

Figure S1 $^1\text{H-NMR}$ -based metabonomic analysis of urine and stool samples from Control and CPL, CPM groups. PCA scores of $^1\text{H-NMR}$ profiles of urine samples (A) and fecea samples (B) in CPL group. PCA scores of $^1\text{H-NMR}$ profiles of urine samples (C) and feces samples (D) in CPM group.

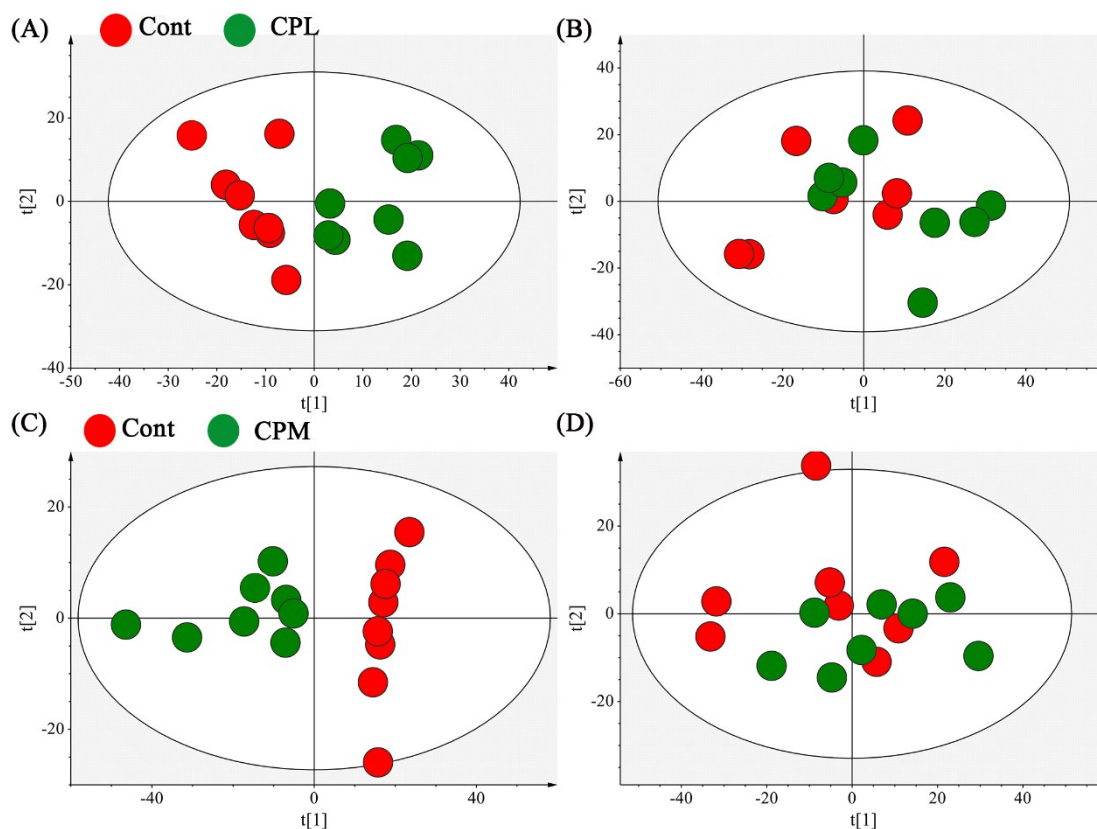


Figure S2 Partial least square discriminant analysis and validation of biological metabolites in urine and in feces. Partial least square discriminant analysis (PLS-DA) plots of biological metabolites in urine (A) and in feces (B). Validation of biological metabolites in urine (A) and in Feces (B).

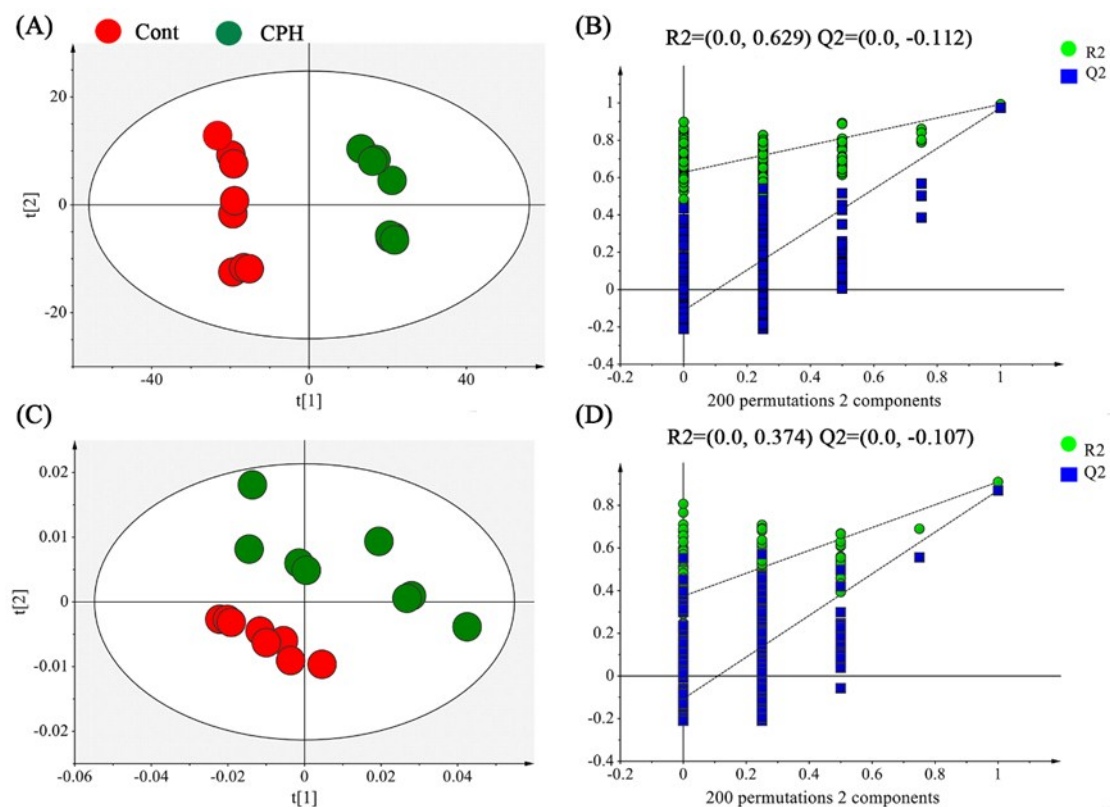


Figure S3 Rarefaction curves based on (A) Observed_species, (B) Chao1, (C) PD_whole_tree, (D) Shannon and (E) Simpson.

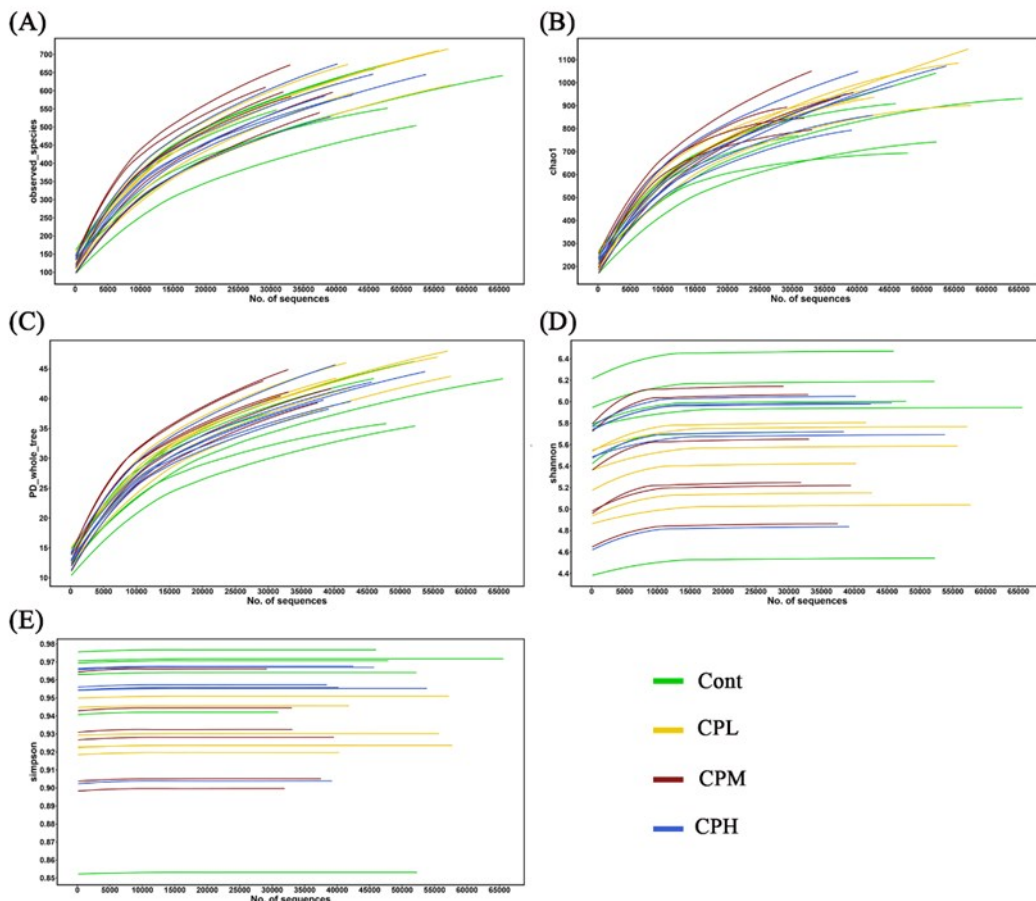


Figure S4 LEfSe was used to identify the most differentially abundant taxa in the control, CPL and CPM samples at 14 days. (A) 11 taxa meeting a significant LDA threshold value of 2 are shown in the Control and CPL groups. (B) 40 taxa meeting a significant LDA threshold value of 2 are shown in the Control and CPM groups. (E) 36 taxa meeting a significant LDA threshold value of 2 are shown in the Control and CPH groups.

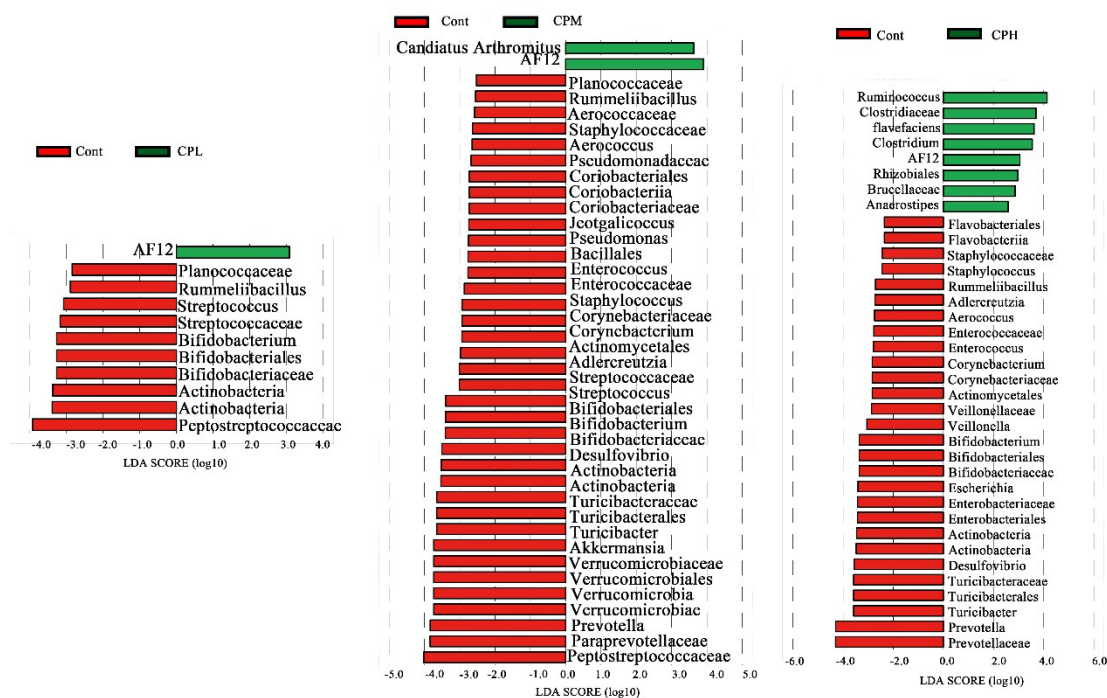
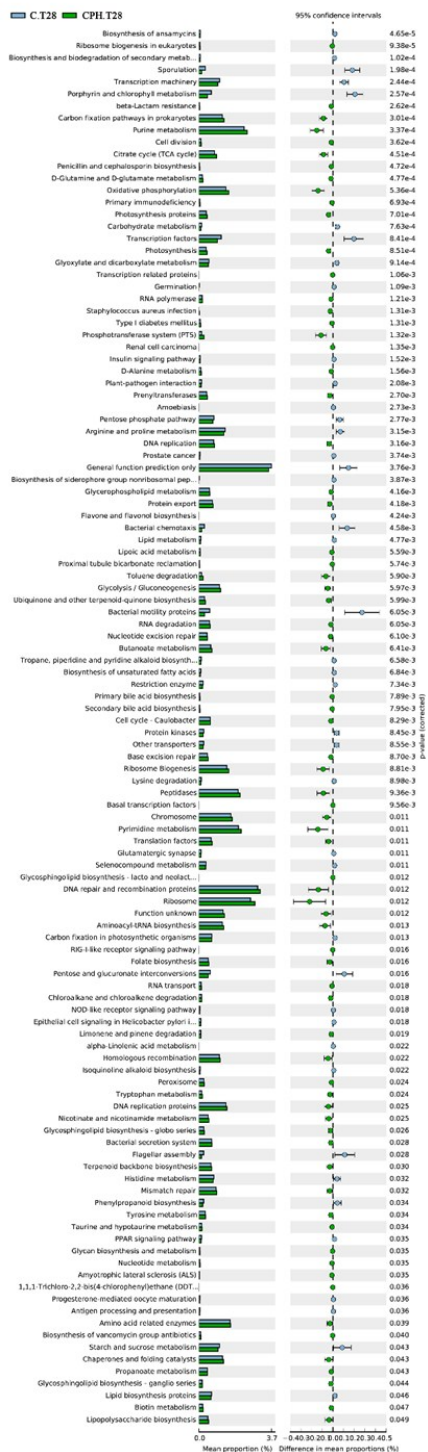


Figure S5 Changes in relative abundance of identified phyla determining the diversity of Control and CPH.



Supplementary table 1. Effect of compound polysaccharides on the body weight of young rats.

Time (week)	Body weight (g)				P value		
	Cont	CPL	CPM	CPH	Cont vs CPL	Cont vs CPM	Cont vs CPH
0	61.7±4.80	56.7±7.28	64.1±12.30	64.3±10.22	0.14	0.59	0.49
1	86.9±5.72	84.6±8.61	93.0±16.54	93.5±9.98	0.73	0.31	0.10
2	123.1±9.29	121.1±11.53	132.4±22.70	129.1±12.18	0.96	0.26	0.25
3	163.4±11.92	161.3±11.03	174.7±24.52	168.8±13.75	0.97	0.23	0.39
4	205.2±17.10	205.7±11.78	218.0±30.27	212.2±13.91	0.69	0.28	0.35

Supplementary table 2. Effect of compound polysaccharides on the digestive tube/body weight.

	The digestive tube/body weight	P value		
		Cont vs CPL	Cont vs CPM	Cont vs CPH
Cont	4.91±0.32			
CPL	4.45±0.49	0.17		
CPM	5.20±0.57		0.41	
CPH	5.53±0.65			0.13

Supplementary table 3. Effect of compound polysaccharides on the duodenum mucosal tissues.

Groups	Duodenum villus height (μm)	Duodenum villus height/ crypt depth ratio	Duodenum muscular thickness (μm)
Cont	444.05±107.02	2.15±0.65	18.28±2.68
CPL	476.74±68.71	2.17±0.90	14.81±2.90
CPM	506.01±53.03	2.74±0.56	9.85±2.90
CPH	573.20±43.50	2.99±0.24	8.84±3.37
P.value (Cont vs CPL)	0.58	0.29	0.085
P.value (Cont vs CPM)	0.27	0.16	0.0014
P.value (Cont vs CPH)	0.036	0.02	0.0022

Supplementary table 4. Effect of compound polysaccharides on the ratio of CD4⁺/CD8⁺ lymphocytes cells in spleen tissues.

Groups	The ratio of CD4 ⁺ /CD8 ⁺	P.value
Cont	1.53±0.26	
CPL	1.59±0.27	0.82
CPM	1.78±0.15	0.22
CPH	2.17±0.30	0.045

P values were considered statistically significant relative to the Cont group.

Supplementary table 5. The differences Bacteroidetes-to-Firmicutes ratio among the different four groups.

Groups	Relative abundance (%)		Bacteroidetes-to-Firmicutes ratio
	Bacteroidetes	Firmicutes	
Cont	70.39±4.71	24.95±4.63	2.82
CPL	62.33±11.64	28.90±9.59	2.15
CPM	60.69±9.49	31.43±9.11	1.93
CPH	66.96±6.37	23.61±6.99	2.84