Supplementary materials

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Table S6. Feed ingredients

Table S7. Compound-dependent LC-MS/MS parameters; declustering potential (DP), entrance potential (EP), collision energy (CE), and cell exit potential (CXP).

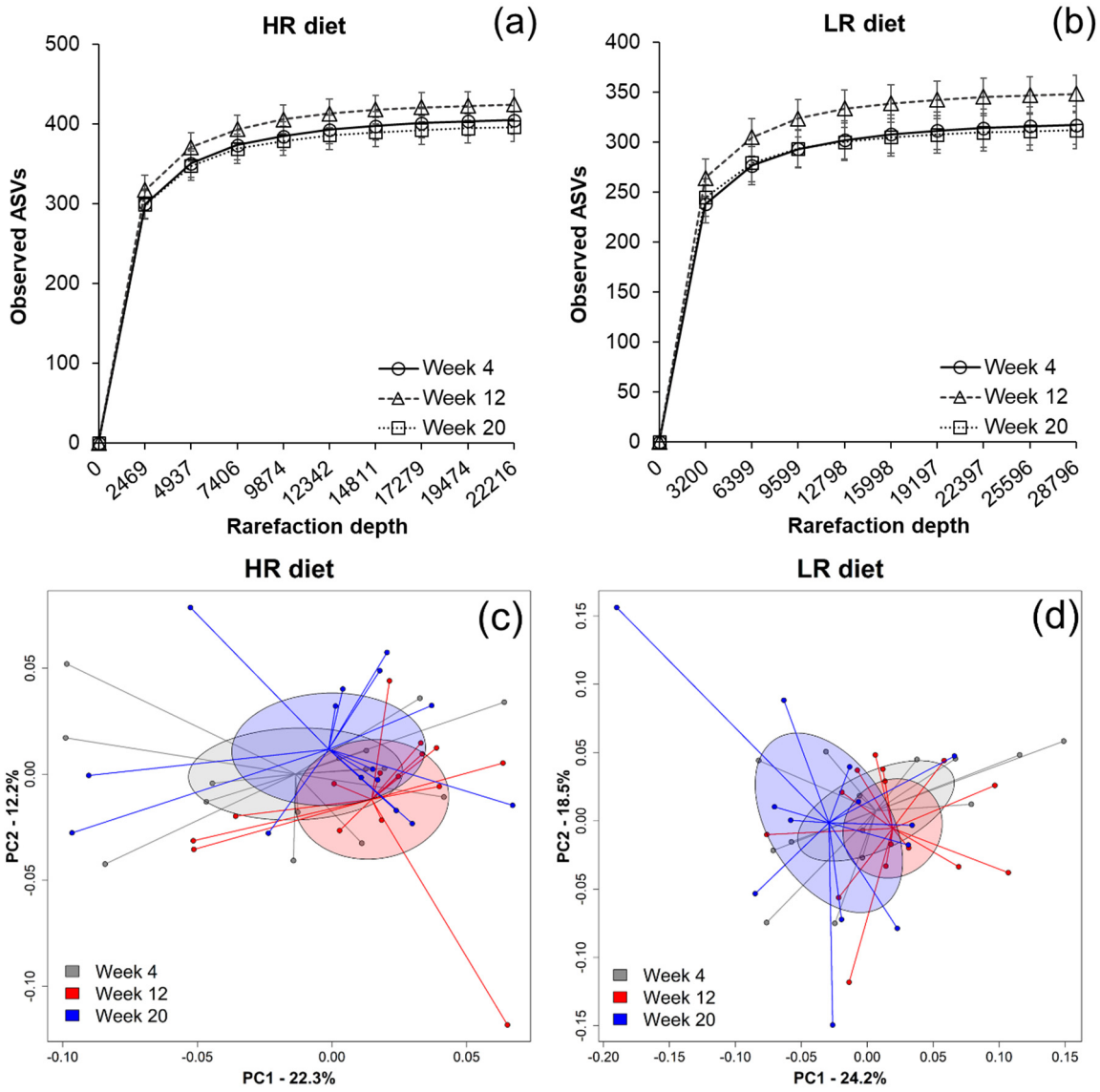

Figure S1. Alpha rarefaction curves (a, b) for each time point (○, week 4; △, week 12; □, week 20) describing the number of observed ASVs (y-axis) as a function of sequencing depth (x-axis); PCoA plots of Weighted UniFrac metrics (c, d) representing individual fecal communities at their respective collection time points (●, week 4; ●, week 12; ●, week 20). Confidence ellipses are presented in color for each dietary group (99% CI based on standard error); HR, high-risk; LR, lower-risk.

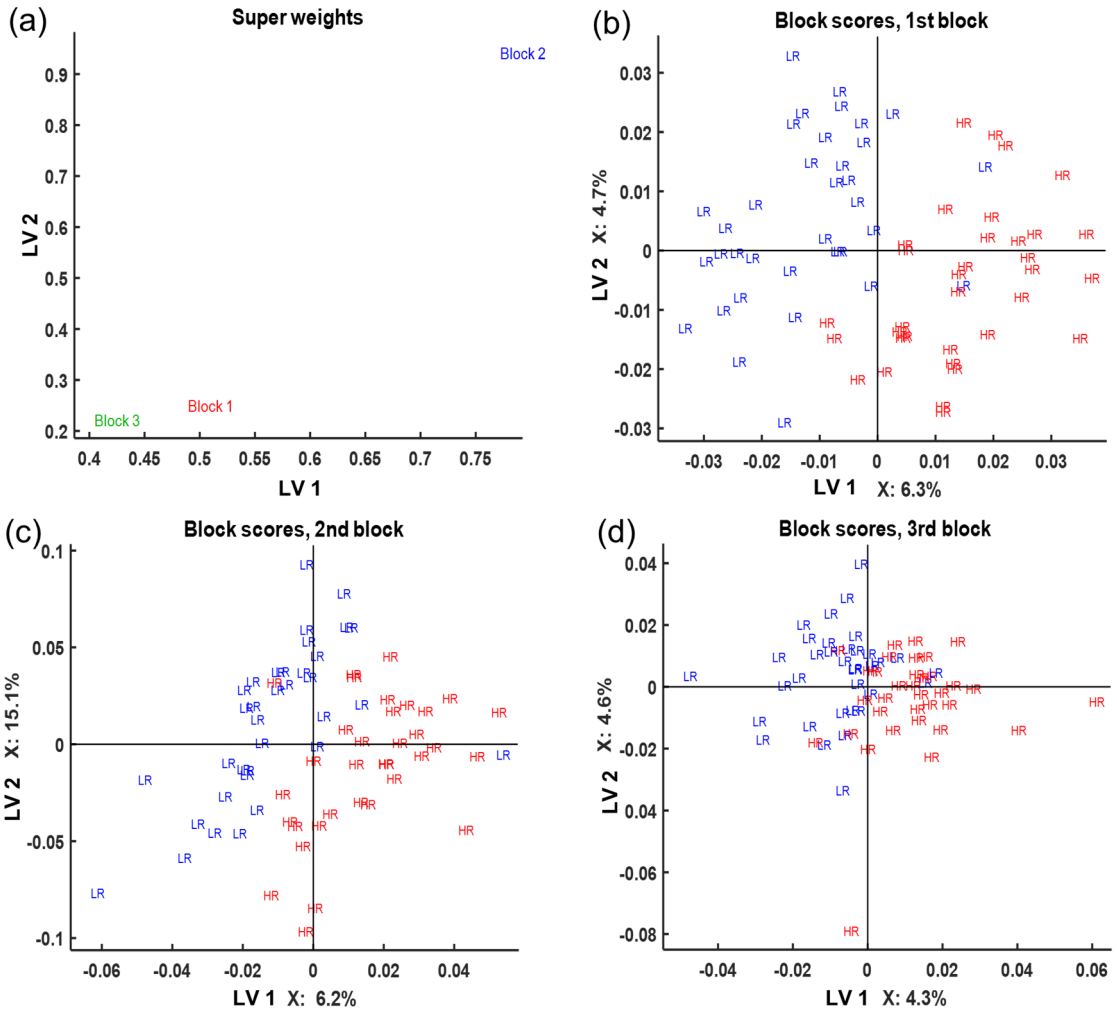

Figure S2. Score plots of sMBPLSR analysis for diet classification models using metabolomics data in positive ionization mode (ESI+): (a) score plot of super weights with block 1 - feces, block 2 - plasma, block 3 - urine; (b, c, d) score plots for each block used in the analysis.

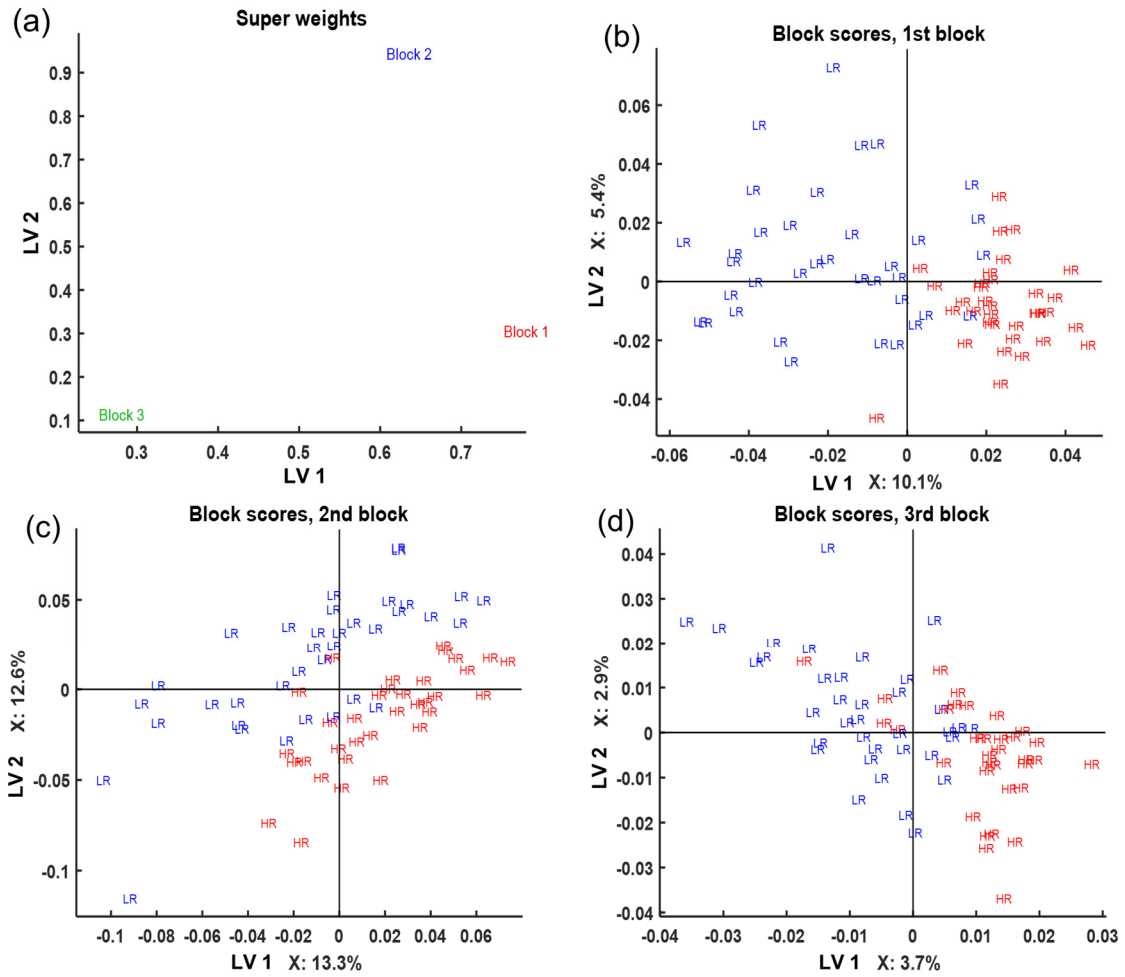

Figure S3. Score plots of sMBPLSR analysis for diet classification models using metabolomics data in negative ionization mode (ESI-): (a) score plot of super weights with block 1 - feces, block 2 - plasma, block 3 - urine; (b, c, d) score plots for each block used in the analysis.

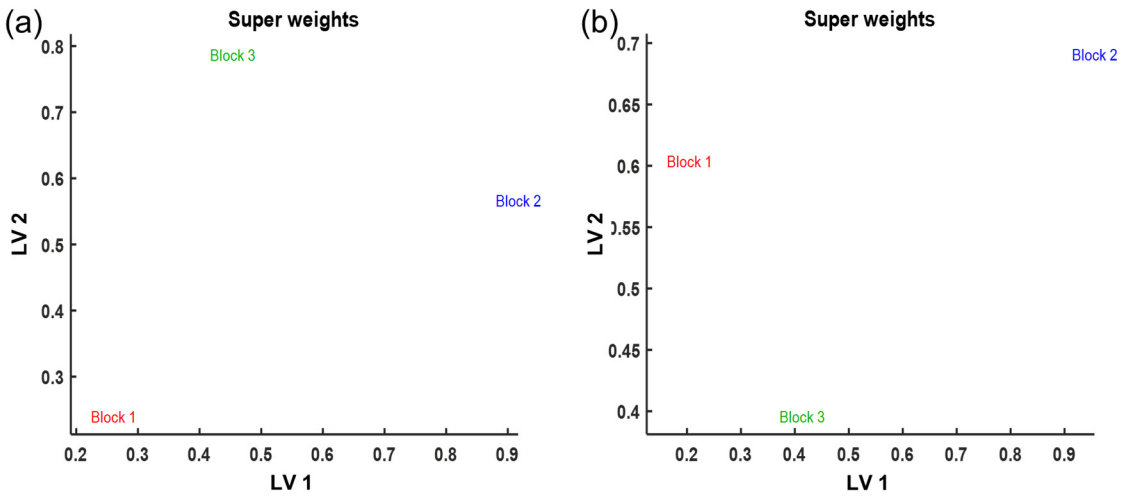

Figure S4. Super weights of sMBPLSR analysis for time classification models using metabolomics data in ESI+ (a) and ESI- (b). Block 1 - feces, block 2 - plasma, block 3 – urine.

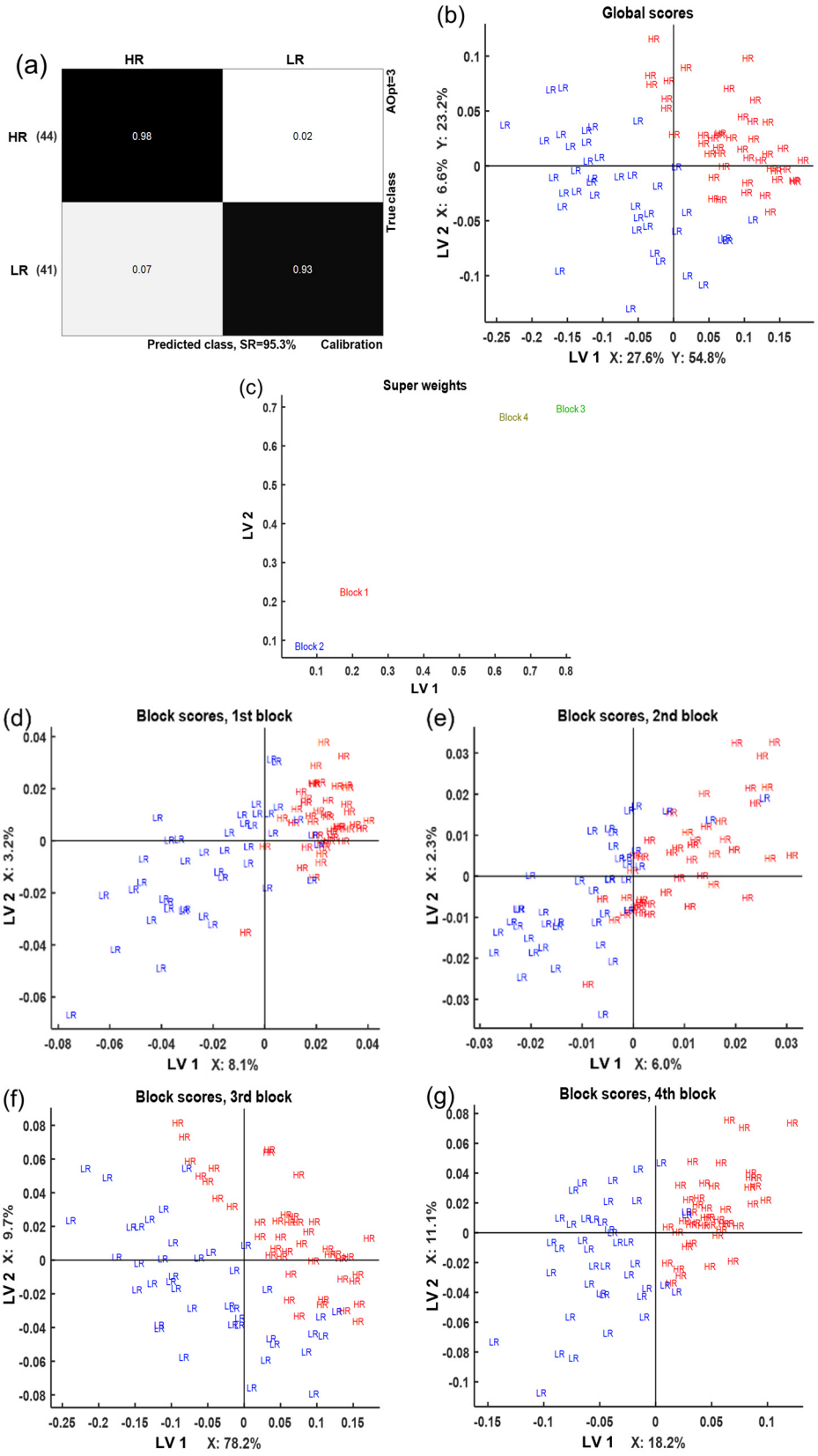

Figure S5. sMBPLSR model parameters for a 4-block (feces metabolome ESI-/ESI+, feces SCFAs, fecal microbiota) analysis classification of pigs fed LR and HR. Confusion matrix (a), global score plot (b), block super weights plot (c) and individual block scores of the fecal metabolome in ESI- (block 1, d), fecal metabolome in ESI+ (block 2, e), SCFAs (block 3, f), microbiota (block 4, g).

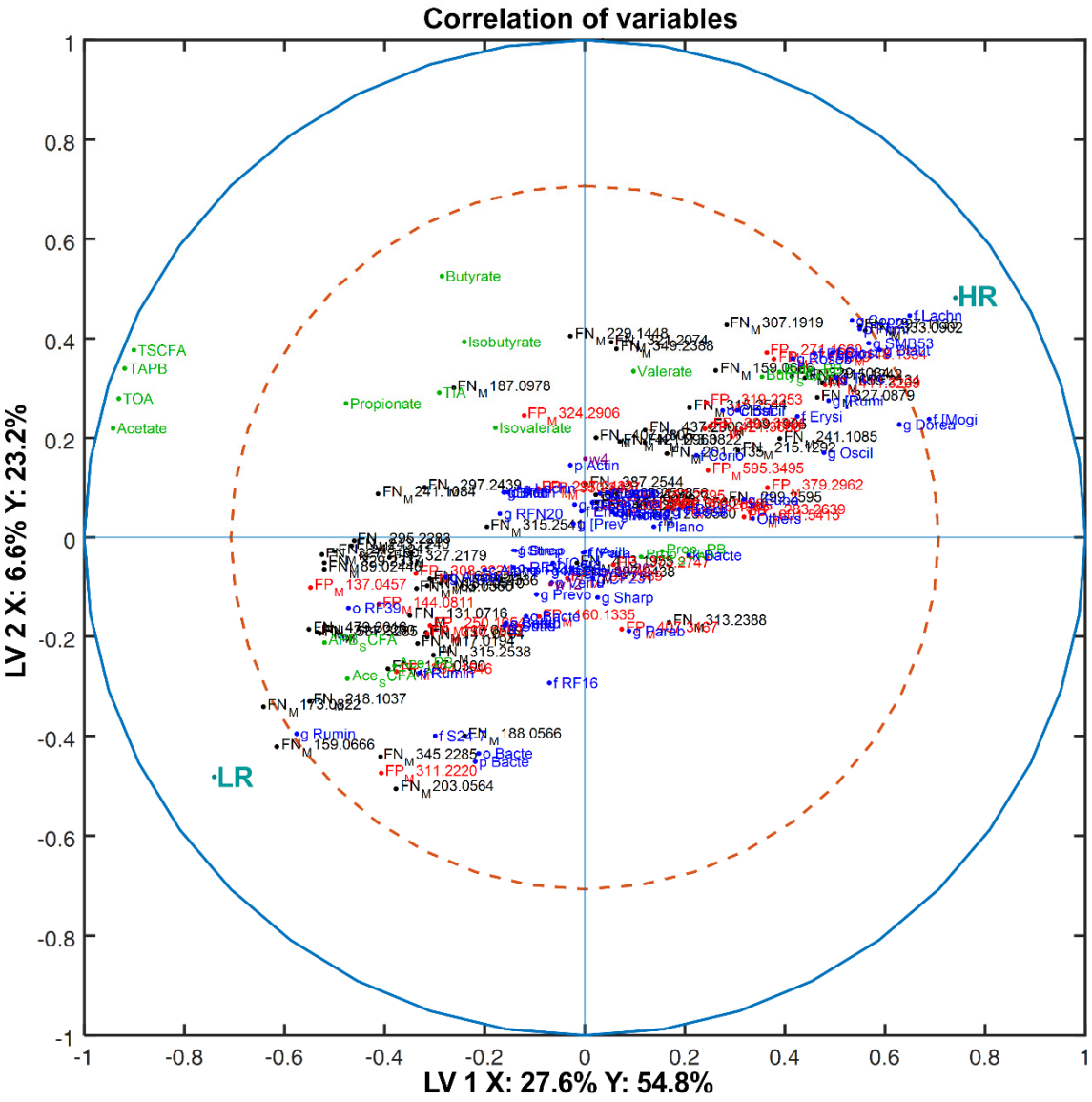

Figure S6. Correlation loading plot for the variables contributing to the separation of the LR and HR diets using scores of a 4-block model: feces metabolomics in ESI+/ESI-, SCFAs, metataxonomics data. The first two components are shown in the plot with the explained variances in sample matrix X and the dietary treatment Y. Variables were colored according to data sets: metataxonomics, blue; SCFAs, green; fecal ESI+ metabolomics, red; fecal ESI- metabolomics, black.

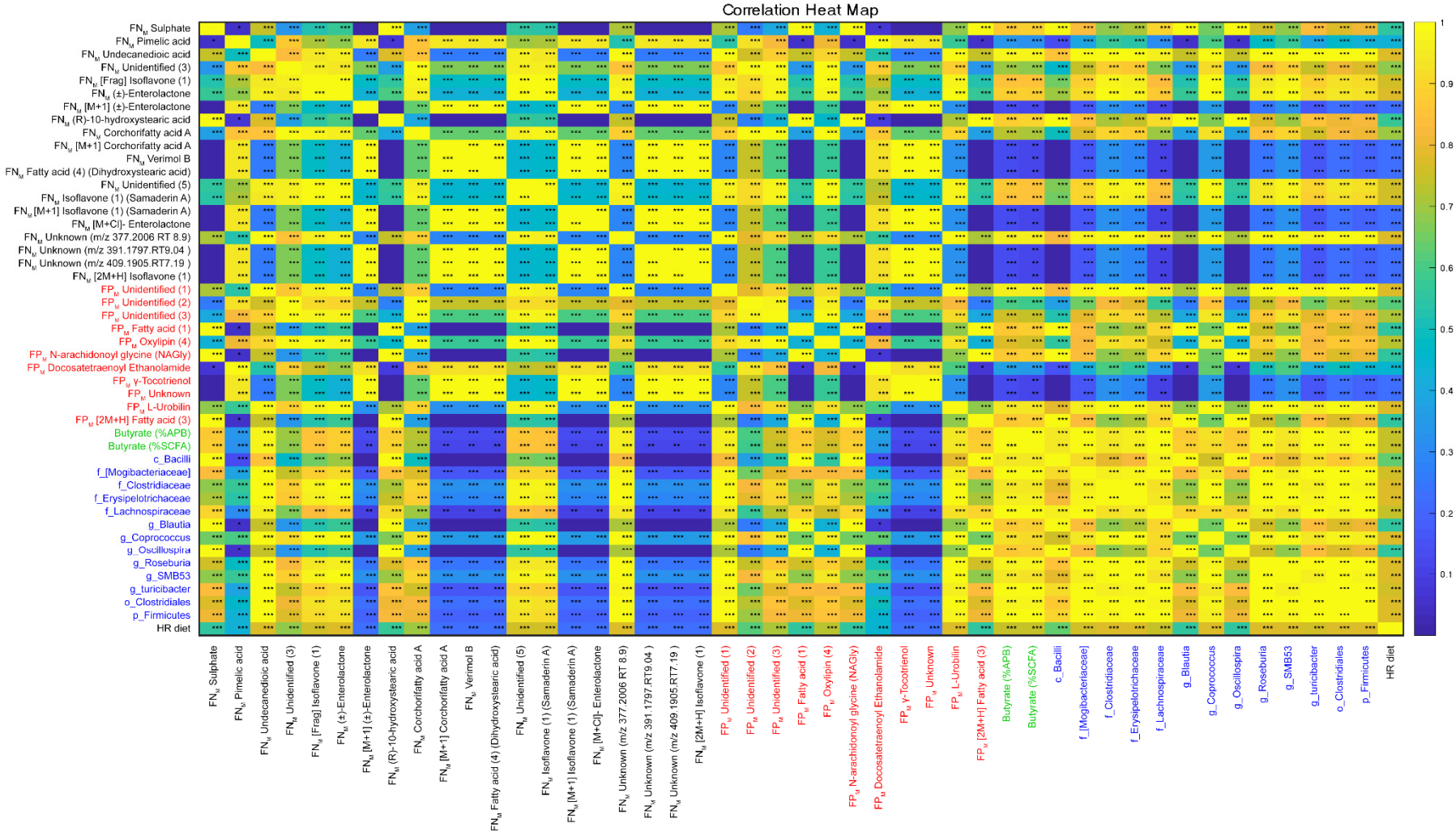

Figure S7. Correlation heat map of variables associated with the HR diet intervention. Variables were colored according to data sets: metataxonomics, blue; SCFAs, green; fecal ESI+ metabolomics, red; fecal ESI- metabolomics, black. Statistical significance value $P < 0.05$ (*); $P < 0.01$ (**), $P < 0.001$ (***).

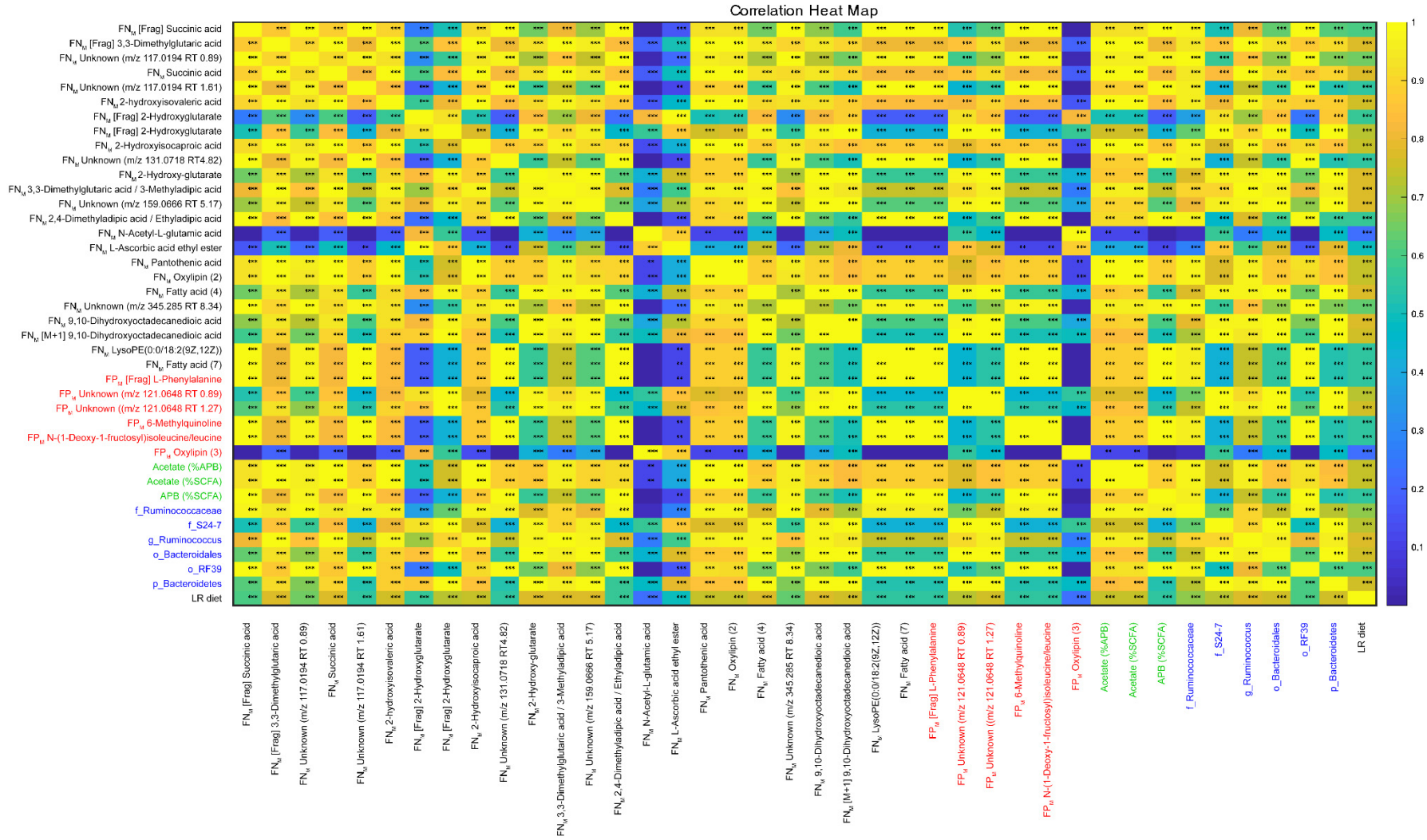

Figure S8. Correlation heat map of variables associated with the LR diet intervention. Variables were colored according to data sets: metataxonomics, blue; SCFAs, green; fecal ESI+ metabolomics, red; fecal ESI- metabolomics, black. Statistical significance value $P < 0.05$ (*); $P < 0.01$ (**), $P < 0.001$ (***).

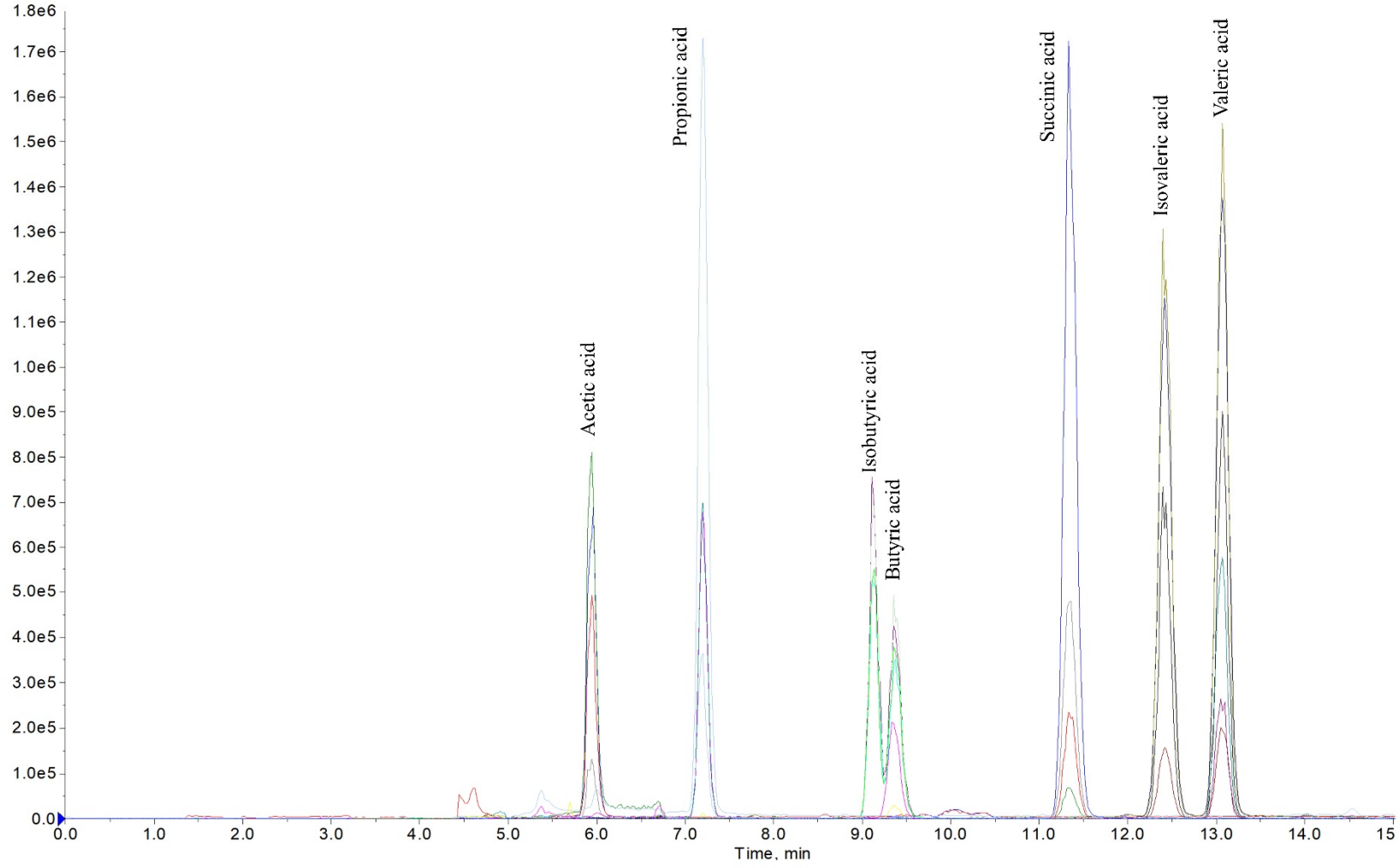

Figure S9. The representative MRM chromatogram of SCFA standards

Table S1. Short-chain fatty acid measured in feces

	HR diet[2]			LR diet[2]			P-value[3]		
	Weeks of intervention			Weeks of intervention			Diet	Week	Week*Diet
Metabolite (mmol/kg)[1]	4	12	20	4	12	20			
Total SCFA	77.2 ± 5.8	67.3 ± 5.8	73.8 ± 6.6	100.1 ± 5.8	100.7 ± 5.6	78.4 ± 7	0.003	0.03	0.02
Total organic acids	78.2 ± 7	67.3 ± 8	74.7 ± 8.8	110.8 ± 7	115.2 ± 7.8	87.9 ± 9	<0.0001	0.08	0.06
Total BCFA	3.4 ± 0.3	3.2 ± 0.3	2.9 ± 0.4	3.1 ± 0.3	3.1 ± 0.3	3.5 ± 0.4	NS	NS	NS
Acetic acid	48.7 ± 5.1	44.3 ± 5.4	45.9 ± 5.3	72 ± 5.1	75.3 ± 5.3	53.8 ± 5.5	<0.0001	0.007	0.007
Propionic acid	8.2 ± 0.8	6.3 ± 0.6	7.2 ± 1.1	9.2 ± 0.8	7.9 ± 0.6	7.4 ± 1.1	NS	0.02	NS
Butyric acid	13.8 ± 1.3	11.1 ± 1.4	14.2 ± 1.6	13.5 ± 1.3	12.6 ± 1.4	11.8 ± 1.6	NS	NS	NS
Valeric acid	2.7 ± 0.3	2.2 ± 0.2	2.4 ± 0.3	2.2 ± 0.3	1.7 ± 0.2	1.7 ± 0.3	0.05	NS	NS
Isovaleric acid	1.5 ± 0.1	1.4 ± 0.1	1.2 ± 0.2	1.2 ± 0.1	1.3 ± 0.1	1.5 ± 0.2	NS	NS	NS
Isobutyric acid	1.8 ± 0.1	1.7 ± 0.1	1.6 ± 0.2	1.7 ± 0.1	1.5 ± 0.1	1.6 ± 0.2	NS	NS	NS
Total APB	71 ± 5.5	61.9 ± 5.4	67.5 ± 6.3	95 ± 5.5	96.1 ± 5.3	73.7 ± 6.7	0.001	0.03	0.02
APB (%TSCFA)	94.7 ± 0.4	95.4 ± 0.4	94.5 ± 0.5	91.9 ± 0.4	91.9 ± 0.4	93 ± 0.5	<0.0001	NS	0.05
Acetate (%TSCFA)	63.9 ± 1.8	66.3 ± 1.7	62.9 ± 2.5	72 ± 1.8	74.8 ± 1.6	69.7 ± 2.6	0.0005	0.03	NS
Propionate (%TSCFA)	10.3 ± 0.6	9.1 ± 0.8	9.4 ± 1	9.1 ± 0.6	8.2 ± 0.7	10 ± 1.1	NS	NS	NS
Butyrate (%TSCFA)	17.8 ± 1.3	17.7 ± 1.4	19 ± 1.6	13.7 ± 1.3	12.5 ± 1.3	14.3 ± 1.6	<0.0001	NS	0.05

[1]Abbreviations: SCFA, short-chain fatty acids; A, acetic acid; P, propionic acid; B, butyric acid; (%TSCFA), proportion in TSCFA; TSCFA, total short-chain fatty acids;

[2]data presented as LSMEANS ± SEM

[3]NS, not significant

Table S2. Short-chain fatty acid measured in fasting plasma

	HR diet[2]			LR diet[2]			P-value[3]		
	Weeks of intervention			Weeks of intervention			Diet	Week	Week*Diet
Metabolite (μM) [1]	4	12	20	4	12	20			
Total SCFA	190.2 ± 14.4	146.4 ± 11.3	140.1 ± 10.5	192.7 ± 14.4	215.8 ± 11.3	185.6 ± 10.2	0.006	0.02	0.009
Total organic acids	215.9 ± 15.6	171.1 ± 12.4	163.5 ± 11.1	222.4 ± 15.6	244.2 ± 12.4	208.7 ± 10.9	0.005	0.006	0.02
Total BCFA	15.9 ± 2.6	10.2 ± 3.1	17.1 ± 3	13.9 ± 2.6	22.2 ± 3.1	25.1 ± 3	0.045	0.03	0.009
Acetic acid	171 ± 13.2	133.7 ± 9.6	120.6 ± 9.3	175.2 ± 13.2	189.7 ± 9.6	156.5 ± 9.1	0.01	0.001	0.020
Propionic acid	1.8 ± 0.2	1.4 ± 0.3	1.6 ± 0.3	2 ± 0.2	2.5 ± 0.3	2.3 ± 0.3	0.007	NS	0.06
Butyric acid	1.6 ± 0.4	1.1 ± 0.3	0.8 ± 0.3	1.7 ± 0.4	1.3 ± 0.3	1.6 ± 0.3	NS	NS	NS
Valeric acid	0.09 ± 0.1	0.08 ± 0.1	0.07 ± 0.1	0.09 ± 0.1	0.11 ± 0.1	0.1 ± 0.1	NS	NS	NS
Succinic acid	25.4 ± 1.9	24.4 ± 1.9	23.3 ± 2.2	29.5 ± 1.9	28.3 ± 1.9	23 ± 2.1	NS	0.05	NS
Isovaleric acid	10.4 ± 2	5.4 ± 2.1	9.8 ± 2.1	7.8 ± 2	13.2 ± 2.1	15.1 ± 2.1	0.08	NS	0.012
Isobutyric acid	5.5 ± 0.8	4.7 ± 1	7.2 ± 1	6.1 ± 0.8	9 ± 1	10 ± 1	0.01	0.0003	0.02
Total APB	174.4 ± 13.5	136.2 ± 9.7	123 ± 9.5	178.9 ± 13.5	193.6 ± 9.7	160.5 ± 9.3	0.01	0.001	0.02
APB (%TSCFA)	91.6 ± 1.4	93.3 ± 1.4	88 ± 2	93.2 ± 1.4	90.2 ± 1.4	86.3 ± 2	NS	0.002	0.04
Acetate (%TSCFA)	89.7 ± 1.4	91.6 ± 1.4	86.4 ± 2.1	91.3 ± 1.4	88.4 ± 1.4	84.1 ± 2.1	NS	0.002	0.04
Propionate (%TSCFA)	0.8 ± 0.2	0.8 ± 0.2	0.5 ± 0.2	0.9 ± 0.2	0.6 ± 0.2	0.9 ± 0.2	NS	NS	0.09
Butyrate (%TSCFA)	0.99 ± 0.1	1 ± 0.2	1.14 ± 0.2	1 ± 0.1	1.2 ± 0.2	1.4 ± 0.2	NS	NS	NS

[1]Abbreviations: SCFA, short-chain fatty acids; A, acetic acid; P, propionic acid; B, butyric acid; (%TSCFA), proportion in TSCFA; TSCFA, total short-chain fatty acids;

[2]data presented as LSMEANS ± SEM

[3]NS, not significant

Table S3. sMBPLSR metabolites discriminating between minipigs fed HR and LR diets in plasma, urine, and feces

LIST NR	IM[1]	MS M/Z[2]	RT[3]	ION	METABOLITE[4]	KEGG[5]	PATHWAY	ID LEVEL	RC HR[6]	RC LR[6]	ANOVA (P-VALUE)
						PLASMA					
1	POS	102.0552	1.11	[Fragment]	Methionine	C00073	Cysteine and methionine metabolism (map00270)	Level 1	3.22	-3.22	0.000
2	POS	102.0916	1.13	[M+H]+	Betaine aldehyde	C00576	Glycine, serine and threonine metabolism (map00260)	Level 2	5.74	-5.74	0.000
3	POS	148.0972	1.13	[M+H]+	4-Hydroxyisoleucine	n/a		Level 1	9.23	-9.23	0.000
4	POS	194.0818	4.15	[M+H]+	Phenylacetylglycine	C05598	Phenylalanine metabolism (map00360)	Level 1	-0.50	0.50	0.000
5	POS	205.0978	3.08	[M+H]+	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	0.25	-0.25	0.076
6	POS	357.2800	7.96	[M+H]+	Fatty acid (1) (Tetracosahexaenoic acid / Docosahexaenoic Acid ethyl ester)	n/a	Fatty acids and conjugates metabolism	Level 3	-2.02	2.02	0.000
7	POS	391.2855	8.29	[M+H]+	Bile acid (1) (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	-0.54	0.54	0.001
8	POS	409.1880	3.08	[2M+H]+	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	0.10	-0.10	0.091
9	POS	466.3181	6.42	Unknown	Unidentified (4)	n/a		Level 4	0.16	-0.16	0.088
10	POS	100.0760	2.33	[M+H]+	δ-Valerolactam	n/a		Level 1	-2.96	2.96	0.752
11	POS	100.1125	2.80	[M+H]+	2-Methylpiperidine	n/a		Level 2	0.12	-0.12	0.316
12	POS	118.0502	1.02	[M+H]+	Acetylglycine	n/a		Level 1	0.02	-0.02	0.581
13	POS	118.0865	0.80	[M+H]+	Betaine	C00719	Glycine, serine and threonine metabolism (map00260)	Level 1	-2.16	2.16	0.283
14	POS	132.0770	0.82	[M+H]+	Creatine	C00300	Glycine, serine and threonine metabolism (map00260)	Level 1	-0.95	0.95	0.348
15	POS	132.1023	1.44	[M+H]+	Leucine	C00123	Valine, leucine and isoleucine degradation (map00280)	Level 1	-0.09	0.09	0.319
16	POS	137.0460	1.10	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	-0.78	0.78	0.480
17	POS	153.0663	1.63	[M+H]+	N1-Methyl-2-pyridone-5-carboxamide	C05842	Nicotinate and nicotinamide metabolism (map00760)	Level 2	0.07	-0.07	0.405
18	POS	165.0550	1.34	[M+NH4]+	Tyrosine (m/z 182.0809)	n/a		Level 1	-0.92	0.92	0.146
19	POS	166.0868	2.35	[M+H]+	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	0.73	-0.73	0.655
20	POS	180.0659	3.79	[M+H]+	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	-0.02	0.02	0.130
21	POS	182.0817	1.34	[M+H]+	Tyrosine	C00082	Tyrosine metabolism (map00350)	Level 1	-0.99	0.99	0.170
22	POS	204.1236	1.03	[M+H]+	Acetylcarnitine	C02571	Insulin resistance (map04931)	Level 1	-0.13	0.13	0.156
23	POS	259.0996	2.62	Unknown	Unidentified (1)	n/a		Level 4	0.03	-0.03	0.916
24	POS	273.1152	3.12	Unknown	Unidentified (2)	n/a		Level 4	0.28	-0.28	0.331

25	POS	387.1814	8.00	Unknown	Unidentified (3)	n/a		Level 3	0.07	-0.07	0.718
26	POS	542.3257	8.84	[M+H]+	LysoPC(20:5)	n/a	Fatty acids and conjugates metabolism	Level 2	0.24	-0.24	0.817
27	NEG	103.0401	1.79	[M-H]-	2-Hydroxybutyrate	C05984	Propanoate metabolism (map00640)	Level 1	-3.01	3.01	0.000
28	NEG	115.0402	2.29	[M-H]-	α-ketoisovaleric acid	C00141	Valine, leucine and isoleucine degradation (map00280)	Level 1	0.41	-0.41	0.008
29	NEG	116.0354	1.05	[M-H]-	L-2-Amino-3-oxobutanoic acid / N-Acetylglycine	C03508	Glycine, serine and threonine metabolism (map00260)	Level 2	-1.53	1.53	0.011
30	NEG	117.0558	2.99	[M-H]-	3-Hydroxyisovalerate	C20827	Valine, leucine and isoleucine degradation (map00280)	Level 2	-0.05	0.05	0.095
31	NEG	128.0354	1.20	[M-H]-	Pyroglutamic acid, N-Acryloylglycine / 4-Oxoproline	C02237	D-Glutamine and D-glutamate metabolism (map00471)	Level 2	-0.32	0.32	0.076
32	NEG	129.0559	3.91	[M-H]-	Ketoleucine	C00233	Valine, leucine and isoleucine degradation (map00280)	Level 1	-1.93	1.93	0.008
33	NEG	129.0559	3.56	[M-H]-	Ketoisoleucine (3-Methyl-2-oxovaleric acid)	C00671	Valine, leucine and isoleucine degradation (map00280)	Level 1	-1.17	1.17	0.022
34	NEG	178.0512	3.80	[M-H]-	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	-1.11	1.11	0.068
35	NEG	187.0074	4.47	[M-H]-	p-Cresol sulfate	n/a		Level 1	-0.76	0.76	0.006
36	NEG	188.0719	6.16	[M-H]-	3-Indolepropionic acid	n/a		Level 2	-0.41	0.41	0.000
37	NEG	192.0668	4.17	[M-H]-	Phenylacetylglycine	C05598	Phenylalanine metabolism (map00360)	Level 1	-3.48	3.48	0.000
38	NEG	203.0828	3.10	[M-H]-	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	-0.14	0.14	0.088
39	NEG	212.0025	3.89	[M-H]-	Indoxylsulfuric acid	n/a		Level 1	1.66	-1.66	0.010
40	NEG	218.1035	2.53	[M-H]-	Pantothenic Acid	C00864	Pantothenate and CoA biosynthesis (map00770)	Level 1	0.58	-0.58	0.016
41	NEG	230.9970	4.41	[M-H]-	Vanillin 4-sulfate	n/a		Level 2	4.81	-4.81	0.003
42	NEG	391.2856	7.99	[M-H]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	-1.06	1.06	0.012
43	NEG	437.2910	7.99	[M+FA]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	-3.49	3.49	0.000
44	NEG	464.3018	6.45	[M-H]-	Bile acid (1) (Glycocholic acid / 3a,7b,12a-Trihydroxyoxocholanyl-Glycine)	n/a	Bile acid metabolism	Level 3	2.80	-2.80	0.098
45	NEG	89.0245	1.13	[M-H]-	Lactic acid	C00256	Pyruvate metabolism (map00620)	Level 2	-0.24	0.24	0.356
46	NEG	130.0875	1.46	[M-H]-	Leucine	C00123	Valine, leucine and isoleucine degradation (map00280)	Level 1	-0.41	0.41	0.199
47	NEG	135.0313	1.12	[M-H]-	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	0.22	-0.22	0.485
48	NEG	145.0144	1.08	[M-H]-	Ketoglutaric acid (oxoglutaric acid)	C00026	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	0.15	-0.15	0.301
49	NEG	146.0459	0.82	[M-H]-	Glutamate	C00025	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	-0.21	0.21	0.260
50	NEG	164.0719	2.34	[M-H]-	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	0.20	-0.20	0.806
51	NEG	180.0667	1.35	[M-H]-	Tyrosine	C00082	Tyrosine metabolism (map00350)	Level 1	0.41	-0.41	0.121
52	NEG	187.0421	1.12	[M-H]-	1-Hydroxy-2-naphthoic acid	n/a		Level 2	0.40	-0.40	0.559

53	NEG	189.0406	1.36	[M-H]-	3-Dehydroquinic acid / 2-Keto-5-epi-valiolone / 4-Hydroxy-4-methyl-2-oxoadipate	n/a		Level 2	0.59	-0.59	0.741
54	NEG	201.0381	1.13	Unknown	Unidentified (1)	n/a		Level 4	0.81	-0.81	0.278
55	NEG	215.0328	0.81	[M+Cl]-	Fructose	C02336	Amino sugar and nucleotide sugar metabolism (map00520)	Level 1	1.19	-1.19	0.978
56	NEG	231.9676	1.13	Unknown	Unidentified (2)	n/a		Level 4	0.71	-0.71	0.281
57	NEG	245.0491	5.51	[M+SO3H]-	Unidentified (3) (m/z 165.0929)	n/a		Level 4	-2.56	2.56	0.774
58	NEG	249.0229	6.26	[M-H]-	4,4'-Sulfonyldiphenol	n/a		Level 2	-1.14	1.14	0.939
59	NEG	255.9599	1.44	[M-H]-	5,7-dichloro-kynurenic acid	n/a		Level 2	-0.08	0.08	0.104
60	NEG	267.0735	1.54	[M-H]-	Inosine	C00294	Purine metabolism (map00230)	Level 1	1.48	-1.48	0.110
61	NEG	283.0825	4.30	[M-H]-	p-Cresol glucuronide	n/a		Level 2	-1.58	1.58	0.184
62	NEG	446.2911	7.08	[M-H2O-H]-	3a,7b,12a-Trihydroxyoxocholanyl-Glycine (m/z 465.3097)	n/a	Bile acid metabolism	Level 2	0.03	-0.03	0.583
63	NEG	448.3068	6.87	[M-H]-	Glycoursodeoxycholic acid	n/a	Bile acid metabolism	Level 1	-0.14	0.14	0.788
64	NEG	453.2857	7.45	[M+FA]-	Hyocholic acid	n/a	Bile acid metabolism	Level 1	0.87	-0.87	0.165
65	NEG	498.2895	6.16	[M-H]-	Bile acid (2) (Tauroursodeoxycholic acid / Taurochenodesoxycholic acid / Taurodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	1.14	-1.14	0.825
66	NEG	514.2841	5.84	[M-H]-	Bile acid (3) (Tauroursocholic acid / Taurohyocholic acid)	n/a	Bile acid metabolism	Level 3	0.13	-0.13	0.215
					URINE						
1	POS	100.0747	2.07	[M+H]+	δ-Valerolactam	n/a		Level 1	0.76	-0.76	0.001
2	POS	116.0694	1.19	[M+H]+	Acetamidopropanal	C18170		Level 2	0.22	-0.22	0.000
3	POS	128.0178	0.58	[M+H]+	2-Acetylthiazole	n/a		Level 2	-0.04	0.04	0.000
4	POS	134.0586	3.48	[M+H]+	6-Hydroxyindole	n/a		Level 2	0.23	-0.23	0.000
5	POS	146.1161	0.91	[M+H]+	N,N-dimethyl-L-Valine	n/a		Level 1	-0.37	0.37	0.000
6	POS	150.0534	2.75	[M+H]+	5,6-Dihydroxyindole	C05578	Tyrosine metabolism (map00350)	Level 2	0.18	-0.18	0.000
7	POS	160.0952	3.04	[M+H]+	Acetyl-DL-Valine	n/a		Level 1	-0.04	0.04	0.033
8	POS	170.0582	4.76	Unknown	Unidentified (1)	n/a		Level 4	-2.83	2.83	0.000
9	POS	170.0583	5.37	Unknown	Unidentified (2)	n/a		Level 4	-0.47	0.47	0.000
10	POS	172.0950	3.76	[M+H]+	N-butanoyl-lhomoserine lactone	n/a		Level 2	-0.51	0.51	0.000
11	POS	229.1523	0.95	[M+H]+	Isoleucylproline / Leucylproline	n/a		Level 2	0.64	-0.64	0.003
12	POS	237.0845	2.95	[M+H]+	Formylkynurenine	C02700	Tryptophan metabolism (map00380)	Level 2	-0.41	0.41	0.015

13	POS	245.0894	4.77	Unknown	Unidentified (4)	n/a		Level 4	-1.70	1.70	0.000
14	POS	399.2088	1.94	Unknown	Unidentified (6)	n/a		Level 4	2.70	-2.70	0.070
15	POS	399.3547	9.22	Unknown	Unidentified (7)	n/a		Level 4	0.33	-0.33	0.094
16	POS	404.1510	3.55	Unknown	Unidentified (8)	n/a		Level 4	0.04	-0.04	0.009
17	POS	413.1334	2.29	Unknown	Glucuronated Unidentified (9)	n/a		Level 4	-3.36	3.36	0.020
18	POS	430.1291	2.66	Unknown	Unidentified (10)	n/a		Level 4	-0.08	0.08	0.001
19	POS	443.1439	2.57	Unknown	Glucuronated Unidentified (12)	n/a		Level 4	0.03	-0.03	0.063
20	POS	479.1525	4.09	[M+H]+	4'-O-methyl-(-)-epicatechin-5-O-beta-glucuronide	n/a		Level 2	-1.80	1.80	0.014
21	POS	504.2545	3.71	Unknown	Glucuronated Unidentified (13)	n/a		Level 4	-1.63	1.63	0.022
22	POS	114.0649	0.74	[M+H]+	Creatinine	C00791	Arginine and proline metabolism (map00330)	Level 1	0.06	-0.06	0.110
23	POS	118.0849	0.72	[M+H]+	Betaine	C00719	Glycine, serine and threonine metabolism (map00260)	Level 1	0.65	-0.65	0.360
24	POS	118.1213	0.77	[M+H]+	2-Diethylaminoethanol	n/a		Level 2	-0.35	0.35	0.275
25	POS	132.0752	0.74	[M+H]+	Creatine	C00300	Glycine, serine and threonine metabolism (map00260)	Level 1	0.01	-0.01	0.319
26	POS	134.1161	0.87	[M+H]+	Bis (2-hydroxypropyl) amine	n/a		Level 2	0.06	-0.06	0.308
27	POS	137.0443	0.94	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	0.54	-0.54	0.852
28	POS	152.0550	0.81	[M+H]+	Guanine	C00242	Purine metabolism (map00230)	Level 1	0.02	-0.02	0.498
29	POS	153.0643	1.42	[M+H]+	N-Methyl-2-pyridone-5-carboxamide (Nudifloramide)	n/a		Level 1	0.22	-0.22	0.235
30	POS	180.0635	3.54	[M+H]+	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	-0.10	0.10	0.311
31	POS	194.0791	3.90	[M+H]+	Phenylacetylglycine	C05598	Phenylalanine metabolism (map00360)	Level 1	-0.81	0.81	0.118
32	POS	224.0717	2.26	Unknown	Unidentified (3)	n/a		Level 4	0.13	-0.13	0.328
33	POS	259.0963	2.43	[M+H]+	Yangonin	C09980	Biosynthesis of phenylpropanoids (map01061)	Level 2	0.34	-0.34	0.164
34	POS	283.1722	2.92	[M+H]+	Hexaethylene glycol	n/a		Level 2	0.32	-0.32	0.151
35	POS	327.1975	3.15	[M+H]+	Heptaethylene glycol	n/a		Level 2	0.06	-0.06	0.172
36	POS	344.2241	3.15	[M+NH4]+	Heptaethylene glycol	n/a		Level 2	0.49	-0.49	0.118
37	POS	388.2501	3.35	[M+H]+	Octaethylene glycol	n/a		Level 2	0.67	-0.67	0.185
38	POS	432.2760	3.52	Unknown	Unidentified (11)	n/a		Level 4	0.19	-0.19	0.265
39	NEG	158.0823	3.04	[M-H]-	2-Methylbutyrylglycine / Isovalerylglycine / Valerylglycine	n/a		Level 2	-0.37	0.37	0.035
40	NEG	181.0507	2.93	[M-H]-	Hydroxyphenyllactic acid	C03672	Tyrosine metabolism (map00350)	Level 1	0.12	-0.12	0.002
41	NEG	189.0404	1.17	[M-H]-	3-Dehydroquinate	C00944	Phenylalanine, tyrosine and tryptophan biosynthesis (map00400)	Level 2	0.19	-0.19	0.019

42	NEG	191.0196	0.84	[M-H]-	Isocitrate	C00311	Citrate cycle (TCA cycle) (map00020)	Level 1	-2.63	2.63	0.000
43	NEG	191.0196	0.96	[M-H]-	Citrate	C00158	Citrate cycle (TCA cycle) (map00020)	Level 1	-2.06	2.06	0.009
44	NEG	192.0666	3.90	[M-H]-	Phenylacetylglycine	C05598	Phenylalanine metabolism (map00360)	Level 1	-2.43	2.43	0.083
45	NEG	201.1132	5.52	[M-H]-	Sebacic acid	C08277	Fatty acids and conjugates metabolism	Level 1	-0.09	0.09	0.028
46	NEG	212.0023	3.58	[M-H]-	Indoxylsulfuric acid	n/a		Level 1	0.57	-0.57	0.002
47	NEG	218.1034	2.32	[M-H]-	Pantothenic Acid	C00864	Pantothenate and CoA biosynthesis (map00770)	Level 1	0.74	-0.74	0.044
48	NEG	227.1289	6.35	[M-H]-	Traumatic acid ((2E)-Dodecenedioic acid)	C16308	alpha-Linolenic acid metabolism (map00592)	Level 2	-0.18	0.18	0.004
49	NEG	229.1446	6.75	[M-H]-	Dodecanedioic acid	C02678	Fatty acids and conjugates metabolism	Level 2	-0.04	0.04	0.006
50	NEG	235.0724	2.96	[M-H]-	Formylkynurenine	C02700	Tryptophan metabolism (map00380)	Level 2	-0.36	0.36	0.013
51	NEG	243.0774	4.76	[M-H]-	Indolylacryloylglycine	n/a		Level 2	-2.17	2.17	0.000
52	NEG	289.1656	4.57	[M-H]-	1-Octen-3-yl glucoside	n/a		Level 2	0.10	-0.10	0.042
53	NEG	293.1759	7.57	[M-H]-	Unidentified (2)	n/a		Level 4	-2.33	2.33	0.077
54	NEG	308.0776	3.47	[M-H]-	Indoxyl glucuronide	n/a		Level 2	1.61	-1.61	0.000
55	NEG	324.0724	2.75	[M-H]-	Dihydroxy-1H-indole glucuronide I	n/a		Level 2	2.43	-2.43	0.000
56	NEG	135.0311	0.94	[M-H]-	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	0.09	-0.09	0.287
57	NEG	178.0509	3.54	[M-H]-	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	0.11	-0.11	0.376
58	NEG	187.0975	4.87	[M-H]-	Azelaic acid	C08261	Fatty acids and conjugates metabolism	Level 1	-1.45	1.45	0.365
59	NEG	194.0459	2.89	[M-H]-	Alpha-Hydroxyhippuric acid / 4-Carboxyphenylglycine / 4-Hydroxyhippuric acid	n/a		Level 2	-0.54	0.54	0.167
60	NEG	199.0975	5.20	[M-H]-	cis-4-Decenedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	-0.06	0.06	0.450
61	NEG	231.9921	3.00	[M+SO3H]-	3-Hydroxyanthranilic acid (m/z 152.0354)	n/a		Level 2	0.84	-0.84	0.651
62	NEG	255.0510	2.48	[M-H]-	Piscidic acid	n/a		Level 2	0.49	-0.49	0.957
63	NEG	261.0435	3.36	Unknown	Unidentified (1)	n/a		Level 4	0.19	-0.19	0.324
64	NEG	269.0666	3.27	[M-H]-	Phenyl glucuronide	n/a		Level 1	-1.80	1.80	0.461
65	NEG	283.0821	4.04	[M-H]-	p-Cresol glucuronide	n/a		Level 2	-0.48	0.48	0.745
66	NEG	345.0978	5.52	Unknown	Glucuronide Unidentified (3) (m/z 169.0659)	n/a		Level 4	0.40	-0.40	0.719
67	NEG	363.1657	4.73	Unknown	Unidentified (4)	n/a		Level 4	0.01	-0.01	0.248
68	NEG	387.2863	7.06	[M+FA]-	Unidentified (5) (m/z 343.2969)	n/a		Level 4	-0.22	0.22	0.152
69	NEG	414.0958	5.06	Unknown	Unidentified (6)	n/a		Level 4	0.04	-0.04	0.356
70	NEG	433.2074	5.29	Unknown	Unidentified (7)	n/a		Level 4	0.30	-0.30	0.311

71	NEG	507.2231	5.45	Unknown	Glucuronide Unidentified (8) (m/z 331.1903)	n/a		Level 4	-0.16	0.16	0.377
72	NEG	567.1713	4.03	[2M+H]-	p-Cresol glucuronide	n/a		Level 2	-0.09	0.09	0.698
					FECES						
1	POS	124.0394	0.88	[M+H]+	Niacin (Nicotinic acid)	C00253	Nicotinate and nicotinamide metabolism (map00760)	Level 1	-0.58	0.58	0.000
2	POS	130.0499	0.72	[M+H]+	Pyrrolidone-5-carboxylic acid (Pyroglutamic acid)	C02237	D-Glutamine and D-glutamate metabolism (map00471)	Level 2	-0.36	0.36	0.002
3	POS	130.1227	0.75	[M+H]+	L-Pipecolic acid	C00408	Lysine degradation (map00310)	Level 1	0.46	-0.46	0.000
4	POS	132.1020	0.91	[M+H]+	N,N-Diethylglycine / beta-Alaninebetaine	n/a		Level 2	0.22	-0.22	0.062
5	POS	137.0457	0.89	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	-0.92	0.92	0.000
6	POS	144.0811	3.56	[M+H]+	Quinaldine	n/a		Level 2	-0.60	0.60	0.000
7	POS	148.1334	0.72	Unknown	Unidentified (1)	n/a		Level 4	2.87	-2.87	0.000
8	POS	153.0407	0.90	[M+H]+	Xanthine	C00385	Purine metabolism (map00230)	Level 1	-0.29	0.29	0.000
9	POS	160.1335	0.79	[M+H]+	Methacholine / Propionylcholine	C07471		Level 2	-0.18	0.18	0.000
10	POS	166.0867	2.15	[M+H]+	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	0.08	-0.08	0.003
11	POS	188.1761	0.65	[M+H]+	N1-Acetylspermidine	C00612		Level 2	-0.26	0.26	0.000
12	POS	220.1185	2.39	[M+H]+	Pantothenic Acid	C00864	Pantothenate and CoA biosynthesis (map00770)	Level 1	-1.01	1.01	0.000
13	POS	231.1134	4.26	[M+H]+	Tetrahydro-1-methyl-beta-carboline-3-carboxylic acid (TRP condensation)	n/a		Level 2	0.35	-0.35	0.000
14	POS	256.2645	15.92	[M+H]+	Palmitic amide	n/a	Fatty acids and conjugates metabolism	Level 2	0.47	-0.47	0.015
15	POS	271.1659	3.50	Unknown	Unidentified (3)	n/a		Level 4	1.57	-1.57	0.000
16	POS	271.1660	3.28	Unknown	Unidentified (3)	n/a		Level 4	2.39	-2.39	0.000
17	POS	279.2327	14.00	[M+H]+	Fatty acid (1) (Pinolenic Acid / Linolenic acid)	C01595	Linoleic acid metabolism (map00591)	Level 3	2.56	-2.56	0.001
18	POS	281.2483	13.18	[M+H]+	Fatty acid (2) (Conjugated Linoleic Acid / Linoelaidic Acid / Linoleic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.36	0.36	0.012
19	POS	283.2639	14.41	[M+H]+	Fatty acid (4) Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41)	C00712	Fatty acid biosynthesis (map00061)	Level 3	2.93	-2.93	0.001
20	POS	283.2641	14.16	[M+H]+	Fatty acid (5) Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.16)	C00712	Fatty acid biosynthesis (map00061)	Level 3	-1.02	1.02	0.007
21	POS	293.2120	12.10	[M+H]+	Oxylipin (1) (9-OxoOTrE)	n/a	PUFA derived oxylipins	Level 3	-0.82	0.82	0.016
22	POS	294.1546	0.89	[M+H]+	N-(1-Deoxy-1-fructosyl)isoleucine/ N-(1-Deoxy-1-fructosyl)leucine	n/a		Level 2	-0.86	0.86	0.000
23	POS	295.0968	6.13	[M+H]+	Isoflavone	n/a		Level 3	0.02	-0.02	0.005
24	POS	297.2430	10.40	[M+H]+	Oxylipin (3) (9-HODE, 13-HODE)	n/a	PUFA derived oxylipins	Level 3	-0.15	0.15	0.000
25	POS	297.2431	11.27	[M+H]+	Oxylipin (4) (9-HODE, 13-HODE)	n/a	PUFA derived oxylipins	Level 3	-0.02	0.02	0.062

26	POS	298.0974	2.90	[M+H]+	5′-Deoxy-5′-(methylthio)adenosine	n/a		Level 2	-0.04	0.04	0.012
27	POS	299.2589	13.41	[M+H]+	Oxylipin (5) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.28	0.28	0.000
28	POS	301.2744	14.41	[M+NH4]+	Fatty acid (6) Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41)	C00712	Fatty acid biosynthesis (map00061)	Level 3	0.58	-0.58	0.001
29	POS	311.2222	10.20	[M+H]+	Oxylipin (8) (9(S)-HpOTrE)	n/a	PUFA derived oxylipins	Level 3	-0.46	0.46	0.000
30	POS	313.2747	13.79	[M+H]+	Ricinoleic Acid methyl ester	n/a		Level 2	-0.39	0.39	0.000
31	POS	315.1963	12.44	[M+H]+	Lys Pro Ala	n/a		Level 2	0.02	-0.02	0.000
32	POS	315.2536	10.47	[M+H]+	Oxylipin (9) ((±)12,13-DiHOME, 9,10-DiHOME)	C14829	Linoleic acid metabolism (map00591)	Level 3	-0.08	0.08	0.000
33	POS	319.2253	13.97	[M+H]+	Oxylipin (10) (HEPE, Oxo-ETE, EpETE)	n/a	PUFA derived oxylipins	Level 3	2.81	-2.81	0.000
34	POS	324.1448	2.69	[M+H]+	Ferulic acid + L-Pipecolic acid	C01494	Phenylpropanoid biosynthesis (map00940)	Level 3	-0.06	0.06	0.000
35	POS	335.2202	13.12	[M+H]+	Oxylipin (14) (HpEPE)	n/a	PUFA derived oxylipins	Level 3	0.18	-0.18	0.000
36	POS	335.2203	13.38	[M+H]+	Oxylipin (15) (HpEPE)	n/a	PUFA derived oxylipins	Level 3	0.04	-0.04	0.002
37	POS	337.2361	12.01	[M+H]+	Oxylipin (16) (DiHETE, HpETE)	n/a	PUFA derived oxylipins	Level 3	0.49	-0.49	0.000
38	POS	347.2432	7.88	[M+H]+	9,10-dihydroxy-Octadecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	-0.19	0.19	0.000
39	POS	351.2151	10.22	[M+Na]+	Oxylipin (17) (9,12,13,TriHODE; m/z 329.2336)	n/a	PUFA derived oxylipins	Level 3	-0.01	0.01	0.001
40	POS	365.3061	14.79	[M+H]+	2-Arachidonyl Glycerol ether	n/a	Fatty acids and conjugates metabolism	Level 2	0.20	-0.20	0.000
41	POS	379.2853	14.19	[M+H]+	Norchenodeoxycholic acid	n/a	Bile acid metabolism	Level 2	0.05	-0.05	0.000
42	POS	379.2962	8.38	Unknown	Unidentified (5)	n/a		Level 4	0.79	-0.79	0.000
43	POS	393.3374	16.23	[M+NH4]+	Docosatetraenoyl Ethanolamide (DEA) (m/z 375.3264)	n/a	Fatty acids and conjugates metabolism	Level 2	1.64	-1.64	0.000
44	POS	407.3167	15.58	[M+H]+	Fatty acid (9) (MG(22:4/0:0/0:0))	n/a	Glycerophospholipid metabolism	Level 3	0.05	-0.05	0.030
45	POS	411.3269	17.92	[M+H]+	γ-Tocotrienol	C14155	Ubiquinone and other terpenoid-quinone biosynthesis (map00130)	Level 2	0.77	-0.77	0.000
46	POS	454.2939	12.39	[M+H]+	PE(16:0/0:0)	n/a	Glycerophospholipid metabolism	Level 2	-0.20	0.20	0.002
47	POS	500.3378	10.70	[M+NH4]+	PC(15:0/0:0) (m/z 482.3287)	C04230	Glycerophospholipid metabolism (map00564)	Level 2	0.37	-0.37	0.000
48	POS	595.3495	6.75	[M+H]+	Urobilin	C05793	Porphyrin and chlorophyll metabolism (map00860)	Level 2	1.41	-1.41	0.004
49	POS	601.5415	14.41	[2M+H]+	Fatty acid (10) Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41)	C00712	Fatty acids and conjugates metabolism	Level 3	1.22	-1.22	0.001
50	POS	100.0759	2.07	[M+H]+	δ-Valerolactam			Level 1	0.04	-0.04	0.661
51	POS	116.0707	0.74	[M+H]+	Proline	C00148	map00330 Arginine and proline metabolism	Level 1	0.11	-0.11	0.405
52	POS	282.2801	16.28	[M+H]+	Fatty acid (3) Oleamide / Elaidamide	C19670	Fatty acids and conjugates metabolism	Level 3	0.08	-0.08	0.631

53	POS	295.2277	13.42	[M+H]+	Oxylipin (2) (13-OxoODE, 9-OxoODE, 9(S)-HOTrE)	n/a	PUFA derived oxylipins	Level 3	0.09	-0.09	0.103
54	POS	299.2589	14.88	[M+H]+	Oxylipin (6) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-1.96	1.96	0.120
55	POS	299.2589	14.64	[M+H]+	Oxylipin (7) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.14	0.14	0.151
56	POS	319.2253	14.21	[M+H]+	Oxylipin (11) (HEPE, Oxo-ETE, EpETE)	n/a	PUFA derived oxylipins	Level 3	-0.55	0.55	0.656
57	POS	321.2409	14.64	[M+Na]+	Oxylipin (12) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.04	0.04	0.104
58	POS	321.2409	14.88	[M+Na]+	Oxylipin (13) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.17	0.17	0.334
59	POS	324.2906	14.36	[M+H]+	Linoleoyl Ethanolamide	n/a	Fatty acids and conjugates metabolism	Level 2	0.08	-0.08	0.200
60	POS	350.3427	17.80	Unknown	Unidentified (4)	n/a		Level 4	0.03	-0.03	0.218
61	POS	357.2793	9.97	[M+H]+	Fatty acid (7) (Docosahexaenoic Acid ethyl ester / Tetracosahexaenoic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	0.00	0.00	0.661
62	POS	357.2796	11.54	[M+H]+	Fatty acid (8) (Docosahexaenoic Acid ethyl ester / Tetracosahexaenoic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.06	0.06	0.755
63	POS	373.2747	13.21	[M+H]+	3-OXO-CHOL-11-ENIC ACID	n/a	Bile acid metabolism	Level 2	0.15	-0.15	0.132
64	POS	381.3117	7.39	[M+NH4]+	Oxylipin (18) (15(S)-HETE Ethanolamide)	n/a	PUFA derived oxylipins	Level 3	-0.02	0.02	0.362
65	POS	391.2851	10.36	[M+H]+	Nutriacholic acid	n/a	Bile acid metabolism	Level 2	-0.30	0.30	0.366
66	POS	407.2798	8.53	[M+H]+	Bile acid (1) (3-Oxocholic acid / 7-ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	-0.03	0.03	0.284
67	POS	505.3389	4.65	Unknown	Unidentified (6)	n/a		Level 4	-0.10	0.10	0.520
68	POS	561.4891	13.67	Unknown	Unidentified (7)	n/a		Level 4	-0.04	0.04	0.904
69	NEG	89.0244	0.89	[M-H]-	Lactic acid	C00256	Pyruvate metabolism (map00620)	Level 2	-0.71	0.71	0.000
70	NEG	117.0194	1.20	[M-H]-	Succinic acid	C00042	Citrate cycle (TCA cycle) (map00020)	Level 1	-2.15	2.15	0.000
71	NEG	117.0559	2.82	[M-H]-	2-Hydroxy-3-methylbutyric acid (2-hydroxyisovaleric acid)	n/a		Level 1	0.50	-0.50	0.000
72	NEG	131.0352	2.34	[M-H]-	Methylsuccinic acid	n/a		Level 2	-0.12	0.12	0.000
73	NEG	131.0716	4.29	[M-H]-	2-Hydroxyisocaproic acid	n/a		Level 1	0.36	-0.36	0.000
74	NEG	147.0300	0.89	[M-H]-	2-Hydroxy-glutarate	C03196	Lysine degradation (map00310)	Level 1	-1.09	1.09	0.000
75	NEG	151.0262	0.89	[M-H]-	Xanthine	C00385	Purine metabolism (map00230)	Level 1	0.41	-0.41	0.003
76	NEG	159.0666	3.86	[M-H]-	Pimelic acid	C02656	Biotin metabolism (map00780)	Level 1	0.51	-0.51	0.000
77	NEG	159.0666	4.63	[M-H]-	3,3-Dimethylglutaric acid / 3-Methyladipic acid			Level 2	-6.89	6.89	0.000

78	NEG	165.0560	5.03	[M-H]-	Phenyllactic acid	n/a		Level 1	-1.63	1.63	0.000
79	NEG	173.0822	5.96	[M-H]-	2,4-Dimethyladipic acid / Ethyladipic acid	n/a		Level 2	-0.43	0.43	0.000
80	NEG	173.0822	4.92	[M-H]-	Suberic acid	C08278	Fatty acids and conjugates metabolism	Level 2	0.01	-0.01	0.029
81	NEG	181.0510	3.13	[M-H]-	Hydroxyphenyllactic acid	C03672		Level 1	0.05	-0.05	0.000
82	NEG	181.0511	3.82	[M-H]-	3,4-Dihydroxyhydrocinnamic acid	C10447	Tyrosine metabolism (map00350)	Level 1	0.85	-0.85	0.048
83	NEG	188.0566	0.89	[M-H]-	N-Acetyl-L-glutamic acid / Glutarylglycine	C00624	Arginine biosynthesis (map00220)	Level 2	-0.03	0.03	0.055
84	NEG	188.0566	1.08	[M-H]-	N-Acetyl-L-glutamic acid / Glutarylglycine	C00624	Arginine biosynthesis (map00220)	Level 2	-0.22	0.22	0.000
85	NEG	201.1135	6.86	[M-H]-	Sebacic acid	C08277	Fatty acids and conjugates metabolism	Level 1	0.35	-0.35	0.004
86	NEG	203.0564	2.75	[M-H]-	L-Ascorbic acid ethyl ester	n/a		Level 2	-0.45	0.45	0.000
87	NEG	215.1292	7.76	[M-H]-	Undecanedioic acid	n/a		Level 2	1.23	-1.23	0.000
88	NEG	218.1037	2.32	[M-H]-	Pantothenic Acid	C00864	Pantothenate and CoA biosynthesis (map00770)	Level 1	-1.62	1.62	0.000
89	NEG	241.1085	4.85	Unknown	Unidentified (2)	n/a		Level 4	0.93	-0.93	0.000
90	NEG	243.1240	6.44	[M-H]-	Fatty acid (3) (4-Oxododecanedioic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.33	0.33	0.000
91	NEG	243.1241	5.92	[M-H]-	Fatty acid (2) (4-Oxododecanedioic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.20	0.20	0.000
92	NEG	289.1660	5.60	[M-H]-	2,2-bis(2-hydroxyethyl)sebacic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.52	-0.52	0.001
93	NEG	293.2125	13.30	[M-H]-	Oxylipin (1) (9-OxoODE)	n/a	PUFA derived oxylipins	Level 3	0.72	-0.72	0.006
94	NEG	295.2283	12.80	[M-H]-	Oxylipin (2) (13-HODE)	n/a	PUFA derived oxylipins	Level 3	2.23	-2.23	0.002
95	NEG	297.1135	8.14	[M-H]-	(±)-Enterolactone	n/a		Level 1	5.31	-5.31	0.000
96	NEG	297.2438	14.80	[M-H]-	Fatty acid (4) (12-oxo-octadecanoic acid / 6R,7S-Epoxy-octadecanoate)	n/a	Fatty acids and conjugates metabolism	Level 3	-2.76	2.76	0.097
97	NEG	299.1867	8.74	[M-H]-	13,14-dihydro-15-keto-tetranor PGF1β	n/a		Level 2	-0.46	0.46	0.076
98	NEG	299.2595	14.30	[M-H]-	(R)-10-hydroxystearic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.56	-0.56	0.001
99	NEG	307.1919	11.70	[M-H]-	Corchorifatty acid A	n/a	Fatty acids and conjugates metabolism	Level 2	3.48	-3.48	0.000
100	NEG	311.2230	12.60	[M-H]-	Oxylipin (3) ((±)13-HpODE / (±)9-HpODE)	n/a	PUFA derived oxylipins	Level 3	-2.20	2.20	0.000
101	NEG	311.2231	11.40	[M-H]-	Oxylipin (4) (9-HpODE / 13-HpODE)	n/a	PUFA derived oxylipins	Level 3	0.35	-0.35	0.051
102	NEG	315.1242	5.78	[M-H]-	Verimol B	n/a		Level 2	0.33	-0.33	0.000
103	NEG	315.2538	9.97	[M-H]-	Fatty acid (5) (9,10-Dihydroxystearic acid)	n/a	Fatty acids and conjugates metabolism	Level 2	-0.41	0.41	0.000
104	NEG	315.2541	10.50	[M-H]-	Fatty acid (6) (12,13-dihydroxy stearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.31	0.31	0.033
105	NEG	315.2544	11.60	[M-H]-	Fatty acid (7) (11,12-dihydroxy stearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	0.54	-0.54	0.000

106	NEG	319.1666	6.54	Unknown	Unidentified (3)	n/a		Level 4	-0.25	0.25	0.023
107	NEG	327.0879	5.66	[M-H]-	Isoflavone (1)	n/a	Fatty acids and conjugates metabolism	Level 3	1.70	-1.70	0.000
108	NEG	327.2179	10.10	[M-H]-	Corchorifatty acid F	n/a	Fatty acids and conjugates metabolism	Level 2	-1.91	1.91	0.000
109	NEG	327.2180	8.96	[M-H]-	Prostaglandin (2,3-Dinor-8-iso prostaglandin F1alpha)	n/a		Level 3	-1.35	1.35	0.000
110	NEG	329.1034	6.06	[M-H]-	Isoflavone (2) (Samaderin A)	n/a		Level 3	5.11	-5.11	0.000
111	NEG	329.2336	9.71	[M-H]-	Oxylipin (6) (9,10,13-TriHOME/11,12,13-TriHOME/5,8,12-TriHOME)	n/a	PUFA derived oxylipins	Level 3	-1.55	1.55	0.000
112	NEG	329.2336	8.79	[M-H]-	Oxylipin (8) (9,10,13-TriHOME/11,12,13-TriHOME/5,8,12-TriHOME)	n/a	PUFA derived oxylipins	Level 3	0.69	-0.69	0.007
113	NEG	329.2337	8.14	[M-H]-	Oxylipin (7) (9,10,13-TriHOME/11,12,13-TriHOME/5,8,12-TriHOME)	n/a	PUFA derived oxylipins	Level 3	-3.07	3.07	0.000
114	NEG	333.0902	8.14	[M+Cl]-	Enterolactone	n/a		Level 1	0.04	-0.04	0.000
115	NEG	345.2285	7.85	[M-H]-	9,10-Dihydroxyoctadecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	-4.63	4.63	0.000
116	NEG	349.2388	12.60	[M-H]-	Tetrahydrocorticosterone	n/a		Level 2	0.12	-0.12	0.000
117	NEG	377.2000	8.68	Unknown	Unidentified (5)	n/a		Level 4	0.07	-0.07	0.000
118	NEG	377.2006	8.90	Unknown	Unidentified (6)	n/a		Level 4	1.40	-1.40	0.000
119	NEG	387.2544	11.10	[M-H]-	Bile acid (2) (7alpha-hydroxy-3-oxochol-4-en-24-oic Acid)	n/a	Bile acid metabolism	Level 2	0.62	-0.62	0.045
120	NEG	391.2857	11.70	[M-H]-	Deoxycholic acid	n/a	Bile acid metabolism	Level 1	-0.14	0.14	0.090
121	NEG	397.1691	14.80	Unknown	Unidentified (7)	n/a		Level 4	-0.31	0.31	0.087
122	NEG	409.1904	7.59	Unknown	Unidentified (8)	n/a		Level 4	0.02	-0.02	0.000
123	NEG	409.1905	7.19	Unknown	Unidentified (9)	n/a		Level 4	0.35	-0.35	0.000
124	NEG	433.2598	11.10	[M+FA]-	Bile acid (8) (7alpha-hydroxy-3-oxochol-4-en-24-oic Acid)	n/a	Bile acid metabolism	Level 3	0.08	-0.08	0.049
125	NEG	453.2860	9.21	[M+FA]-	Bile acid (13) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	-2.61	2.61	0.020
126	NEG	479.3016	11.70	[M-H]-	LysoPE(0:0/18:2(9Z,12Z))	n/a	Fatty acids and conjugates metabolism	Level 2	-0.48	0.48	0.000
127	NEG	523.3128	12.60	Unknown	Unidentified (10)	n/a		Level 4	-0.02	0.02	0.000
128	NEG	537.3285	13.70	[M-H]-	Fatty acid (9) (PG(20:1(11Z)/0:0))	n/a	Fatty acids and conjugates metabolism	Level 2	-0.51	0.51	0.000
129	NEG	659.2134	6.09	[2M+H]-	Isoflavone (3) (Samaderin A)	n/a		Level 3	0.03	-0.03	0.000
130	NEG	129.0560	3.42	[M-H]-	Fatty acid (1) (3-Methyl-2-oxovaleric acid / 2-keto-n-caproic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	0.29	-0.29	0.280
131	NEG	129.0560	3.84	[M-H]-	Ketoleucine	C00233	Valine, leucine and isoleucine degradation (map00280)	Level 1	0.53	-0.53	0.373
132	NEG	146.0459	0.70	[M-H]-	Glutamate	C00025	Alanine, aspartate and glutamate metabolism (map00250)	Level 1	-0.82	0.82	0.724
133	NEG	235.0827	2.30	[M-H]-	Purine deoxyribonucleoside	n/a		Level 2	0.19	-0.19	0.363

134	NEG	241.1084	6.87	Unknown	Unidentified (1)	n/a		Level 4	0.03	-0.03	0.152
135	NEG	297.2439	13.30	[M-H]-	Ricinoleic acid	C08365	Fatty acids and conjugates metabolism	Level 2	-0.37	0.37	0.224
136	NEG	301.1662	5.18	[M-H]-	(2S,3S)-3-hydroxy-2-(9-ketodecyl)glutaric acid	n/a		Level 2	0.10	-0.10	0.242
137	NEG	313.2387	11.00	[M-H]-	Oxylipin (5) (12,13-DiHOME)	n/a	PUFA derived oxylipins	Level 3	0.35	-0.35	0.565
138	NEG	315.2543	11.90	[M-H]-	Fatty acid (8) (11,12-dihydroxy stearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	0.26	-0.26	0.128
139	NEG	375.1850	8.51	Unknown	Unidentified (4)	n/a		Level 4	0.69	-0.69	0.801
140	NEG	375.2909	14.00	[M-H]-	Bile acid (1) (Allolithocholic acid / Lithocholic acid)	n/a	Bile acid metabolism	Level 3	0.00	0.00	0.865
141	NEG	389.2699	10.30	[M-H]-	Bile acid (3) (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	-1.08	1.08	0.304
142	NEG	391.2856	9.92	[M-H]-	Ursodeoxycholic acid	n/a	Bile acid metabolism	Level 1	1.99	-1.99	0.683
143	NEG	407.2804	9.23	[M-H]-	Bile acid (4) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	-0.56	0.56	0.445
144	NEG	407.2805	8.09	[M-H]-	Bile acid (5) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	0.08	-0.08	0.724
145	NEG	407.2805	8.35	[M-H]-	Bile acid (6) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	0.36	-0.36	0.836
146	NEG	421.2963	14.00	[M+FA]-	Bile acid (7) (Allolithocholic acid / Lithocholic acid)	n/a	Bile acid metabolism	Level 3	0.20	-0.20	0.859
147	NEG	435.2753	10.30	[M+FA]-	Bile acid (9) (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	-1.04	1.04	0.317
148	NEG	437.2906	10.70	[M+FA]-	Bile acid (10) (Murocholic acid, m/z 391.2855)	n/a	Bile acid metabolism	Level 3	0.75	-0.75	0.797
149	NEG	437.2910	11.50	[M+FA]-	Chenodeoxycholic acid	n/a	Bile acid metabolism	Level 1	-1.07	1.07	0.841
150	NEG	437.2910	9.92	[M+FA]-	Ursodeoxycholic acid	n/a	Bile acid metabolism	Level 1	3.01	-3.01	0.888
151	NEG	437.2924	12.60	[M+FA]-	Bile acid (11)	n/a	Bile acid metabolism	Level 3	-0.23	0.23	0.664
152	NEG	453.2860	8.40	[M+FA]-	Bile acid (12) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	0.25	-0.25	0.420

1 Ionization mode

2 MS M/Z, mass spectrometry mass-to-charge ratio

3 RT, retention time

4Abbreviations: FA, formic acid; OxoOTre, oxo-octadecatrienoic acid; HODE, hydroxyoctadecadienoic acid; HOME, Hydroxy-octadecenoic acid; HpHOTrE, hydroperoxy-octadecatrienoic acid; DiHOME, dihydroxy-octadecenoic acid; HEPE, hydroxy-eicosapentaenoic acid; HpEPE, hydroperoxy-eicosapentaenoic acid; DiHETE, dihydroxy-eicosatetraenoic acid; HpETE, hydroperoxy-eicosatetraenoic acid; TriHODE, trihydroxy-octadecenoic acid; MG, monoacylglyceride; PE, glycerophosphatidylethanolamine; PC, phosphocholine; OxoODE, oxo-octadecadienoic acid; HETE, hydroxy-eicosatetraenoic acid; HpODE, Hydroperoxy-octadecadienoic acid; TriHOME, trihydroxy-octadecenoic acid; LysoPE, Lysophosphatidylethanolamine; PG, phosphoglycerol; LysoPC, lysophosphatidylcholine.

5 KEGG, Kyoto Encyclopedia of Genes and Genomes; n/a, not available

6 RC HR/LR, regression coefficient for the HR/LR group from the MBPLSR models

Table S4. sMBPLSR metabolites discriminating between different collection time points analyzed in plasma, urine, and feces over a five-month dietary intervention period

LIST NR	IM[1]	MS M/Z[2]	RT[3]	ION	METABOLITE[4]	KEGG[5]	PATHWAY	ID LEVEL	RC[6] WEEK 4	RC[6] WEEK 12	RC[6] WEEK 20	P-VAL W4/W12	P-VAL W12/W20	P-VAL W4/W20
PLASMA														
1	POS	100.0760	2.33	[M+H]+	δ-Valerolactam	n/a		Level 1	-0.34	-1.30	1.65	0.631	0.071	0.383
2	POS	102.0916	1.13	[M+H]+	Betaine aldehyde	C00576	Glycine, serine and threonine metabolism (map00260)	Level 2	0.01	-0.02	0.01	0.968	0.936	0.824
3	POS	104.0709	0.80	[M+H]+	y-aminobutyric acid	C00334	Alanine, aspartate and glutamate metabolism (map00250)	Level 2	-0.32	-0.06	0.38	0.997	0.031	0.024
4	POS	104.1072	0.76	[M+H]+	Choline	C00114	Glycine, serine and threonine metabolism (map00260)	Level 1	0.32	0.06	-0.38	0.103	0.073	0.000
5	POS	118.0865	0.80	[M+H]+	Betaine	C00719	Glycine, serine and threonine metabolism (map00260)	Level 1	1.53	0.79	-2.32	0.124	0.017	0.000
6	POS	130.0502	0.78	[M+H]+	Pyroglutamic acid	C02237	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	-0.07	0.13	-0.06	0.140	0.987	0.184
7	POS	132.0770	0.82	[M+H]+	Creatine	C00300	Glycine, serine and threonine metabolism (map00260)	Level 1	0.23	0.04	-0.27	0.584	0.045	0.003
8	POS	132.1023	1.44	[M+H]+	Leucine	C00123	Valine, leucine and isoleucine degradation (map00280)	Level 1	-1.91	-0.47	2.38	0.077	0.001	0.000
9	POS	137.0460	1.10	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	0.11	-0.10	-0.01	0.251	0.638	0.035
10	POS	148.0972	1.13	[M+H]+	4-Hydroxyisoleucine	n/a		Level 1	0.13	-0.25	0.11	0.939	0.840	0.635
11	POS	150.0587	1.09	[M+H]+	Methionine	C00073	Cysteine and methionine metabolism (map00270)	Level 1	-0.03	0.05	-0.02	0.607	0.969	0.752
12	POS	159.0657	5.22	Unknown	Unidentified (1)	n/a		Level 4	0.11	-0.20	0.09	0.000	0.000	0.478
13	POS	160.0762	2.10	[M+H]+	Indoleacetaldehyde	C00637	Tryptophan metabolism (map00380)	Level 2	0.01	-0.02	0.01	0.994	0.903	0.853
14	POS	166.0868	2.35	[M+H]+	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	0.16	-0.59	0.42	0.649	0.070	0.365
15	POS	180.0659	3.79	[M+H]+	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	0.02	0.00	-0.03	0.019	0.411	0.000
16	POS	205.0978	3.08	[M+H]+	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	-0.79	-0.15	0.94	0.323	0.058	0.001
17	POS	209.1908	8.71	[M+H]+	n,n-Tetradecadienal	n/a	Fatty acids and conjugates metabolism	Level 2	0.26	-0.48	0.22	0.000	0.000	0.620
18	POS	217.1077	4.84	[M+H]+	γ-Glutamyl-γ-aminobutyraldehyde	C15700	Arginine and proline metabolism (map00330)	Level 2	-2.14	1.56	0.57	0.000	0.404	0.000
19	POS	239.0896	4.84	[M+Na]+	γ-Glutamyl-γ-aminobutyraldehyde	C15700	Arginine and proline metabolism (map00330)	Level 2	-1.98	1.30	0.68	0.000	0.224	0.000
20	POS	249.1835	8.72	Unknown	Unidentified (2)			Level 3	0.07	-0.13	0.06	0.000	0.004	0.224
21	POS	255.0635	4.84	[M+K]+	γ-Glutamyl-γ-aminobutyraldehyde	C15700	Arginine and proline metabolism (map00330)	Level 2	-0.28	0.15	0.12	0.000	0.094	0.000

22	POS	269.0886	1.53	[M+H]+	Inosine	C00294	Purine metabolism (map00230)	Level 1	0.05	-0.09	0.04	0.351	0.901	0.163
23	POS	294.1555	1.35	[M+H]+	N-(1-Deoxy-1-fructosyl)isoleucine / N-(1-Deoxy-1-fructosyl)leucine	n/a		Level 2	-0.08	-0.01	0.09	0.492	0.028	0.001
24	POS	305.1418	4.14	Unknown	Unidentified (3)	n/a		Level 4	-0.15	0.27	-0.13	0.012	0.086	0.704
25	POS	357.2800	7.96	[M+H]+	Fatty acid (1) (Tetracosahexaenoic acid / Docosahexaenoic Acid ethyl ester)	n/a	Fatty acids and conjugates metabolism	Level 2	0.09	0.02	-0.10	0.985	0.841	0.743
26	POS	376.2611	8.62	[M+H-H2O]+	Sphingosine-1-phosphate	n/a	Fatty acids and conjugates metabolism	Level 3	-0.05	0.09	-0.04	0.109	0.070	0.977
27	POS	391.2855	8.29	[M+H]+	Bile acid (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 2	0.08	0.02	-0.10	0.455	0.996	0.401
28	POS	455.1899	4.84	[2M+Na]	γ-Glutamyl-γ-aminobutyraldehyde	C15700	Arginine and proline metabolism (map00330)	Level 2	-0.55	0.30	0.24	0.000	0.304	0.000
29	POS	479.1584	4.30	[M+H]+	Glucuronated Cmpd (1) (4'-O-methyl-(-)-epicatechin-5-O-beta-glucuronide)	n/a		Level 2	-0.02	0.00	0.03	0.257	0.014	0.000
30	NEG	103.0401	1.79	[M-H]-	2-Hydroxybutyrate	C05984	Propanoate metabolism (map00640)	Level 1	-0.23	-0.03	0.26	0.308	0.880	0.129
31	NEG	115.0402	2.29	[M-H]-	α-ketoisovaleric acid	C00141	Valine, leucine and isoleucine degradation (map00280)	Level 1	-0.23	-0.03	0.26	0.470	0.182	0.011
32	NEG	116.0717	0.96	[M-H]-	Valine	C00183	Valine, leucine and isoleucine degradation (map00280)	Level 1	-0.12	-0.02	0.14	0.037	0.000	0.000
33	NEG	117.0558	2.99	[M-H]-	a-Hydroxyisovaleric acid	n/a		Level 1	-0.73	-0.10	0.82	0.002	0.104	0.000
34	NEG	128.0354	1.20	[M-H]-	Pyroglutamic acid	C02237	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	-0.95	-0.13	1.07	0.000	0.027	0.000
35	NEG	129.0559	3.56	[M-H]-	Ketoisoleucine (3-Methyl-2-oxovaleric acid)	C00671	Valine, leucine and isoleucine degradation (map00280)	Level 1	-1.00	-0.13	1.13	0.177	0.663	0.025
36	NEG	129.0559	3.91	[M-H]-	Ketoleucine	C00233	Valine, leucine and isoleucine degradation (map00280)	Level 1	-2.35	-0.31	2.66	0.365	0.072	0.002
37	NEG	130.0875	1.46	[M-H]-	Leucine	C00123	Valine, leucine and isoleucine degradation (map00280)	Level 1	-1.17	-0.16	1.32	0.061	0.000	0.000
38	NEG	131.0715	4.08	[M-H]-	2-Hydroxyisocaproic acid	n/a		Level 1	-0.32	-0.04	0.36	0.002	0.004	0.000
39	NEG	133.0143	1.03	[M-H]-	Malic acid	C00149	Citrate cycle (TCA cycle) (map00020)	Level 1	0.12	0.02	-0.13	0.037	0.000	0.000
40	NEG	145.0144	1.08	[M-H]-	Ketoglutaric acid (oxoglutaric acid)	C00026	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	0.85	0.11	-0.96	0.194	0.000	0.000
41	NEG	145.0619	0.80	[M-H]-	Glutamine	C00064	D-Glutamine and D-glutamate metabolism (map00471)	Level 2	-0.12	-0.02	0.13	0.033	0.009	0.000
42	NEG	146.0459	0.82	[M-H]-	Glutamate	C00025	D-Glutamine and D-glutamate metabolism (map00471)	Level 1	-0.06	-0.01	0.07	0.067	0.362	0.001
43	NEG	160.0615	0.84	[M-H]-	2-Aminoadipic acid	C00956	Lysine degradation (map00310)	Level 1	-0.03	0.00	0.03	0.680	0.177	0.027
44	NEG	164.0719	2.34	[M-H]-	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	-0.01	0.00	0.02	1.000	0.043	0.041
45	NEG	178.0512	3.80	[M-H]-	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	1.18	0.16	-1.34	0.312	0.191	0.005
46	NEG	187.0074	4.47	[M-H]-	p-Cresol sulfate	n/a		Level 1	-0.15	-0.02	0.17	0.019	0.507	0.001

47	NEG	199.0978	5.49	[M-H]-	cis-4-Decenedioic acid	n/a		Level 2	0.09	0.01	-0.11	0.559	0.005	0.000
48	NEG	203.0828	3.10	[M-H]-	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	-2.04	-0.27	2.32	0.028	0.069	0.000
49	NEG	212.0025	3.89	[M-H]-	Indoxyl sulfate	n/a		Level 1	-0.66	-0.09	0.75	0.495	0.053	0.002
50	NEG	215.0328	0.81	[M+Cl]-	Fructose	C02336	Amino sugar and nucleotide sugar metabolism (map00520)	Level 1	-0.98	-0.13	1.11	0.118	0.925	0.051
51	NEG	230.9970	4.41	[M-H]-	Vanillin 4-sulfate / p-Hydroxyphenylacetic acid sulphate / 2,4-Dihydroxyacetophenone 5-sulfate	C00755	Phenylalanine metabolism (map00360) or C00755	Level 2	-1.13	-0.15	1.28	0.335	0.071	0.001
52	NEG	245.0491	5.51	[M+SO3H]-	4-Butoxyphenol or 4-n-Butylresorcinol (m/z 165.0929)	n/a		Level 2	-0.26	-0.03	0.29	0.610	1.000	0.615
53	NEG	249.0229	6.26	[M-H]-	4,4'-Sulfonyldiphenol	n/a		Level 2	-4.27	-0.57	4.84	0.000	0.560	0.000
54	NEG	255.9599	1.44	Unknown	Unidentified (1)	n/a		Level 4	-0.56	-0.07	0.63	0.001	0.000	0.000
55	NEG	257.9570	1.44	Unknown	Unidentified (2)	n/a		Level 4	-0.33	-0.04	0.37	0.000	0.000	0.000
56	NEG	276.0171	1.46	[M+SO3H]-	L-Tyrosine / N-Hydroxy-L-phenylalanine (m/z 180.0669)	C00082	Tyrosine metabolism (map00350)	Level 2	-0.15	-0.02	0.17	0.000	0.000	0.000
57	NEG	351.0778	1.47	Unknown	Unidentified (3)	n/a		Level 4	-0.14	-0.02	0.16	0.001	0.000	0.000
58	NEG	361.1062	1.47	[2M+H]-	Tyrosine	C00082	Tyrosine metabolism (map00350)	Level 1	-0.22	-0.03	0.25	0.001	0.000	0.000
59	NEG	391.2856	7.99	[M-H]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	0.13	0.02	-0.15	0.820	0.414	0.780
60	NEG	437.2910	7.99	[M+FA]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	0.49	0.07	-0.56	0.991	0.560	0.480
61	NEG	453.2857	7.45	[M+FA]-	Hyocholic acid	n/a	Bile acid metabolism	Level 1	0.82	0.11	-0.93	0.257	0.982	0.342
						URINE								
1	POS	114.0649	0.74	[M+H]+	Creatinine	C00791	Arginine and proline metabolism (map00330)	Level 1	-0.59	-0.11	0.70	0.006	0.304	0.000
2	POS	118.0849	0.72	[M+H]+	Betaine	C00719	Glycine, serine and threonine metabolism (map00260)	Level 1	0.21	-0.38	0.17	0.275	0.716	0.656
3	POS	118.1213	0.77	[M+H]+	2-Diethylaminoethanol	n/a		Level 2	0.91	0.17	-1.08	0.075	0.027	0.000
4	POS	132.0752	0.74	[M+H]+	Creatine	C00300	Glycine, serine and threonine metabolism (map00260)	Level 1	0.01	-0.02	0.01	0.782	0.943	0.541
5	POS	132.1001	0.79	[M+H]+	N,N-Diethylglycine	n/a		Level 2	-0.01	-0.04	0.04	0.964	0.008	0.014
6	POS	134.1161	0.87	[M+H]+	Bis (2-hydroxypropyl) amine	n/a		Level 2	0.76	0.10	-0.87	0.457	0.111	0.003
7	POS	137.0443	0.94	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	-0.10	-0.02	0.12	0.959	0.205	0.311
8	POS	172.0950	3.76	[M+H]+	N-butanoyl-lhomoserine lactone	n/a		Level 2	-0.02	0.04	-0.02	0.702	0.400	0.077
9	POS	180.0635	3.54	[M+H]+	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	0.83	0.16	-0.98	0.242	0.001	0.000
10	POS	194.0791	3.90	[M+H]+	Phenylacetylglycine	C05598	Phenylalanine metabolism (map00360)	Level 1	-0.14	0.27	-0.12	0.267	0.480	0.869

11	POS	195.0745	1.65	[M+H]+	Aminohippuric acid	n/a		Level 2	0.23	0.04	-0.27	0.070	0.009	0.000
12	POS	206.0789	4.81	[M+H]+	Cinnamoylglycine	n/a		Level 1	0.01	0.00	-0.02	0.104	0.021	0.000
13	POS	229.1523	0.95	[M+H]+	Isoleucylproline / Leucylproline	n/a		Level 2	-0.02	0.00	0.03	0.919	0.145	0.052
14	POS	229.1524	1.39	[M+H]+	Leucylproline / Isoleucylproline	n/a		Level 2	0.13	-0.24	0.11	0.962	0.250	0.367
15	POS	237.0845	2.95	[M+H]+	Formylkynurenine	C02700	Tryptophan metabolism (map00380)	Level 2	0.02	0.00	-0.02	0.984	0.073	0.041
16	POS	253.0979	3.59	Unknown	Unidentified (1)	n/a		Level 4	-0.35	0.64	-0.29	0.609	0.046	0.316
17	POS	253.1521	3.20	Unknown	Unidentified (2)	n/a		Level 4	0.16	0.03	-0.19	0.984	0.023	0.011
18	POS	259.0963	2.43	[M+H]+	Yangonin	C09980	Phytochemical compounds	Level 2	-0.15	-0.03	0.18	0.627	0.945	0.780
19	POS	283.1722	2.92	[M+H]+	Hexaethylene glycol	n/a	Polyethylene glycols	Level 2	0.06	-0.10	0.05	0.975	0.709	0.550
20	POS	291.1384	2.42	Unknown	Unidentified (3)	n/a		Level 4	-0.07	0.14	-0.06	0.206	0.010	0.432
21	POS	327.1975	3.15	[M+H]+	Heptaethylene glycol	n/a	Polyethylene glycols	Level 2	0.02	-0.03	0.01	0.931	0.681	0.428
22	POS	343.2920	7.07	Unknown	Unidentified (4)	n/a		Level 4	-1.54	2.84	-1.30	0.268	0.000	0.043
23	POS	344.2241	3.15	[M+NH4]+	Heptaethylene glycol	n/a	Polyethylene glycols	Level 2	0.12	-0.22	0.10	0.984	0.685	0.556
24	POS	371.3233	8.12	Unknown	Unidentified (5)	n/a		Level 4	-1.83	3.36	-1.54	0.073	0.004	0.568
25	POS	388.2501	3.35	[M+H]+	Octaethylene glycol	n/a	Polyethylene glycols	Level 2	0.19	-0.35	0.16	0.948	0.748	0.525
26	POS	399.2088	1.94	Unknown	Unidentified (6)	n/a		Level 4	-0.33	-0.22	0.55	0.603	0.994	0.621
27	POS	399.3547	9.22	Unknown	Unidentified (7)	n/a		Level 4	-1.51	2.79	-1.27	0.102	0.016	0.780
28	POS	413.1334	2.29	[M+H]+	Glucuronated unidentified (8) (m/z 237.1060)	n/a		Level 4	-0.74	1.36	-0.62	0.700	0.142	0.522
29	POS	413.1335	2.63	[M+H]+	Glucuronated unidentified (9) (m/z 237.1060)	n/a		Level 4	-0.44	0.81	-0.37	0.675	0.074	0.363
30	POS	418.2605	3.15	[M+NH4]+	Unidentified (10) (m/z 401.2397)	n/a		Level 4	-0.01	0.02	-0.01	0.587	0.005	0.063
31	POS	443.1439	2.57	[M+H]+	Glucuronated unidentified (11)	n/a		Level 4	-0.34	0.63	-0.29	0.644	0.164	0.630
32	POS	476.3019	3.67	Unknown	Unidentified (12)	n/a		Level 4	0.07	-0.12	0.06	0.830	0.966	0.649
33	POS	479.1525	4.09	[M+H]+	4'-O-methyl-(-)-epicatechin-5-O-beta-glucuronide	n/a		Level 2	-0.02	0.04	-0.02	0.723	0.497	0.942
34	POS	504.2545	3.71	[M+H]+	Glucuronated unidentified (13)	n/a		Level 4	-0.22	0.40	-0.18	0.727	0.311	0.773
35	POS	685.5773	7.06	[2M+H]+	Unidentified (14) (m/z 343.2962)	n/a		Level 4	-0.46	0.84	-0.38	0.354	0.281	0.997
36	NEG	158.0823	3.04	[M-H]-	5-Acetamidopentanoate	C03087	Lysine degradation (map00310)	Level 2	0.20	0.03	-0.23	0.547	0.227	0.016
37	NEG	173.0819	4.18	[M-H]-	Suberic acid	C08278	Fatty acids and conjugates metabolism	Level 2	0.07	0.01	-0.08	0.866	0.203	0.059
38	NEG	178.0509	3.54	[M-H]-	Hippuric acid	C01586	Phenylalanine metabolism (map00360)	Level 1	1.49	0.20	-1.69	0.532	0.019	0.000
39	NEG	191.0196	0.84	[M-H]-	Isocitrate	C00311	Citrate cycle (TCA cycle) (map00020)	Level 1	0.02	0.00	-0.03	0.902	0.299	0.118

40	NEG	191.0196	0.96	[M-H]-	Citrate	C00158	Citrate cycle (TCA cycle) (map00020)	Level 1	0.01	0.00	-0.01	0.964	0.267	0.149
41	NEG	193.0618	1.65	[M-H]-	Aminohippuric acid	n/a		Level 2	0.90	0.12	-1.02	0.537	0.020	0.000
42	NEG	194.0459	3.74	[M-H]-	Salicyluric acid (Alpha-Hydroxyhippuric acid)/ Dopaquinone	C00822	Tyrosine metabolism (map00350) or C07588 (salicyluric acid)	Level 2	0.98	0.13	-1.11	0.102	0.000	0.000
43	NEG	199.0975	5.20	[M-H]-	cis-4-Decenedioic acid	n/a		Level 2	0.03	0.00	-0.04	0.910	0.238	0.438
44	NEG	204.0666	4.81	[M-H]-	Cinnamoylglycine	n/a		Level 1	0.82	0.11	-0.93	0.155	0.016	0.000
45	NEG	212.0023	3.58	[M-H]-	Indoxylsulfuric acid	n/a		Level 1	-1.08	-0.14	1.22	0.829	0.021	0.003
46	NEG	216.9812	2.65	[M-H]-	5-Sulfosalicylic acid / 3-hydroxybenzoic acid-3-O-sulphate	n/a		Level 2	0.05	0.01	-0.06	0.012	0.039	0.000
47	NEG	230.9968	4.11	[M-H]-	Vanillin 4-sulfate / p-Hydroxyphenylacetic acid sulphate / 2,4-Dihydroxyacetophenone 5-sulfate	C00755	Phenylalanine metabolism (map00360) or C00755	Level 2	0.37	0.05	-0.42	0.461	0.138	0.005
48	NEG	235.0724	2.96	[M-H]-	Formylkynurenine	C02700	Tryptophan metabolism (map00380)	Level 2	0.04	0.00	-0.04	0.992	0.095	0.111
49	NEG	255.0510	2.48	[M-H]-	Piscidic acid	n/a		Level 2	-0.43	-0.06	0.48	0.000	0.075	0.000
50	NEG	313.0565	2.60	[M-H]-	1-Salicylate glucuronide / Beta-D-Glucopyranuronic acid	n/a		Level 2	0.63	0.08	-0.71	0.003	0.000	0.000
51	NEG	327.0721	3.54	[M-H]-	Glucuronide - Vanillin/4-Hydroxy-3-methylbenzoic acid/Anisic acid	C00755	Phenylalanine metabolism (map00360) or C00755	Level 2	0.47	0.06	-0.54	0.269	0.004	0.000
52	NEG	345.0978	5.52	[M-H]-	Glucuronide Unidentified (m/z 169.0659)	n/a		Level 4	-0.05	-0.01	0.05	0.000	0.700	0.000
53	NEG	354.0829	2.80	[M-H]-	Hippuric acid glucuronide	C01586	Phenylalanine metabolism (map00360)	Level 2	0.19	0.03	-0.22	0.013	0.001	0.000
54	NEG	627.1196	2.60	[2M+H]-	1-Salicylate glucuronide / Beta-D-Glucopyranuronic acid	n/a		Level 2	0.35	0.05	-0.39	0.002	0.000	0.000
						FECES								
1	POS	100.0759	2.07	[M+H]+	δ-Valerolactam	n/a		Level 1	0.27	-0.49	0.22	0.302	0.707	0.064
2	POS	130.0865	0.8	[M+H]+	Pipecolic acid	C00408	Lysine degradation (map00310)	Level 2	0.14	-0.08	-0.07	0.035	0.847	0.008
3	POS	132.102	0.91	[M+H]+	N,N-Diethylglycine / beta-Alaninebetaine	n/a		Level 2	-0.06	0.12	-0.05	0.572	0.441	0.975
4	POS	166.0867	2.15	[M+H]+	Phenylalanine	C00079	Phenylalanine metabolism (map00360)	Level 1	-0.02	0.04	-0.02	0.938	0.437	0.648
5	POS	205.0977	3.11	[M+H]+	Tryptophan	C00078	Tryptophan metabolism (map00380)	Level 1	-0.06	0.10	-0.05	0.617	0.290	0.834
6	POS	256.2645	15.92	[M+H]+	Palmitic amide	n/a	Fatty acids and conjugates metabolism	Level 2	-0.30	0.51	-0.21	0.000	0.817	0.000
7	POS	276.1966	11.61	Unknown	Unidentified (1)	n/a		Level 4	-0.08	-0.01	0.09	0.000	0.000	0.000
8	POS	280.1394	0.82	[M+H]+	N-(1-Deoxy-1-fructosyl)valine	n/a		Level 2	-0.01	0.02	-0.01	0.959	0.562	0.734
9	POS	282.2801	16.28	[M+H]+	Fatty acid (1) (Oleamide / Elaidamide)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.41	0.49	-0.08	0.000	0.917	0.000

10	POS	283.2639	14.41	[M+H]+	Fatty acid (2) (Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41))	n/a	Fatty acids and conjugates metabolism	Level 3	-0.11	0.08	0.02	0.228	0.666	0.036
11	POS	284.2957	17.64	[M+H]+	Stearamide	C13846	Fatty acids and conjugates metabolism	Level 2	-0.10	0.19	-0.09	0.001	0.650	0.009
12	POS	293.212	12.1	[M+H]+	Oxylipins (1) (9-OxoOTrE)	n/a	PUFA derived oxylipins	Level 3	-0.08	-0.02	0.10	0.617	0.293	0.043
13	POS	294.1546	0.89	[M+H]+	N-(1-Deoxy-1-fructosyl)isoleucine/ N-(1-Deoxy-1-fructosyl)leucine	n/a		Level 2	-0.16	0.29	-0.13	0.978	0.596	0.473
14	POS	295.2277	13.42	[M+H]+	Oxylipin (2) (13-OxoODE, 9-OxoODE, 9(S)-HOTrE)	n/a	PUFA derived oxylipins	Level 3	-0.41	0.12	0.29	0.151	0.819	0.039
15	POS	297.2433	14.17	[M+H]+	Oxylipin (3) (9(R)-HODE)	n/a	PUFA derived oxylipins	Level 3	-0.20	0.37	-0.17	0.626	0.872	0.906
16	POS	299.2589	14.88	[M+H]+	Oxylipin (4) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.03	0.00	0.03	0.377	0.241	0.011
17	POS	319.2253	13.97	[M+H]+	Oxylipin (5) (HEPE, Oxo-ETE, EpETE)	n/a	PUFA derived oxylipins	Level 3	-0.27	0.16	0.11	0.071	0.974	0.042
18	POS	321.1812	6.58	Unknown	Unidentified (2)	n/a		Level 4	-0.12	-0.02	0.14	0.021	0.001	0.000
19	POS	391.2851	10.1	[M+H]+	Bile acid (1) (12-Ketodeoxycholic acid / Nutriacholic acid)	n/a	Bile acid metabolism	Level 3	-0.08	0.15	-0.07	0.604	0.958	0.434
20	POS	393.3374	16.23	[M+NH4]+	Docosatetraenoyl Ethanolamide (m/z 375.3264)	n/a		Level 2	-0.07	-0.01	0.08	0.350	0.556	0.045
21	POS	561.4891	13.67	Unknown	Unidentified (3)	n/a		Level 4	0.00	0.00	0.00	0.593	0.787	0.946
22	POS	595.3495	6.75	[M+H]+	Urobilin	C05793	Porphyrin and chlorophyll metabolism (map00860)	Level 2	-0.43	-1.17	1.60	0.362	0.004	0.000
23	POS	611.3444	6.31	[M+NH4]+	Urobilinogen	C05790	Porphyrin and chlorophyll metabolism (map00860)	Level 2	-0.11	-0.12	0.22	0.442	0.000	0.000
24	NEG	181.0511	3.82	[M-H]-	3,4-Dihydroxyhydrocinnamic acid	C10447	Tyrosine metabolism (map00350)	Level 1	-0.01	0.00	0.01	0.700	0.692	1.000
25	NEG	297.2439	13.38	[M-H]-	Ricinoleic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.99	0.13	-1.12	0.449	0.001	0.000
26	NEG	299.2595	14.36	[M-H]-	(R)-10-hydroxystearic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.11	0.01	-0.13	0.989	0.721	0.633
27	NEG	315.2543	11.93	[M-H]-	11,12-DHSA (11,12-dihydroxystearic acid) / isomer	n/a	Fatty acids and conjugates metabolism	Level 2	0.02	0.00	-0.02	0.193	0.040	0.000
28	NEG	319.1666	6.54	[M-H]-	Unidentified (1)	n/a		Level 4	-0.27	-0.04	0.30	0.055	0.001	0.000
29	NEG	345.2285	7.85	[M-H]-	9,10-Dihydroxyoctadecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.02	0.00	-0.02	0.698	0.966	0.540
30	NEG	385.1442	5.75	[M-H]-	Unidentified (2)	n/a		Level 4	-0.04	-0.01	0.05	0.012	0.001	0.000
31	NEG	389.2699	10.35	[M-H]-	Bile acid (1) (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	0.02	0.00	-0.02	0.963	0.859	0.712
32	NEG	391.2856	9.92	[M-H]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	-0.32	-0.04	0.36	0.165	0.983	0.116
33	NEG	435.2753	10.31	[M+FA]-	Bile acid (2) (Nutriacholic acid / 12-Ketodeoxycholic acid)	n/a	Bile acid metabolism	Level 3	0.38	0.05	-0.43	0.980	0.960	0.888
34	NEG	437.291	9.92	[M+FA]-	Ursodeoxycholic acid	C07880	Secondary bile acid biosynthesis (map00121)	Level 1	-0.12	-0.02	0.13	0.185	0.997	0.211

35	NEG	593.3347	6.7	[M-H]-	Urobilin	C05793	Porphyrin and chlorophyll metabolism (map00860)	Level 2	-0.17	-0.02	0.19	0.525	0.001	0.000

1 Ionization mode

2 MS M/Z, mass spectrometry mass-to-charge ratio

3 RT, retention time

4Abbreviations: FA, formic acid; OxoOTre, oxo-octadecatrienoic acid; OxoODE, oxo-octadecadienoic acid; HOTrE, hydroxy-octadecatrienoic acid; HODE, hydroxyoctadecadienoic acid; HOME, Hydroxy-octadecenoic acid; HEPE, hydroxy-eicosapentaenoic acid; Oxo-ETE, oxo-eicosatetraenoic acid; EpETE, epoxy-eicosatetraenoic acid.

5 KEGG, Kyoto Encyclopedia of Genes and Genomes; n/a, not available

6 RC Week 4/RC week 12/RC week 20, regression coefficient for the weeks 4, 12, and 20 from the sMBPLSR models

Table S5. sMBPLSR metabolites discriminating between minipigs fed HR and LR diets in the fecal metabolome

LIST NR	IM[1]	MS M/Z[2]	RT[3]	ION	METABOLITE[4]	KEGG[5]	PATHWAY	ID LEVEL	RC[6] HR	RC[6] LR	P-VAL ANOVA
1	POS	137.0457	0.89	[M+H]+	Hypoxanthine	C00262	Purine metabolism (map00230)	Level 1	0.00	0.00	0.000
2	POS	144.0811	3.56	[M+H]+	6-Methylquinoline / quinaldine / 2-Naphthylamine	n/a		Level 2	-0.05	0.05	0.000
3	POS	148.1334	0.72	Unknown	Unidentified (1)	n/a		Level 4	0.23	-0.23	0.000
4	POS	160.1335	0.79	[M+H]+	Methacholine / Propionylcholine	n/a		Level 2	-0.04	0.04	0.000
5	POS	250.1653	2.09	[M+NH4]+	Isobutyryl-L-carnitine/Butyryl-L-carnitine (m/z 232.1548)	n/a	Fatty acids and conjugates metabolism	Level 2	0.03	-0.03	0.000
6	POS	250.1654	1.70	[M+NH4]+	Isobutyryl-L-carnitine/Butyryl-L-carnitine (m/z 232.1548)	n/a	Fatty acids and conjugates metabolism	Level 2	0.01	-0.01	0.000
7	POS	271.1659	3.50	Unknown	Unidentified (2)	n/a		Level 4	0.07	-0.07	0.000
8	POS	271.1660	3.28	Unknown	Unidentified (3)	n/a		Level 4	0.19	-0.19	0.000
9	POS	283.2639	14.41	[M+H]+	Fatty acid (1) (Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41))	n/a	Fatty acids and conjugates metabolism	Level 3	0.10	-0.10	0.001
10	POS	294.1546	0.89	[M+H]+	N-(1-Deoxy-1-fructosyl)isoleucine/ N-(1-Deoxy-1-fructosyl)leucine	n/a		Level 2	-0.01	0.01	0.000
11	POS	297.2433	14.17	[M+H]+	Oxylipin (1) (HODE)	n/a	PUFA derived oxylipins	Level 3	0.00	0.00	0.101
12	POS	299.2589	14.88	[M+H]+	Oxylipin (2) (HOME, 13-oxo-octadecanoic acid, 12-oxo-octadecanoic acid)	n/a	PUFA derived oxylipins	Level 3	-0.23	0.23	0.120
13	POS	311.2220	7.88	[M+H]+	Oxylipin (3) (13S-HpOTrE(gamma)/13(S)-HpOTrE)	n/a	PUFA derived oxylipins	Level 3	-0.01	0.01	0.000
14	POS	315.1963	12.44	[M+H]+	Lys Pro Ala	n/a		Level 2	0.08	-0.08	0.000
15	POS	319.2253	13.97	[M+H]+	Oxylipin (4) (HEPE, Oxo-ETE, EpETE)	n/a	PUFA derived oxylipins	Level 3	0.35	-0.35	0.000
16	POS	324.2906	14.36	[M+H]+	Linoleoyl Ethanolamide	n/a	Fatty acids and conjugates metabolism	Level 2	0.03	-0.03	0.200
17	POS	350.3427	17.80	Unknown	Unidentified (4)	n/a		Level 4	0.00	0.00	0.218
18	POS	357.2795	9.71	[M+H]+	Docosahexaenoic Acid ethyl ester / THA	n/a	Fatty acids and conjugates metabolism	Level 3	-0.06	0.06	0.574
19	POS	373.2747	13.21	[M+H]+	Bile acid (1) (3-OXO-CHOL-11-ENIC ACID)	n/a	Bile acid metabolism	Level 3	0.12	-0.12	0.132
20	POS	379.2853	14.19	[M+H]+	Norchenodeoxycholic acid	n/a	Bile acid metabolism	Level 2	0.04	-0.04	0.000
21	POS	379.2962	8.38	[M+NH4]	N-arachidonoyl glycine (NAGly)	n/a	Fatty acids and conjugates metabolism	Level 2	0.00	0.00	0.000
22	POS	389.2695	11.15	[M+H]+	Bile acid (2) (6β-Hydroxy-3-oxochol-4-en-24-oic Acid)	n/a	Bile acid metabolism	Level 3	0.05	-0.05	0.058
23	POS	393.3374	16.23	[M+NH4]	Docosatetraenoyl Ethanolamide (m/z 375.3264)	n/a	Fatty acids and conjugates metabolism	Level 2	0.15	-0.15	0.000

24	POS	407.3167	15.58	[M+H]+	Fatty acids (2) (MG(22:4/0:0/0:0))	n/a	Fatty acids and conjugates metabolism	Level 3	0.05	-0.05	0.030
25	POS	411.3269	17.92	[M+H]+	γ-Tocotrienol	C14155	Ubiquinone and other terpenoid-quinone biosynthesis (map00130)	Level 2	0.00	0.00	0.000
26	POS	595.3495	6.75	[M+H]+	L-Urobilin	C05793	Porphyrin and chlorophyll metabolism (map00860)	Level 2	0.33	-0.33	0.004
27	POS	601.5415	14.41	[2M+H]+	Fatty acid (3) (Oleic Acid, Elaidic Acid, Vaccenic acid (RT14.41))	n/a	Fatty acids and conjugates metabolism	Level 3	0.01	-0.01	0.001
28	NEG	89.0244	0.89	[M-H]-	Lactic acid	C00256	Pyruvate metabolism (map00620)	Level 2	-0.24	0.24	0.000
29	NEG	117.0194	1.20	[M-H]-	Succinic acid	C00042	Citrate cycle (TCA cycle) (map00020)	Level 1	-0.44	0.44	0.000
30	NEG	117.0559	2.82	[M-H]-	2-hydroxyisovaleric acid (2-Hydroxy-3-methylbutyric acid)	n/a		Level 1	-0.17	0.17	0.000
31	NEG	129.0560	3.42	[M-H]-	3-Methyl-2-oxovaleric acid / 2-keto-n-caproic acid	n/a		Level 3	0.02	-0.02	0.280
32	NEG	129.0560	3.84	[M-H]-	Ketoleucine	C00233	Valine, leucine and isoleucine degradation (map00280)	Level 1	0.05	-0.05	0.373
33	NEG	131.0716	4.29	[M-H]-	2-Hydroxyisocaproic acid	n/a	Leucine metabolism	Level 1	-0.61	0.61	0.000
34	NEG	147.0300	0.89	[M-H]-	2-Hydroxy-glutarate	C03196	Lysine degradation (map00310)	Level 1	-0.40	0.40	0.000
35	NEG	159.0666	4.63	[M-H]-	3,3-Dimethylglutaric acid / 3-Methyladipic acid	n/a		Level 2	-1.10	1.10	0.000
36	NEG	159.0666	3.86	[M-H]-	Pimelic acid	C02656	Biotin metabolism (map00780)	Level 1	0.24	-0.24	0.000
37	NEG	165.0560	5.03	[M-H]-	D-(+)-3-Phenyllactic acid	C05607	Phenylalanine metabolism (map00360)	Level 1	-1.09	1.09	0.000
38	NEG	165.0560	5.63	[M-H]-	Desaminotyrosine / 4-Hydroxyphenyl-2-propionic acid	n/a		Level 2	-0.04	0.04	0.000
39	NEG	173.0822	5.96	[M-H]-	2,4-Dimethyladipic acid / Ethyladipic acid	n/a		Level 2	-0.04	0.04	0.000
40	NEG	173.0822	4.92	[M-H]-	Suberic acid	C08278	Fatty acids and conjugates metabolism	Level 2	0.05	-0.05	0.029
41	NEG	181.0510	3.13	[M-H]-	Hydroxyphenyllactic acid	C03672		Level 1	-0.25	0.25	0.000
42	NEG	187.0978	5.91	[M-H]-	Nonanedioic acid	n/a		Level 2	0.08	-0.08	0.926
43	NEG	188.0566	1.08	[M-H]-	N-Acetyl-L-glutamic acid	C00624	Arginine biosynthesis (map00220)	Level 2	-0.09	0.09	0.000
44	NEG	201.1135	6.86	[M-H]-	Sebacic acid	C08277	Fatty acids and conjugates metabolism	Level 1	0.08	-0.08	0.004
45	NEG	203.0564	2.75	[M-H]-	L-Ascorbic acid ethyl ester	n/a		Level 2	-0.16	0.16	0.000
46	NEG	215.1292	7.76	[M-H]-	Undecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.14	-0.14	0.000
47	NEG	218.1037	2.32	[M-H]-	Pantothenic acid	C00864	Pantothenate and CoA biosynthesis (map00770)	Level 1	-0.19	0.19	0.000
48	NEG	229.1448	8.63	[M-H]-	Dodecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.14	-0.14	0.006
49	NEG	231.9925	3.20	Unknown	Unidentified (1)	n/a		Level 4	0.09	-0.09	0.005

50	NEG	241.1084	6.87	Unknown	Unidentified (2)	n/a		Level 4	-0.01	0.01	0.152
51	NEG	241.1085	4.85	Unknown	Unidentified (3)	n/a		Level 4	0.16	-0.16	0.000
52	NEG	243.1240	6.44	[M-H]-	Fatty acid (1) (4-Oxododecanedioic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.03	0.03	0.000
53	NEG	243.1241	5.92	[M-H]-	Fatty acid (2) (4-Oxododecanedioic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.06	0.06	0.000
54	NEG	295.2283	12.82	[M-H]-	Oxylipin (1) (13-HODE)	n/a	PUFA derived oxylipins	Level 3	-0.04	0.04	0.002
55	NEG	297.1135	8.14	[M-H]-	(±)-Enterolactone	n/a		Level 1	0.88	-0.88	0.000
56	NEG	297.2438	14.82	[M-H]-	Fatty acid (3) (12-oxo-octadecanoic acid / 6R,7S-Epoxy-octadecanoate)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.07	0.07	0.097
57	NEG	297.2439	13.38	[M-H]-	Ricinoleic acid	n/a	Fatty acids and conjugates metabolism	Level 2	-0.13	0.13	0.224
58	NEG	299.2595	14.36	[M-H]-	(R)-10-hydroxystearic acid	n/a	Fatty acids and conjugates metabolism	Level 2	0.21	-0.21	0.001
59	NEG	307.1919	11.79	[M-H]-	Corchorifatty acid A	n/a	Fatty acids and conjugates metabolism	Level 2	0.54	-0.54	0.000
60	NEG	311.2230	12.60	[M-H]-	Oxylipin (2) ((±)13-HpODE / (±)9-HpODE)	n/a	PUFA derived oxylipins	Level 3	-0.42	0.42	0.000
61	NEG	313.2388	13.49	[M-H]-	Oxylipin (3) (9,10-DHOME / 12,13-DHOME)	n/a	PUFA derived oxylipins	Level 3	0.02	-0.02	0.111
62	NEG	315.1242	5.78	[M-H]-	Verimol B	n/a		Level 2	0.03	-0.03	0.000
63	NEG	315.2538	9.97	[M-H]-	Fatty acid (4) (9,10-Dihydroxystearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.06	0.06	0.000
64	NEG	315.2541	10.50	[M-H]-	Fatty acid (5) (12,13-dihydroxy stearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	-0.18	0.18	0.033
65	NEG	315.2544	11.60	[M-H]-	Fatty acid (6) (11,12-dihydroxy stearic acid)	n/a	Fatty acids and conjugates metabolism	Level 3	0.05	-0.05	0.000
66	NEG	321.2074	11.24	Unknown	Unidentified (4) (possible 7,10,13,16,19-Docosapentaynoic acid)	n/a		Level 4	0.06	-0.06	0.001
67	NEG	327.0879	5.66	Unknown	Unidentified (5) (possible isoflavone)	n/a		Level 4	0.30	-0.30	0.000
68	NEG	327.2179	10.17	[M-H]-	Corchorifatty acid F	n/a	Fatty acids and conjugates metabolism	Level 2	-0.21	0.21	0.000
69	NEG	327.2180	8.96	[M-H]-	Prostaglandin (2,3-Dinor-8-iso prostaglandin F1alpha)	n/a		Level 3	-0.15	0.15	0.000
70	NEG	329.1034	6.06	[M-H]-	Isoflavone (1) (Samaderin A)	n/a		Level 3	0.87	-0.87	0.000
71	NEG	329.2336	9.71	[M-H]-	Oxylipin (4) (9,10,13-TriHOME/11,12,13-TriHOME/5,8,12-TriHOME)	n/a	PUFA derived oxylipins	Level 3	-0.63	0.63	0.000
72	NEG	329.2337	8.14	[M-H]-	Oxylipin (5) (9,10,13-TriHOME/11,12,13-TriHOME/5,8,12-TriHOME)	n/a	PUFA derived oxylipins	Level 3	-0.71	0.71	0.000
73	NEG	333.0902	8.14	[M+Cl]-	Enterolactone	n/a		Level 2	0.01	-0.01	0.000
74	NEG	345.2285	7.85	[M-H]-	9,10-Dihydroxyoctadecanedioic acid	n/a	Fatty acids and conjugates metabolism	Level 2	-1.06	1.06	0.000
75	NEG	349.2388	12.69	[M-H]-	Tetrahydrocorticosterone	n/a		Level 2	0.06	-0.06	0.000

76	NEG	387.2544	11.10	[M-H]-	Bile acid (1) (7alpha-hydroxy-3-oxochol-4-en-24-oic Acid)	n/a	Bile acid metabolism	Level 3	0.65	-0.65	0.045
77	NEG	391.2856	9.92	[M-H]-	Ursodeoxycholic acid	n/a		Level 1	-0.32	0.32	0.683
78	NEG	407.2805	8.35	[M-H]-	Bile acid (2) (Allocholic acid/Hyocholic acid/Muricholic acid/Ursocholic acid)	n/a	Bile acid metabolism	Level 3	-0.09	0.09	0.836
79	NEG	409.1905	7.19	Unknown	Unidentified (6)	n/a		Level 4	0.01	-0.01	0.000
80	NEG	413.1955	9.03	Unknown	Unidentified (7)	n/a		Level 4	-0.13	0.13	0.004
81	NEG	421.2963	14.03	[M+FA]-	Bile acid (3 (Allolithocholic acid / Lithocholic acid)	n/a	Bile acid metabolism	Level 3	-0.02	0.02	0.859
82	NEG	433.2598	11.10	[M+FA]-	Bile acid (4) (7alpha-hydroxy-3-oxochol-4-en-24-oic Acid)	n/a	Bile acid metabolism	Level 3	0.38	-0.38	0.049
83	NEG	437.2906	10.73	[M+FA]-	Bile acid (5) (m/z 391.2855; Murocholic acid / Deoxycholic acid / Chenodeoxycholic Acid)	n/a	Bile acid metabolism	Level 3	-0.06	0.06	0.797
84	NEG	437.2910	9.92	[M+FA]-	Ursodeoxycholic acid	n/a		Level 1	-0.25	0.25	0.888
85	NEG	479.3016	11.72	[M-H]-	LysoPE(0:0/18:2(9Z,12Z))	n/a	Fatty acids and conjugates metabolism	Level 2	-0.01	0.01	0.000
86	NEG	537.3285	13.75	[M-H]-	Fatty acid (7) (PG(20:1(11Z)/0:0))	n/a	Fatty acids and conjugates metabolism	Level 3	-0.05	0.05	0.000
87	NEG	659.2134	6.09	[2M-H]-	Isoflavone (2) (Samaderin A)	n/a		Level 3	0.00	0.00	0.000

1 Ionization mode

2 MS M/Z, mass spectrometry mass-to-charge ratio

3 RT, retention time

4Abbreviations: UI, Unidentified compound; FA, formic acid; HODE, hydroxyoctadecadienoic acid; HOME, Hydroxy-octadecenoic acid; HpHOTrE, hydroperoxy-octadecatrienoic acid; HEPE, hydroxy-eicosapentaenoic acid; Oxo-ETE, oxo-eicosatetraenoic acid; EpETE, epoxy-eicosatetraenoic acid; HpODE, Hydroperoxy-octadecadienoic acid; DiHOME, dihydroxy-octadecenoic acid; TriHOME, trihydroxy-octadecenoic acid; LysoPE, Lysophosphatidylethanolamine; PG, phosphoglycerol;

5 KEGG, Kyoto Encyclopedia of Genes and Genomes; n/a, not available

6 RC HR/LR, regression coefficient for the HR/LR group from the MBPLSR models

Table S6. Feed ingredients

	Diet	
	LR	**HR**
Ingredients, g/kg (as-fed basis)*		
Wheat starch	232.8	232.8
Whole grain wheat (milled)	150	150
Wheat bran (finely milled)	125	125
Wheat gluten	65	65
LT Fishmeal	20	20
HiMaize® 260 (60% resistant starch)	**200**	-
Fructose crystalline (food grade)	-	**200**
Lard 92/15	150	150
Monocalcium phosphate 17/22.7	36.7	36.7
Limestone (39 % Ca)	9.0	9.0
Salt (NaCl)	6.5	6.5
Lysine monohydrochloride	1.7	1.7
Choline chloride (70 %)	1.3	1.3
Vitamin premix **	2.0	2.0

LR, lower-risk diet; HR, high-risk diet

* Formulated to supply 55% energy from carbohydrates, 10% energy from protein and 35% energy from fat

** amount per kg additive: 1000 IE vitamin A, 1000 IE vitamin D3, 31500 mg alpha-tocopherol, 34615,4 mg DL-alphatocopherolacetate, 1050 mg vitamin B1, 1050 mg vitamin B2, 1575 mg vitamin B6, 10,5 mg vitamin B12, 5250 mg Ca-D-pantothenic acid, 10500 mg niacin, 26.25 mg biotin, 1050 mg vitamin K3, 42000 mg Fe as FeSO4, 7500 mg Cu as CuSO4, 21000 mg Mn as MnO.

Table S7. Compound-dependent LC-MS/MS parameters; declustering potential (DP), entrance potential (EP), collision energy (CE), and cell exit potential (CXP).

	Q1 mass	Q3 mass	DP	EP	CE	CXP
Acetic acid quantifier	193.8	151.9	-80	-15	-15	-15
Acetic acid qualifier	193.8	46.0	-80	-15	-50	-15
$^{13}C_2$ acetic acid quantifier	196.0	152.0	-100	-15	-24	-13
$^{13}C_2$ acetic acid qualifier	196.0	121.8	-100	-15	-24	-10
Propionic acid quantifier	208.0	136.9	-20	-10	-24	-9
Propionic acid qualifier	208.0	46.0	-20	-10	-50	-20
$^{13}C_1$ propionic acid quantifier	209.0	137.0	-20	-10	-25	-9
$^{13}C_1$ propionic acid qualifier	209.0	165.1	-20	-10	-18	-11
Isobutyric acid quantifier	221.9	178.9	-100	-2	-18	-15
Isobutyric acid qualifier	221.9	42.0	-60	-2	-70	-19
Butyric acid quantifier	221.9	178.9	-100	-2	-18	-15
Butyric acid qualifier	221.9	42.0	-60	-2	-70	-19
$^{13}C_2$ butyric acid quantifier	224.0	205.8	-100	-10	-20	-12
$^{13}C_2$ butyric acid qualifier	224.0	180.0	-100	-10	-18	-15
Succinic acid quantifier	387.1	234.1	-30	-10	-25	-12
$^{13}C_2$ succinic acid qualifier	387.1	97.8	-30	-10	-47	-10
$^{13}C_2$ succinic acid quantifier	389.1	99.9	-145	-10	-40	-10
Succinic acid qualifier	389.1	236.1	-145	-10	-24	-15
Isovaleric acid quantifier	235.9	137.0	-15	-15	-30	-15
Isovaleric acid qualifier	235.9	46.0	-15	-15	-40	-15
Valeric acid quantifier	235.9	137.0	-15	-15	-30	-15
Valeric acid qualifier	235.9	46.0	-15	-15	-40	-15
$^{13}C_3$ valeric acid quantifier	239.0	136.9	-120	-10	-27	-15
$^{13}C_3$ valeric acid qualifier	239.0	151.8	-120	-10	-24	-12