

## Supplementary Material

**Table S1.** Statistical analysis results of the main metabolite in urine

No.	Metabolites	Chemical shift (ppm)	VIP values in MOD vs CON	VIP values in YGP vs MOD
1	2-hydroxy isovalerate	0.82d, 0.95d	↓**(1.19893)	↑##(1.4592)
2	2-oxoisocaproate	0.93d	↓**(1.20244)	↑##(1.3372)
3	valine	0.98d, 1.03d, 2.29(m), 3.62(d)	↓*(2.3414)	↑##(1.16657, 1.9085)
4	3-hydroxybutyrate	1.20d	↓(1.27208)	↑#(1.80074)
5	lactate	1.33d, 4.11q	↓**(1.43589, 1.82228)	↑##(3.22914, 2.00244)
6	alanine	1.48d	↓**(1.45455)	↑##(1.58037)
7	acetate	1.91s	↓(3.21613)	↑#(6.38963)
8	NAG	2.04s	↓**(4.8771)	↑##(3.44076)
9	acetone	2.23s	↓(1.49277)	↑##(1.5611)
10	succinate	2.41s	↓**(2.44932)	↑##(3.71412)
11	α-ketoglutarate (α-KG)	2.45t, 3.01t	↓(2.50328, 1.3932)	↑##(3.03184, 3.66234)
12	citrate	2.56d, 2.72d	↓**(3.93786, 2.30092)	↑(1.63101, 2.51258)
13	dimethylamine (DMA)	2.71s	↓*(1.06588)	↑#(1.91873)
14	dimethylglycine (DMG)	2.92s	↓*(3.86941)	↑(1.81422)
15	creatinine	3.05s, 4.06s	↓*(5.46773, 4.18704)	↑(2.08887, 1.68475)
16	TMAO	3.27s	↓**(4.25915)	↑(2.70055)
17	choline	3.20s	↓*(1.74248)	↑#(1.56094)
18	glycine	3.56s	↓(1.79166)	↑#(2.09787)
19	glycerol	3.64dd, 3.87dd	↓**(2.66159, 2.17052)	↑##(1.84109, 1.70949)
20	creatine	3.93s	↓**(2.04625)	↑##(1.63151)
21	α-glucose	5.24d, 3.70t, 3.40t, 3.83dd, 3.72dd, 3.85m	↓**(2.12986, 1.14185, 2.47749, 2.51527, 2.43068)	↑##(2.02001, 1.01783, 1.80521, 2.18719, 1.61842)

22	β-glucose	4.65d, 3.24dd, 3.47dd	↓**(1.18783, 1.60082, )	↑#(1.04652)
23	betaine	3.90s	↓**(3.31971)	↑##(2.16067)
24	hippurate	3.97d, 7.55t, 7.64t, 7.84d	↓**(1.43334, 1.80337)	↑(1.12264, 1.7032)
25	tryptophan	7.21t, 7.29t, 7.56d	↓**(1.11104, 1.94659)	↑##(1.83171)
26	phenylalanine	7.33m, 7.44m, 7.39(m), 3.17(dd), 3.30(dd), 3.99(dd)	↓*(1.16678, 1.78083)	↑##(1.24986, 1.45088)
27	formate	8.46s	↓(1.45119)	↑#(2.57806)

Note: *P* value was measured by one-way ANOVA with a Bonferroni correction, \* *P* < 0.05, \*\* *P* < 0.01; # *P* < 0.05, ## *P* < 0.01. The chemical shift values of marked green corresponded to the VIP values in MOD vs CON group, while the chemical shift values of labeled red corresponded to the VIP values in YGP vs MOD group.

**Table S2.** Results of pathway analysis using MetaboAnalyst

No.	Pathway Name	Match Status	Raw p	-log(p)	Holm p	FDR	Impact	Details
1	Glycine, serine and threonine metabolism	5/32	1.40E-04	8.8722	0.011359	0.011359	0.3236	KEGG
2	Butanoate metabolism	3/20	0.0041543	5.4836	0.33235	0.090967	0	KEGG
3	Citrate cycle (TCA cycle)	3/20	0.0041543	5.4836	0.33235	0.090967	0.14721	KEGG
4	Aminoacyl-tRNA biosynthesis	5/67	0.0044922	5.4054	0.35039	0.090967	0	KEGG
5	Alanine, aspartate and glutamate metabolism	3/24	0.0070505	4.9547	0.54289	0.11422	0.06329	KEGG
6	Methane metabolism	2/9	0.0093998	4.6671	0.71438	0.1269	0	KEGG
7	Valine, leucine and isoleucine biosynthesis	2/11	0.014063	4.2642	1	0.16273	0.33333	KEGG
8	Glyoxylate and dicarboxylate metabolism	2/16	0.029123	3.5362	1	0.29487	0.40741	KEGG
9	Pyruvate metabolism	2/22	0.052676	2.9436	1	0.47408	0.05583	KEGG
10	Phenylalanine, tyrosine and tryptophan biosynthesis	1/4	0.066805	2.706	1	0.4792	0.5	KEGG
11	Glycolysis or Gluconeogenesis	2/26	0.071108	2.6435	1	0.4792	0.02862	KEGG
12	Galactose metabolism	2/26	0.071108	2.6435	1	0.4792	0.03644	KEGG
13	Synthesis and degradation of ketone bodies	1/5	0.082826	2.491	1	0.4792	0	KEGG
14	D-Glutamine and D-glutamate metabolism	1/5	0.082826	2.491	1	0.4792	0	KEGG
15	Cyanoamino acid metabolism	1/6	0.098582	2.3169	1	0.53234	0	KEGG
16	Valine, leucine and isoleucine degradation	2/38	0.136	1.9951	1	0.6494	0.0119	KEGG
17	Nitrogen metabolism	1/9	0.14431	1.9358	1	0.6494	0	KEGG
18	Phenylalanine metabolism	1/9	0.14431	1.9358	1	0.6494	0.40741	KEGG
19	Selenoamino acid metabolism	1/15	0.22919	1.4732	1	0.92822	0	KEGG
20	Pantothenate and CoA biosynthesis	1/15	0.22919	1.4732	1	0.92822	0	KEGG

21	Glycerolipid metabolism	1/18	0.26854	1.3147	1	1	0.28098	KEGG
22	Propanoate metabolism	1/20	0.2937	1.2252	1	1	0	KEGG
23	Starch and sucrose metabolism	1/23	0.32989	1.109	1	1	0.03778	KEGG
24	Glutathione metabolism	1/26	0.36429	1.0098	1	1	0.00573	KEGG
25	Porphyrin and chlorophyll metabolism	1/27	0.37538	0.97981	1	1	0	KEGG
26	Glycerophospholipid metabolism	1/30	0.40754	0.8976	1	1	0.02315	KEGG
27	Tryptophan metabolism	1/41	0.51243	0.66859	1	1	0.15684	KEGG
28	Arginine and proline metabolism	1/44	0.53779	0.62029	1	1	0.01198	KEGG
29	Primary bile acid biosynthesis	1/46	0.55399	0.59061	1	1	0.02976	KEGG

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Note: The “Match Status” represents the ratio of actual matched number from the user uploaded data to the number of compounds in the pathway; the *p* values from the pathway enrichment analysis and pathway impact values (from 0 to 1) from the pathway topology analysis.