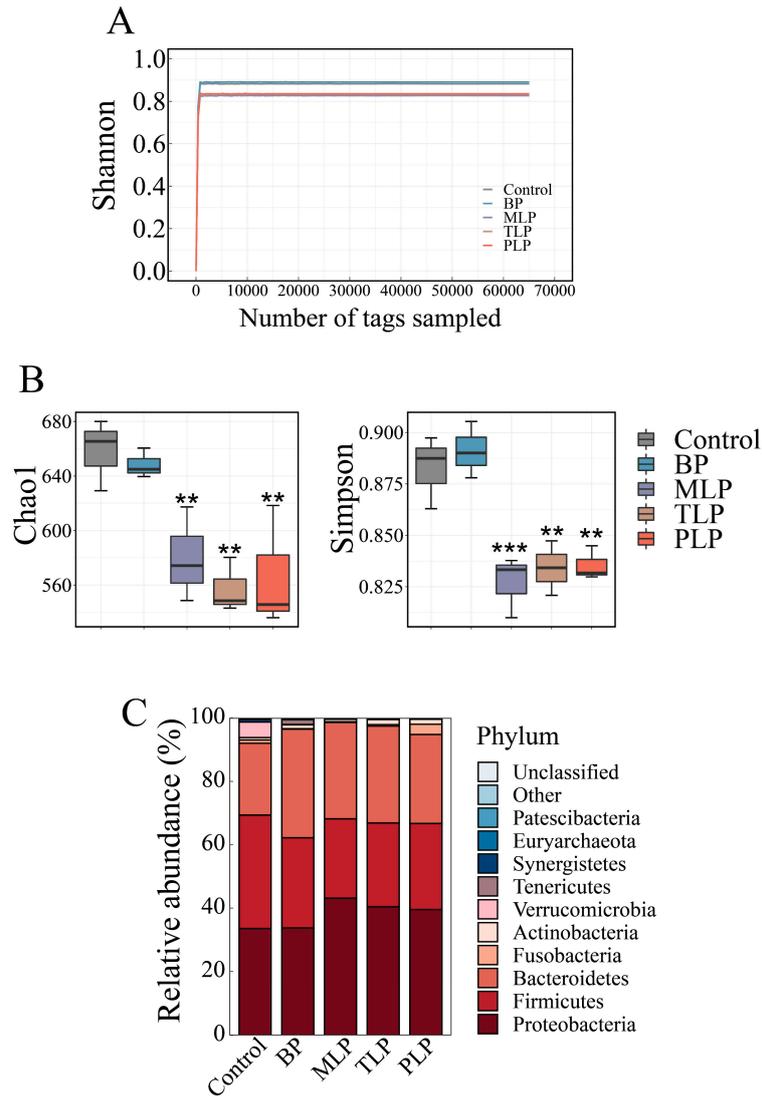


## Supplementary Materials

**Figure S1** Gut microbiota was altered by polysaccharides after *in vitro* fermentation. (A) Rarefaction curves of Shannon indexes,  $\alpha$ -diversity indices of microbial community; (B) Chao1 and Simpson and (C) classification of bacteria at the phylum level in fermentation broth from different treatments. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement).

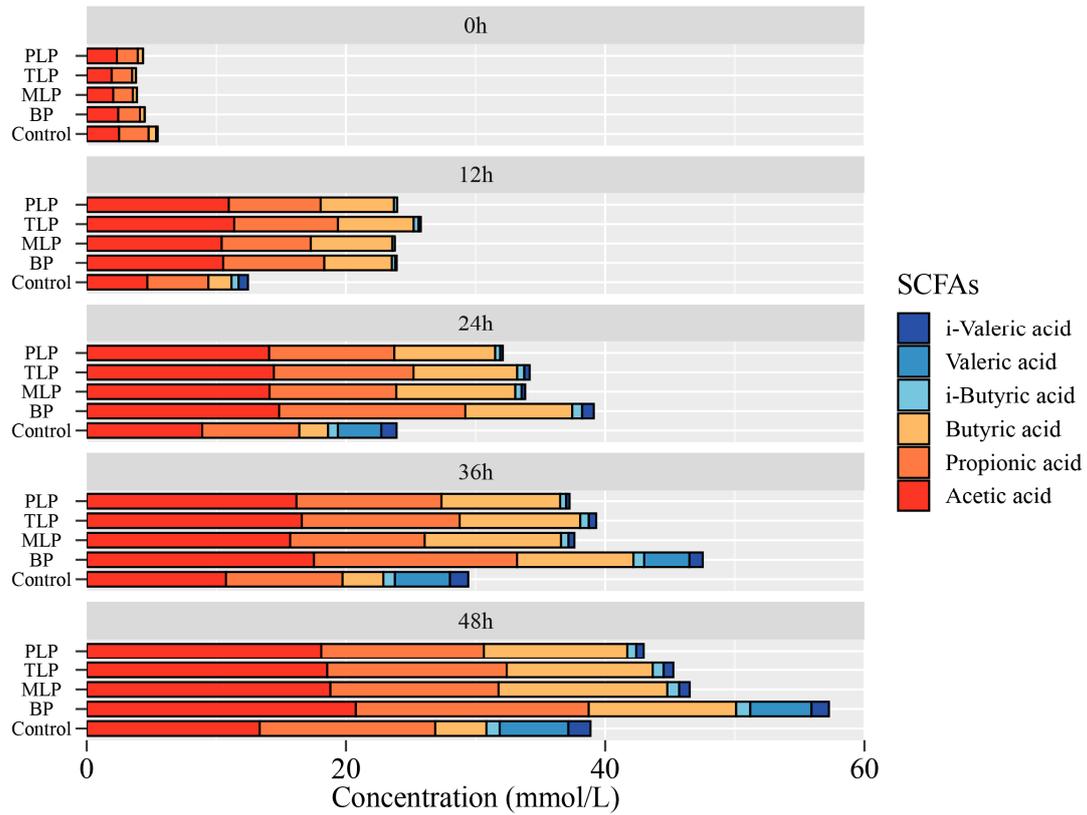
**Figure S2** The concentrations of short-chain fatty acids (SCFAs) among different groups during *in vitro* fermentation. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement).

**Figure S3** Peak areas of the 20 vital metabolites with variable importance in the projection (VIP value in the top 20).  $*p < 0.05$ ,  $**p < 0.01$ ,  $***p < 0.001$  compared to the control group., by one-way ANOVA with Tukey's post hoc test were considered. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement).



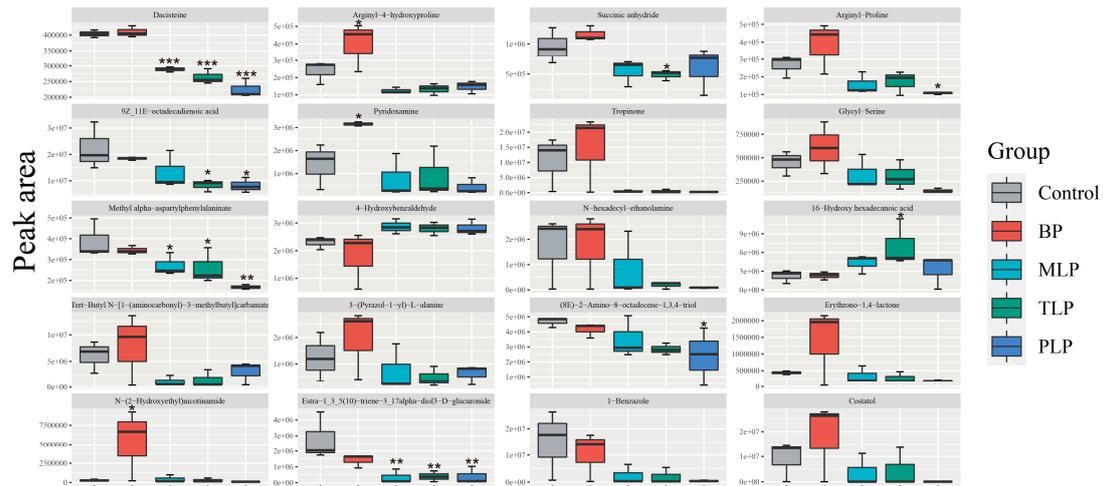
**Figure S1**

Gut microbiota was altered by polysaccharides after in vitro fermentation. **(A)** Rarefaction curves of Shannon indexes,  $\alpha$ -diversity indices of microbial community; **(B)** Chao1 and Simpson and **(C)** classification of bacteria at the phylum level in fermentation broth from different treatments. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement). \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$



**Figure S2**

The concentrations of short-chain fatty acids (SCFAs) among different groups during *in vitro* fermentation. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement).



**Figure S3**

Peak areas of the 20 vital metabolites with variable importance in the projection (VIP value in the top 20). \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$  compared to the control group., by one-way ANOVA with Tukey's post hoc test were considered. The control group (no additional carbon source supplement); BP (bergamot polysaccharide supplement); MLP (mono-Laoxianghuang polysaccharide supplement); TLP (tri-Laoxianghuang polysaccharide supplement); PLP (penta-Laoxianghuang polysaccharide supplement).