Table S1. ^{1}H and ^{13}C chemical shifts for metabolites in urine and faces at day 35

Keys	Metabolites	δ ^{1}H (ppm) and multiplicity	$\delta^{13}C$(ppm[a])	Samples
1	n-heptanoate	1.31(m)	30.2	F
2	1,3-dihydroxyacetone	4.42(s),3.57(s)	67.5	F
3	3-hydroxyphenylacetate	3.48(s),6.75(m)，6.81(m),6.89(dd),7.25(t)	47.1,119.4,124.2,132.9	F
4	3-hydroxyphenylpropionate	2.47(t),2.85(t),6.67(m),6.80(m),6.87(m),7.25(m)	—	F
5	5-aminovalerate	1.62(m),1.65(m),2.24(t),3.02(t)	25.6,29.7,39.3,41.4	F
6	acetate	1.92(s)	26.5	F U
7	alanine	1.48(d),3.79(q)	18.3,53.3	F U
8	butyrate	0.90(t),1.56(tq),2.15(t)	42.3，16.1	F U
9	cadaverine	1.48(m),1.72(quin),3.02(t)	25.9,29.3,41.4	F
10	caproate	0.89(t),1.29(m),1.31(m),1.55(m),2.18(t)	16.2,32.6,23.6,29.1,39.5	F
11	choline	3.21(s),3.52(dd),4.07(ddd)	56.9,70.1,58.2	F U
12	creatine	3.04(s),3.93(s)	40.1,56.2	F U
13	formate	8.45(s)	172.1	F U
14	Fumarate	6.52(s)	137.5	F U
15	glutamate	2.06(m),2.12(m),2.36(m),3.75(dd)	—	F
16	glutamine	2.17(m),2.46(m),3.78(t)	29.5,32.9,57.1	F
17	glycerol	3.56(m),3.65(m),3.77(tt)	—	F U
18	glycine	3.57(s)	44.5	F U
19	Hypoxanthine	8.197(s),8.216(s)	145.2,147.5	F
20	lactate	1.33(d),4.11(q)	22.9,71.4	F U
21	Leucine	0.95(t),1.70(m),3.72(m)	23.4,24.3,26.6,56.9	F U
22	malonate	3.12(s)	50.1	F
23	methanol	3.37(s)	51.2	F
24	methionine	2.16(m),2.63(t),3.85(dd)	16.0,31.3,29.4,56.7	F
25	Methylamine	2.61(s)	27.2	F U
26	methylsuccinate	1.10(d),2.13(dd),2.63(m)	20.6,44.4,—	F
27	N-acety-glycoprotein	2.03(s)	24.5	F
28	Oligosaccharides	3.92 (m)	—	F
29	phenylacetate	3.54(s),7.32(m),7.37(m)	47.2,129.6,131.1	F U
30	proline	2.01(m),2.07(m),2.36(m),3.34(dt),3.45(dt),4.13(dd)	25.8,32.1,48.7,48.7,63.5	F
31	Propionate	1.06(t),2.19(q)	12.9,33.3	F
32	pyruvate	2.38(s)	29.5	F U
33	sarcosine	2.70(s),3.60(s)	34.8,53.7	F U

34	succinate	2.41(s)	37.3	F U
35	taurine	3.25(t),3.43(t)	49.5,37.5	F U
36	TMA	2.88 (s)	—	F
37	trimethylamine	2.88(s)	47.4	F U
38	trimethylamine N-oxide	3.26(s)	61.5	U
39	tyrosine	3.06(dd),3.15(dd),3.94(dd),6.91(m),7.20(m)	37.9,37.8,59.4,118.8,133.4	F
40	U1	2.61(s),	—	F
41	uracil	5.81(d),7.54(d)	104.2,146.2	F U
42	uridine	3.81(dd),3.92(dd),4.14(m),4.24(dd),4.36(dd),5.90(d),5.91(d),7.87(d)	—,64.0,69.0,77.3,105.5,92.8,145.4	F
43	valerate	0.90(t),1.31(m),2.18(t)	16.4,23.9,39.6	F
44	xanthine	7.91(s)	144.2	F U
45	α-arabinose	3.82(dd),5.24(d)	—,—,72.3,66.37,93.94	F
46	α-galactose	5.25(d),4.58(d),4.08(m),3.64(dd)	71.7,73.3,72.5,—,95.3	F
47	α-glucose	5.24(d),4.64(d),3.89(dd),3.82(m),3.72(m)3.53(dd)	72.4,74.3,75.4,—,—,75.2,94.9	F U
48	α-ketoglutarate	2.45(t),3.02(t)	33.4,38.3	F
49	α-ketoisocaproate	0.92(d),2.06(m),2.61(d)	—	F
50	α-ketoisovalerate	1.13(d),3.02(m)	18.8	F U
51	β- glucose	3.24(dd),3.46(m),3.49(d),3.75(dd),3.91(dd),4.65(d)	—,—,—,63.26,63.26,98.39	F
52	β-arabinose	3.52(dd),3.67(t),3.85(dd),3.94(m),4.52(d)	—,69.8,70.6,—,99.7	F
53	β-d-xylp	3.24(dd),3.58(t),3.80(m),4.58(d)	—	F
54	β-galactose	3.48(dd),3.65(dd),3.93(m),3.71(m),4.59(d),3.74(m)，	94	F
55	β-xylose	4.58(d)3.24(dd)	99.7	F U
56	2-Hydroxyisobutyrate	1.35(s)	30	U
57	2-Ketoglutarate	2.43(t),3.00(t)	33.4,38.3	F
58	2-ketoisocaproate	0.94(d),2.10(m),2.61(d)	—	F
59	2-Oxoglutarate	2.45(t),3.02(t)	33.2,39.0	F U
60	3-Hydroxyisovalerate	1.26(s),2.34(s)	30.2	U
61	4-Pyridoxate	2.43(s),7.53(s)	20.39,138.78	U
62	Acetoacetate	2.27(s),3.44(s)	32.3,—	U
63	Acetone	2.23(s)	28.2	U
64	Allantoin	5.39(s)	66.5	U
65	asparagine	2.86(m),2.98(m),4.01(dd)	—	F U

66	aspartate	2.68(dd),2.84(dd),3.91(dd)	39.3,39.3,55.1	F U
67	Benzoate	7.49(dd),7.56(t),7.88(d)	131.2,130.0,134.0	U
68	Betaine	3.25(s),3.89(s)	57.0,68.0	U
69	carnitine	2.41(t),3.23(s),3.40(m),4.55(m)	—,57.5,71.6,66.4	U
70	cholesterol	0.84(s)	—	U
71	Citrate	2.53(d),2.69(d)	48.7,48.7	U
72	Creatine phosphate	3.03(s),3.94(s)	40.1,56.2	F U
73	Creatinine	3.03(s),4.05(s)	33.5,58.4	U
74	Dimethyl sulfone	3.14(s)	—	U
75	Dimethylamine	2.50(s)	36.8	F U
76	DMSO2	3.15(s)	—	U
77	Ethanol	1.18(t),3.66(q)	19.5,—	U
78	Galactarate	3.95(s),4.26(s)	—	U
79	Galactonate	4.24(d)	—	U
80	Glycerophosphocholine	3.23(s),3.69(m)3.92(m),4.32(dd)	55.9,68.1,73.9,64.4	U
81	Glycolate	3.94(s)	64.2	U
82	Glycylproline	3.94(s),1.97(d)	49.0,42.7	U
83	Guanidoacetate	3.78(s)	47.5	U
84	Hippurate	3.96(d),7.54(none),7.64(tt),7.83(d),8.53(s)	46.1,131.5,134.9,129.9	U
85	Indoxyl sulfate	7.21(m),7.28(m),7.37(s),7.51(m),7.71(m)	—	U
86	Lactose	5.22(d),4.44(d),3.28(t)	76.2,—,—,—,64.6,63.5,—,104.6,98.9,93.9	U
87	Methylguanidine	2.83(s),3.35(s)	29.47,—	U
88	N,N-dimethylglycine	2.92(s),3.71(s)	46.1,62.2	U
89	N6,N6,N6-trimethyllysine	3.11(s)	47.14	U
90	N-Acetylglycine	2.04(s),3.76(d),7.99(s)	24.2,46.1,—	U
91	N-Methylhydantoin	2.93(s),4.09(s)	—	U
92	N-Nitrosodimethylamine	3.16(s),3.80（s）	32.2,39.8	U
93	p-cresol	2.25(s),6.82(m),7.13(dd)	22.1,117.9	U
94	p-Cresol glucuronide	2.30(s),7.05(m),7.24(m)	22.3,123.2,135.6	U
95	p-cresol sulfate	2.34(s),7.22(d),7.29(d)	—,121.61,136.05	U
96	phenylalanine	3.13(dd),3.29(dd),3.97(dd),7.33(m),7.38(m),7.43(m)	38.9,38.9,58.9,132.2,129.8,131.9	F U
97	phosphorylcholine	3.23(s),3.60(t).4.17(dd)	56.0,68.5,60.3	U
98	p-Hydroxyphenylacetate	3.44(s),6.86(d),7.17(d)	46.5,118.59,133.69	U
99	Propylene glycol	1.14(d),3.44(dd),3.54(dd),3.87(	—	U

		m)		
100	Tartrate	4.33(s)	77.4	U
101	taurocholic acid	0.67(s)	12.5	F
102	Triglycerides	0.89(m),1.30(m),2.04(m),2.24(m),2.75(m),5.31(m)	—	U
103	tryptophan	3.31(dd),3.48(dd),4.07(dd),7.21(t),7.29(t),7.32(s),7.55(d),7.76(d)	—	F
104	urocanate	6.39(d),7.32(d),7.43(s),7.89(s),	133.4,124.7,141.4,134.2	F U

"-":The corresponding ^{13}C shift values are not found in the HSQC spectra, and NMR spectra of the metabolites assigned only to the ^{1}H shift in the TOCSY spectrum.

Table S2. Statistical anaysis results of the main metabolite change in urine at days 35

Metabolites	Chemical shift	Vip	P(t-test)	Variations
2-Hydroxyisobutyrate	1.35(s)	1.67	0.034	↓*
cholesterol	0.84(s)	1.91	0.009	↓**
taurine	3.25(t),3.43(t)	1.33, 1.62	0.045	↓*
glycine	3.58(s)	1.41	0.044	↓*
TMAO	3.26(s)	1.78	0.009	↓**
phosphorylcholine	3.23(s),3.60(t).4.17(t)	1.30, 1.55. 1.14	0.047	↓*
Betaine	3.25(s),3.89(s)	1.63, 1.47	0.038	↓*
butyrate	0.90(t),1.56(m),2.15(t)	1.67, 2.11.1.34	0.008	↓**
trimethylamine	2.88(s)	1.64	0.031	↓*
choline	3.21(s),3.51(m),4.08(m)	1.35, 1.76, 1.46	0.013	↓*
urocanate	6.38(d),7.32(d),7.43(s),7.89(s),	1.21, 1.02, 1.51, 1.77	0.035	↓*
pyruvate	2.39(s)	1.72	0.023	↑*
succinate	2.42(s)	1.09	0.048	↑*
Methylamine	2.62(s)	1.99	0.007	↑**
Dimethylamine	2.73(s)	1.63	0.028	↑*
creatine	3.04(s),3.92(s)	1.43, 1.29	0.035	↑*
Creatine phosphate	3.03(s),3.94(s)	1.33, 1.49	0.048	↑*
2-Oxoglutarate	2.45(t),3.02(t)	1.59, 1.12	0.015	↑*
alanine	3.789(dd) 1.48(d)	2.01, 1.61	0.008	↑**
formate	8.44(s)	1.22, 1.04	0.019	↑*
Guanidoacetate	3.78(s)	1.76, 1.83	0.006	↑**
Acetate	1.94(s)	1.27, 1.29	0.042	↑*
Glutamate	2.05(m),2.33(m),3.74（q）	1.94, 1.35, 1.33	0.009	↑**
Hippurate	3.96(d),7.55(t),7.64(m),7.83(q),8.53(s)	1.54, 1.74, 1.37, 1.21, 1.55	0.009	↑**
Fumarate	6.524(s)	1.88	0.008	↑**
citrate	2.65(d),2.54(d)	1.92, 1.73	0.039	↑*
Creatinine	3.03(s),4.05(s)	1.04, 1.45	0.041	↑*

"*": indicates significant changes compared with control *p<0.05, **p<0.01

Table S3. Statistical anaysis results of the main metabolite change in faces at days 35

Metabolites	Chemical shift	Vip	P(t-test)	Variations
lactate	1.33(d),4.11(q)	1.05, 1.77	0.023	↓*
alanine	1.48(d),3.79(q)	1.85, 1.65	0.042	↓*
pyruvate	2.38(s)	1.63	0.007	↓**
succinate	2.41(s)	1.35	0.009	↓**
choline	3.21(s),3.52(m),4.07(m)	1.24, 1.63, 1.35	0.041	↓*
taurine	3.25(t),3.43(t)	1.76, 1.55	0.037	↓**
butyrate	0.90(t),1.56(m),2.15(t)	1.82, 1.46, 1.52	0.044	↓*
acetate	1.92(s)	1.31	0.045	↓*
Propionate	1.06(t),2.18(q)	1.45, 1.39	0.027	↓*
glutamine	2.17(m),2.46(m),3.78(m)	1.98, 1.75, 1.82	0.011	↓*
tyrosine	3.06(dd),3.15(dd),3.94(dd),6.91(d),7.20(d)	1.46, 1.82, 1.11	0.009	↓**
methionine	2.14(s),2.16(m),2.64(t),3.85（m）	1.64, 1.62, 1.54	0.033	↓*
Leucine	0.95(d)0.97(d)1.69(m)1.72(m)1.73(m)3.740(m)	1.42, 1.59, 1.21, 1.33, 1.59, 1.31	0.027	↓*
methanol	3.37(s)	1.66	0.009	↑**
sarcosine	2.70(s)，3.59（s）	1.91, 2.02	0.008	↑**
proline	2.01(m),2.07(m),2.36(m),3.34(m),3.45(m),4.13(m)	1.77, 1.22, 1.58, 1.35, 1.32, 1.71	0.013	↑*
glycine	3.57(s)	1.07	0.026	↑*
glycerol	3.56(dd),3.65(dd),3.77(m)	1.56, 1.43, 2.21	0.008	↑**
Fumarate	6.52(s)	1.99	0.006	↑**
Alpha-D-Glucose	5.24(d),4.64(d),3.89(dd),3.82(m),3.72(m)3.53(dd)	1.34, 1.81, 1.73, 1.66, 1.38, 1.63	0.041	↓*
Beta-D-Glucose	4.67(d),3.23(d),3.73(dd)	1.28, 1.47, 1,34	0.018	↓*
β-xylose	4.58(d)3.24(dd)	1.75, 1.46	0.049	↓*

"*": indicates significant changes compared with control *p<0.05, **p<0.01

Table S4. Result from Pathway Analysis for urine and faces on day 35

Pathway Name	Match Status	p	-log(p)	Holm p	FDR	Impact
Glycine, serine and threonine metabolism	7/32	1.25E-05	11.292	1.01E-03	1.01E-03	0.38443
Alanine, aspartate and glutamate metabolism	6/24	2.49E-05	10.601	1.99E-03	1.01E-03	0.21624
Citrate cycle (TCA cycle)	5/20	1.29E-04	8.9568	0.01018	3.48E-03	0.24593
D-Glutamine and D-glutamate	3/5	1.77E-04	8.6381	1.38E-02	3.59E-03	0

metabolism						
Glycolysis or Gluconeogenesis	5/26	4.85E-04	7.6309	3.74E-02	7.86E-03	0.13531
Arginine and proline metabolism	6/44	8.76E-04	7.0397	6.66E-02	1.18E-02	0.09931
Methane metabolism	3/9	1.38E-03	6.5854	0.10353	1.47E-02	0
Aminoacyl-tRNA biosynthesis	7/67	1.61E-03	6.4334	0.11892	1.47E-02	0
Butanoate metabolism	4/20	1.63E-03	6.419	0.11901	1.47E-02	0
Pyruvate metabolism	3/22	1.98E-02	3.9207	1	0.1606	0.24337
Nitrogen metabolism	2/9	2.28E-02	3.779	1	0.16823	0
Valine, leucine and isoleucine biosynthesis	2/11	3.37E-02	3.3893	1	0.22769	0.33333
Glyoxylate and dicarboxylate metabolism	2/16	6.76E-02	2.694	1	0.42127	0.40741
Ubiquinone and other terpenoid-quinone biosynthesis	1/3	7.92E-02	2.536	1	0.45813	0
Propanoate metabolism	2/20	0.10008	2.3017	1	0.52749	0
Phenylalanine, tyrosine and tryptophan biosynthesis	1/4	0.10419	2.2615	1	0.52749	0.5
Primary bile acid biosynthesis	3/46	0.12552	2.0753	1	0.5704	0.0965
Starch and sucrose metabolism	2/23	0.12676	2.0655	1	0.5704	0.18993
Cyanoamino acid metabolism	1/6	0.15225	1.8822	1	0.6274	0
Galactose metabolism	2/26	0.15491	1.8649	1	0.6274	0.00169
Cysteine and methionine metabolism	2/28	0.17432	1.7469	1	0.67237	0.11567
Glycerophospholipid metabolism	2/30	0.19411	1.6393	1	0.69656	0.06759
Taurine and hypotaurine metabolism	1/8	0.19779	1.6206	1	0.69656	0.42857
Phenylalanine metabolism	1/9	0.21966	1.5157	1	0.74134	0
Tyrosine metabolism	2/42	0.31628	1.1511	1	1	0.14045
Selenoamino acid metabolism	1/15	0.33918	1.0812	1	1	0
Histidine metabolism	1/15	0.33918	1.0812	1	1	0.14516
Glycerolipid metabolism	1/18	0.39206	0.93635	1	1	0.28098
Pentose phosphate pathway	1/19	0.40875	0.89465	1	1	0
Fructose and mannose metabolism	1/19	0.40875	0.89465	1	1	0
Glutathione metabolism	1/26	0.51372	0.66608	1	1	0.00573

Porphyrin and chlorophyll metabolism	1/27	0.52715	0.64027	1	1	0
Steroid biosynthesis	1/35	0.62234	0.47427	1	1	0.05394
Amino sugar and nucleotide sugar metabolism	1/37	0.64305	0.44153	1	1	0
Valine, leucine and isoleucine degradation	1/38	0.65299	0.42619	1	1	0
Pyrimidine metabolism	1/41	0.68121	0.38388	1	1	0
Purine metabolism	1/68	0.8527	0.15934	1	1	0
Steroid hormone biosynthesis	1/70	0.86098	0.14968	1	1	0.01746

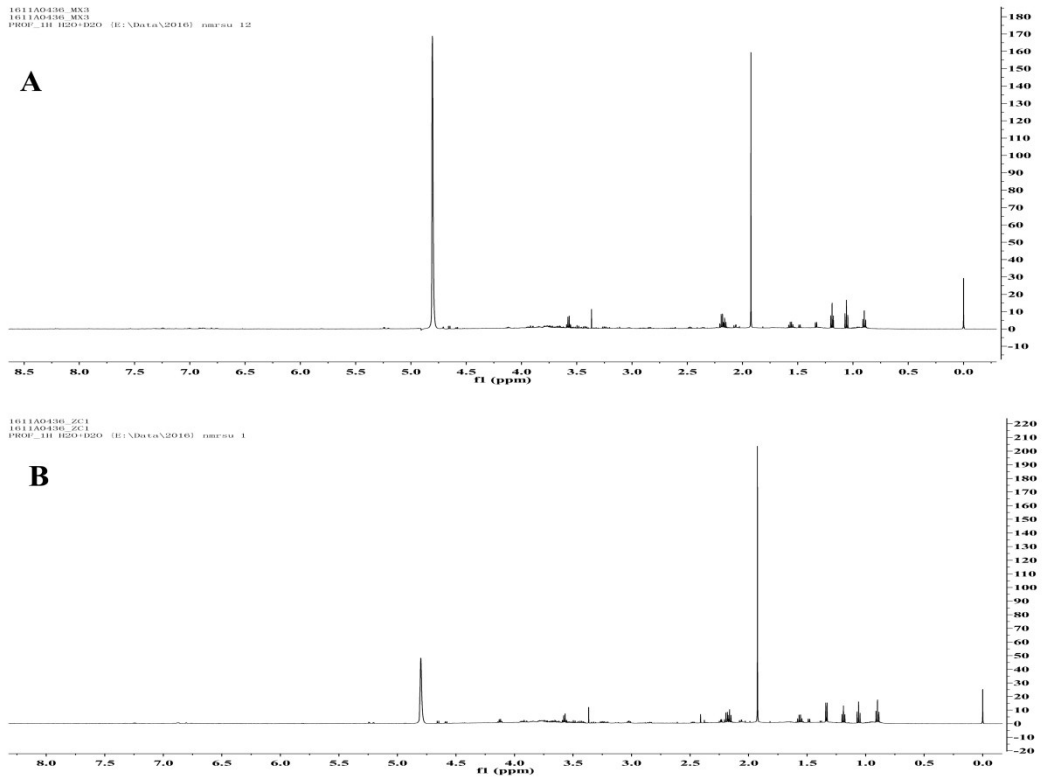

Fig. S1 600 MHz ^{1}H NMR spectra of faces of SD rat, A: Model group B: Control group

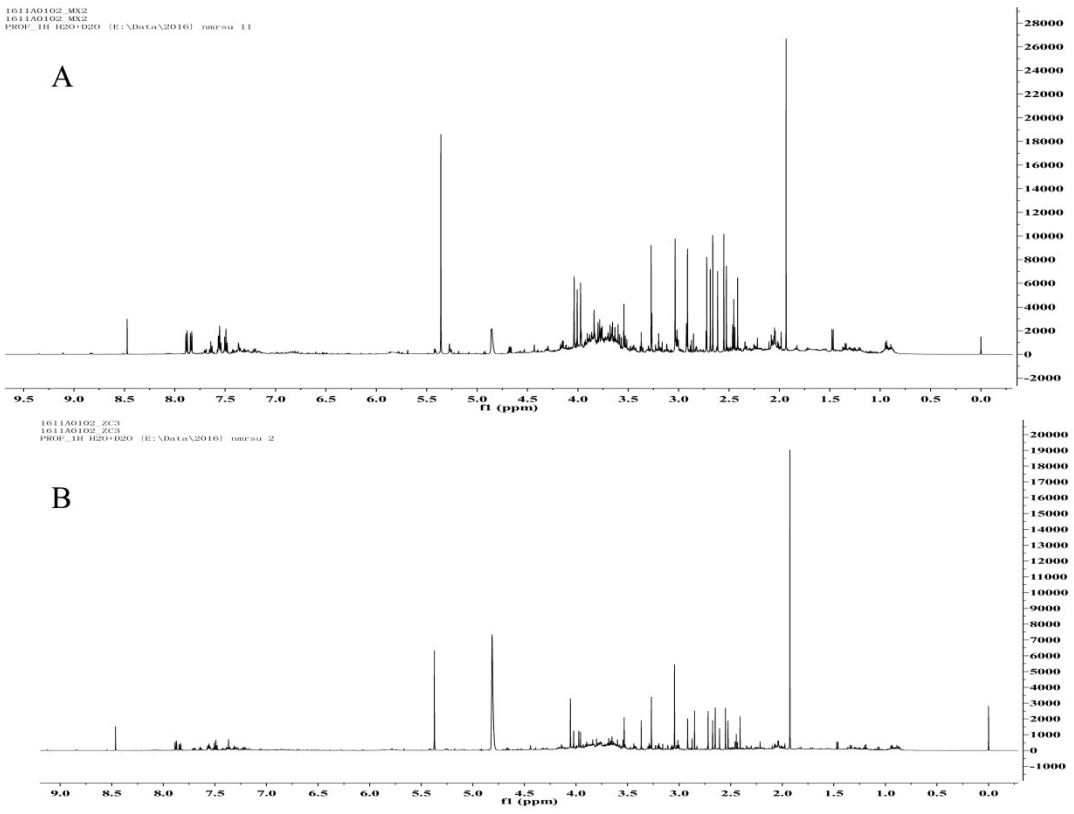

Fig. S2 600 MHz ^{1}H NMR spectra of urine of SD rat, A: Model group B: Control group

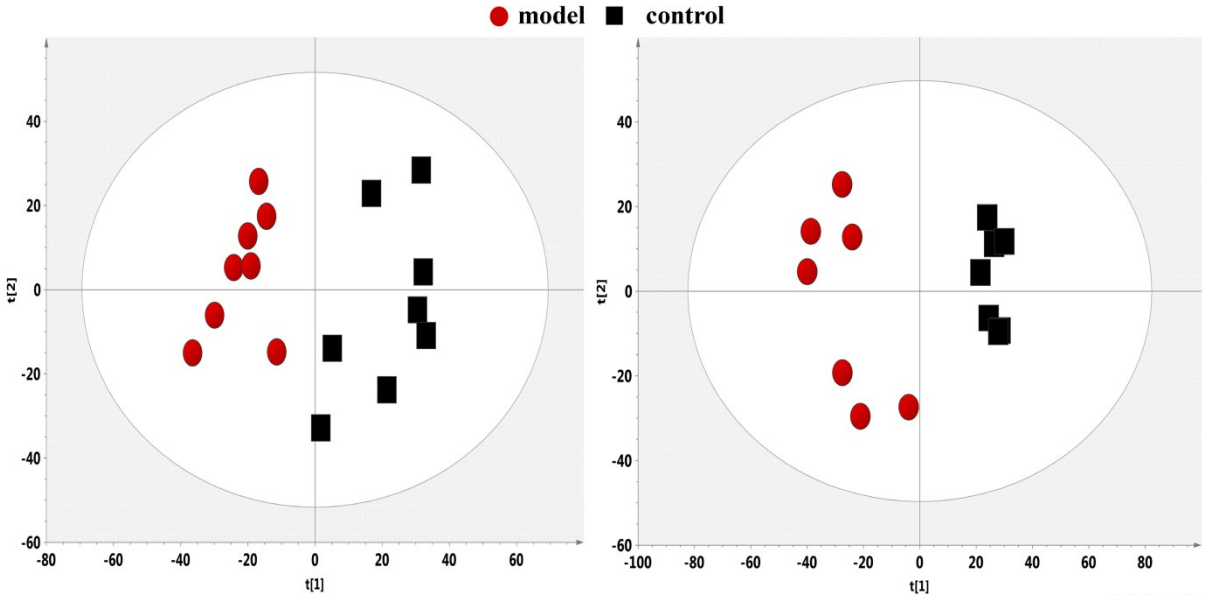

Fig. S3 PCA scores scatter plots for ^{1}H NMR data of faces (left) and urine (right) at day 35

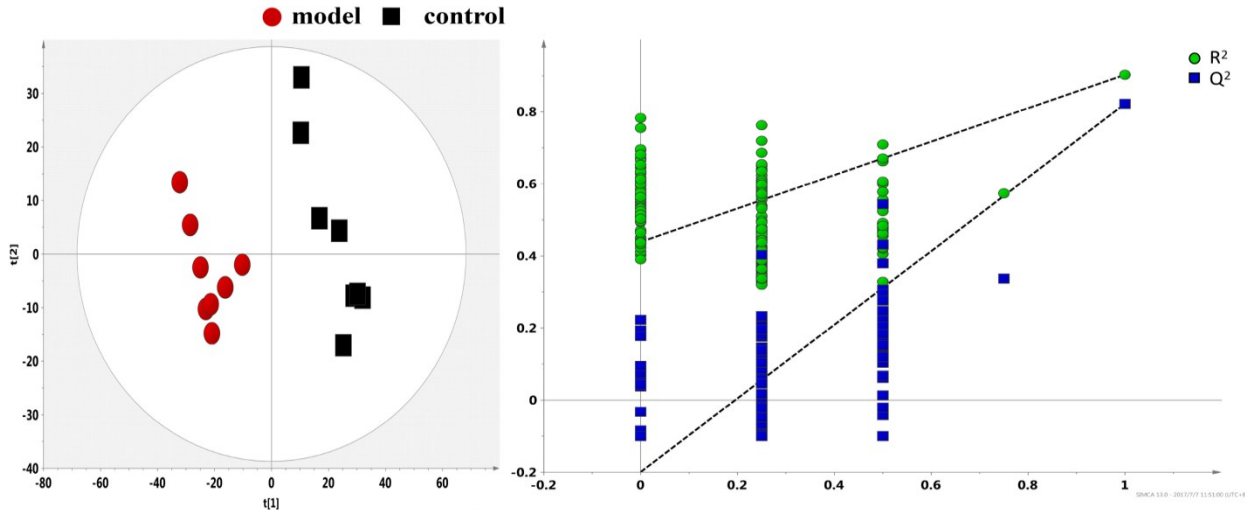

Fig. S4 PLS-DA scores plots and Permutation test plots (200 permutations) for faces at day 35

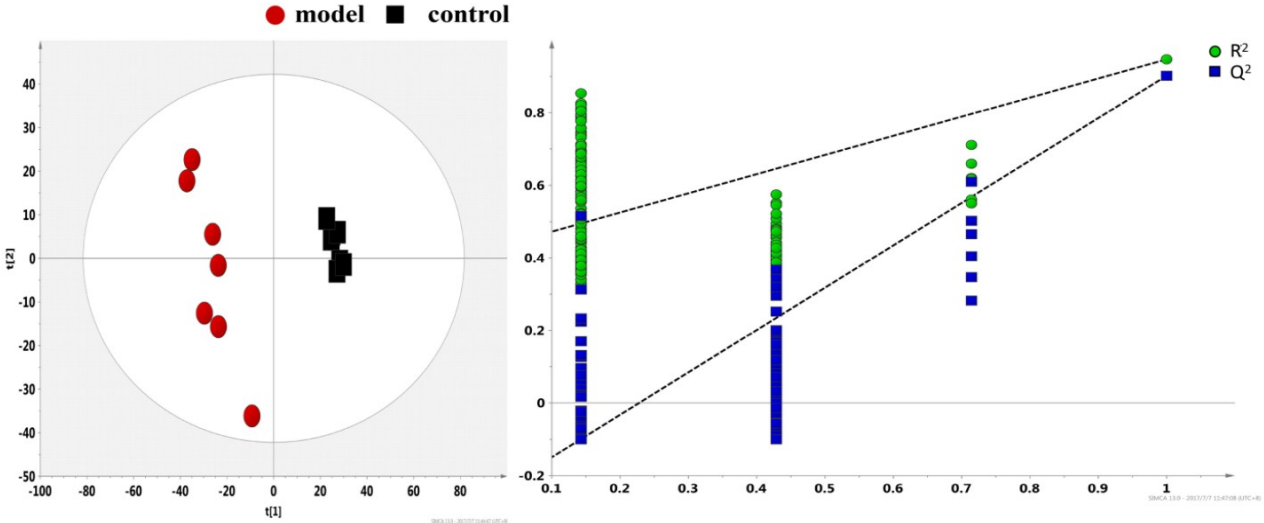

Fig. S5 PLS-DA scores plots and Permutation test plots (200 permutations) for urine at day 35