.8294,0	36	229	0.109822931	0.071576844	1.70341965	0.006835416	0.071078721	1.534336033	0.617614481
387	unknown	218	19.3473,0	15	70	0.020917251	2.62618E-08	2.068522197	0.007990216	0.076881961	796489.3182	19.60329549
309	unknown	515	17.2394,0	20	191	0.013429862	0.001503092	1.649682647	0.012165313	0.101677086	8.934821623	3.159438927
227	unknown	295	14.0406,0	23	244	0.004267984	0.000821864	1.837456963	0.001152145	0.034229761	5.193051578	2.376582555
66	unknown	325	8.74023,0	36	128	0.22236875	0.053240626	2.237664456	0.001599486	0.037115126	4.176674253	2.062354629
143	unknown	514	11.4377,0	36	241	0.023487321	0.053561326	2.222069124	8.59842E-05	0.007748997	0.438512682	-1.189309529
349	unknown	261	18.4339,0	15	75	0.009449627	0.044151323	2.096828081	0.028446565	0.168064383	0.214028166	-2.224127427
243	unknown	417	14.6178,0	18	232	0.00154847	0.008011949	1.313304384	0.017628033	0.129339302	0.193270013	-2.371310284
506	unknown	259	22.7257,0	26	83	0.002108399	0.027873012	1.559652094	0.00752789	0.074665877	0.075643037	-3.724648911