Supplementary

Table S1. Ingredients and Chemical Composition of Dietary

Item	Group			
	NC	TA	GSPE	TA+GSPE
Ingredients, % DM				
Alfalfa	70	70	70	70
Commercial concentrate	30	30	30	30
TA	0	0.5	0	0.25
GSPE	0	0	0.5	0.25
Chemical composition				
DM, %	90.4	90.4	90.4	90.4
OM, % DM	88.4	88.4	88.4	88.4
CP, % DM	15.5	15.4	15.4	15.4
EE, % DM	1.95	1.95	1.95	1.95
ADF, % DM	31.1	31.1	31.1	31.1
NDF, % DM	49.7	49.7	49.7	49.7
GE, MJ/kg DM	15.8	15.8	15.8	15.8

TA, Chinese gallnut tannic; GSPE, grape seeds procyanidins; DM, dry matter; OM, organic matter; CP, crude protein; EE, crude fat; ADF, acid detergent fiber; NDF, neutral detergent fiber; GE, Gross energy.

Figure S1. The chemical structures of the two tannins. Tannic acid[1] (a) and procyanidins[2] (b).

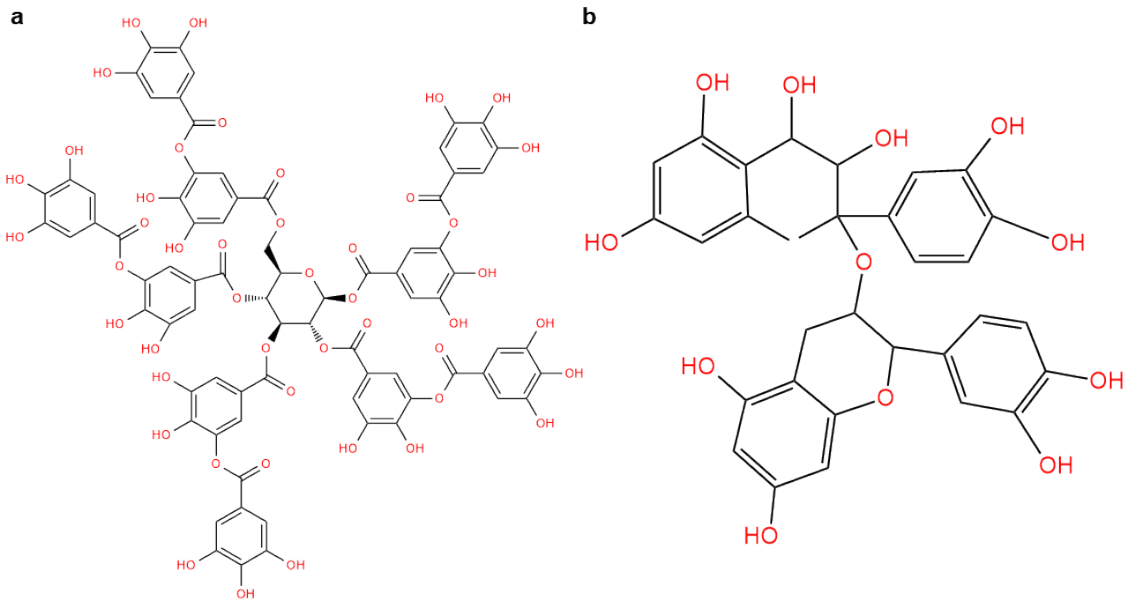


Figure S2. The relative abundance of jejunal and colonic bacteria. (a) Firmicutes, Verrucomicrobia, Actinobacteria and Bacteroidetes are the top 4 relative abundance phyla in jejunum; (b) Firmicutes, Bacteroidetes, Verrucomicrobia and Proteobacteria are the highest abundant phyla in colon. * $p <$ 0.05 (*t*-test).

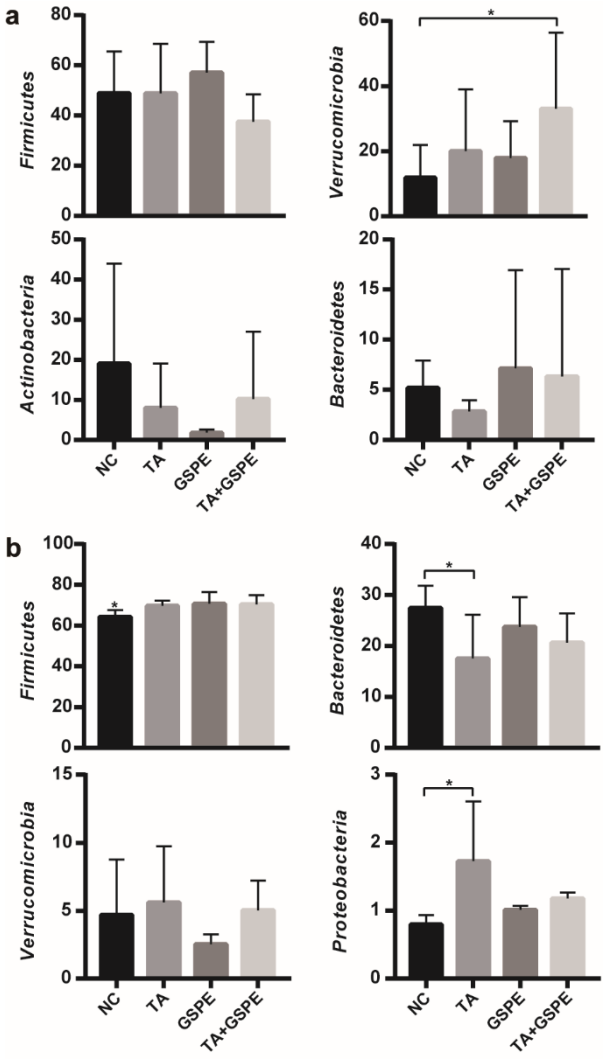


Figure S3. Interaction network of gut bacteria. The correlation analysis of jejunal bacteria (a), colonic bacteria (b) at the genus level. Each node denotes one genus and the same-colored nodes belong to one order as label shown. In addition, the diameter of the node reflects node (genus) relative importance in network.

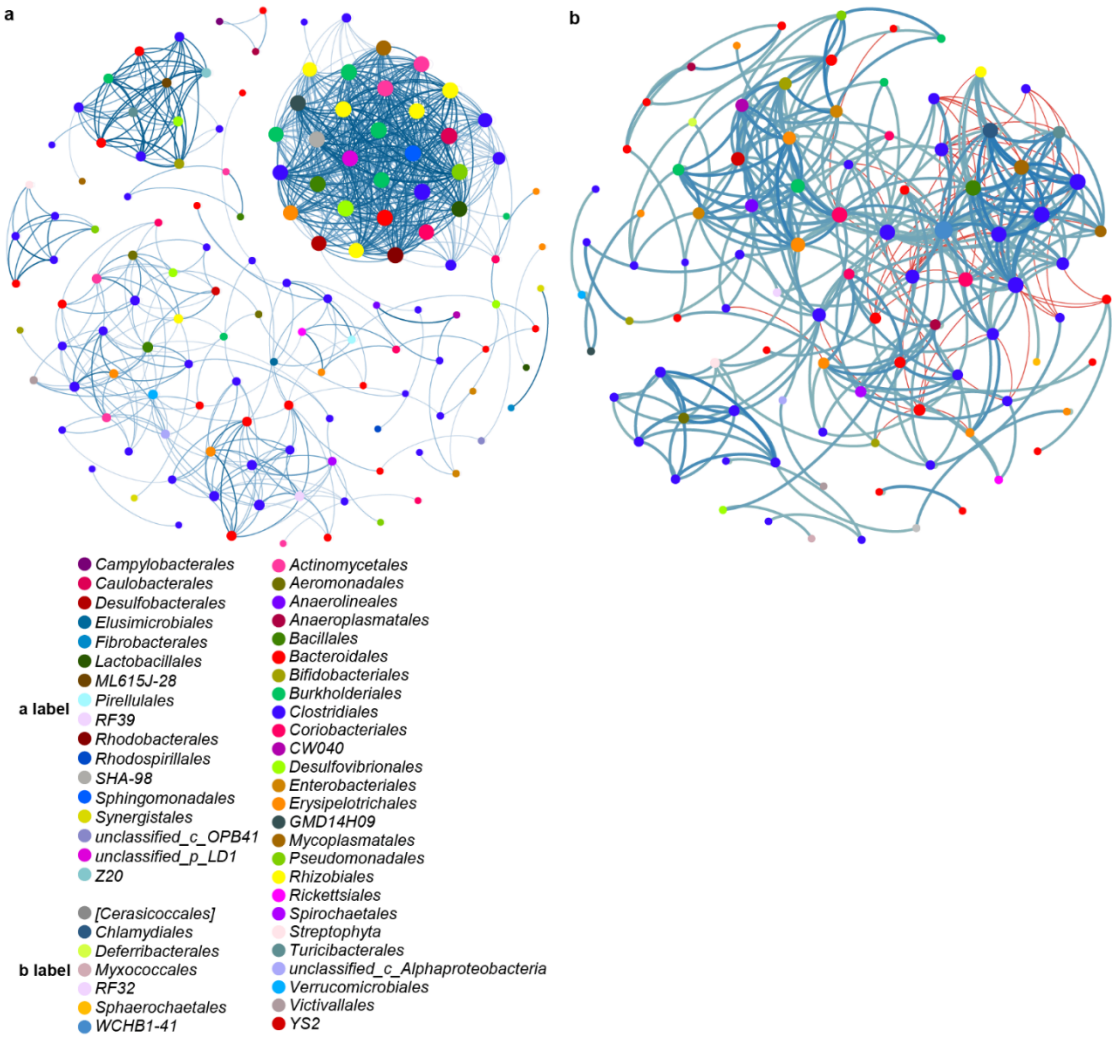


Figure S4. Histogram of differentially abundant taxa between control and treatment groups. The LDA scores are calculated by LEfSe. (a) (b) (c) show the taxa with significant difference between NC and TA group, NA and GSPE group, NC and TA+GSPE group, respectively, in jejunum. (d) (e) (f) show the taxa with significant difference between NC and TA group, NA and GSPE group, NC and TA+GSPE group, respectively, in colon.

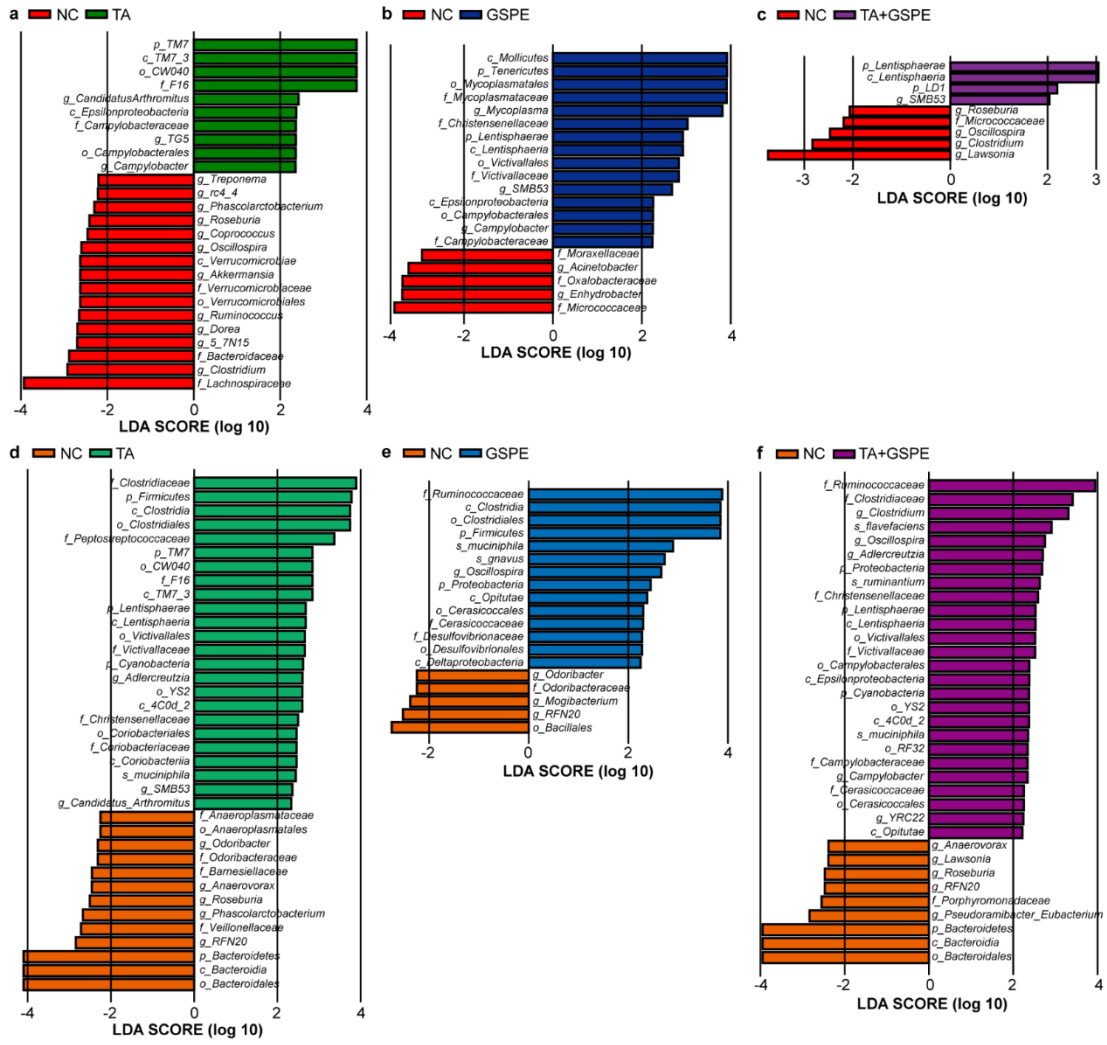


Figure S5. Heatmaps of the correlation between biochemical parameters and genera in jejunum and colon. The correlation between blood lipid indexes and genera. Heatmaps are created according to the result of Pearson correlation analysis. The significant correlations are presented as * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

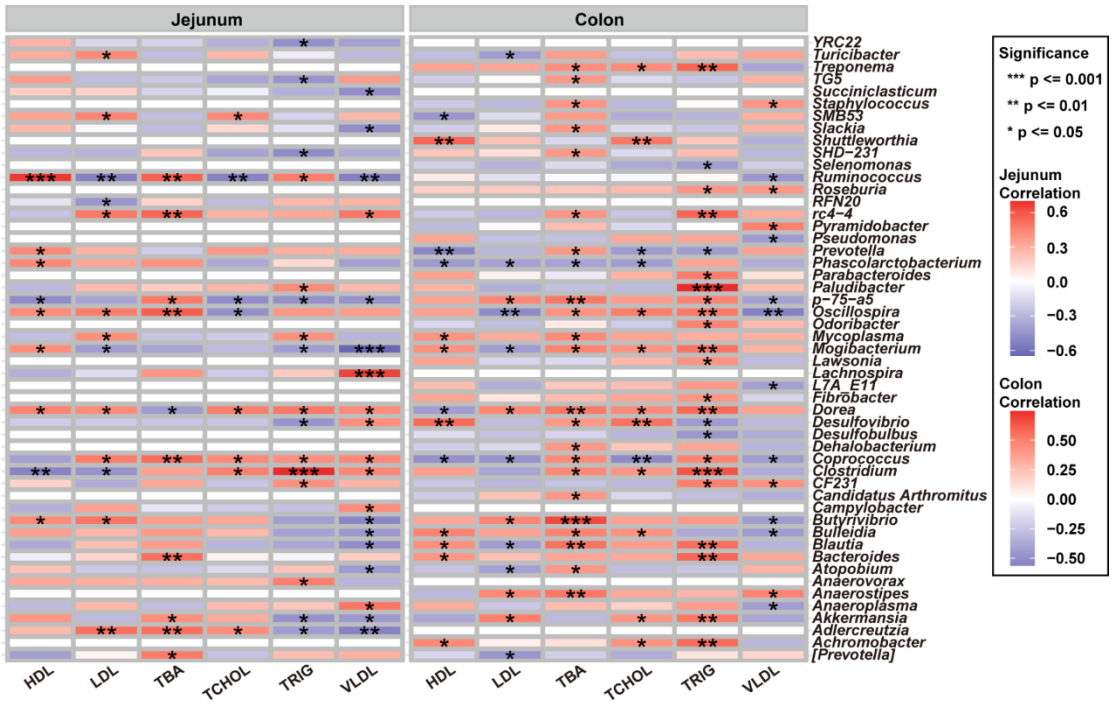


Figure S6. Heatmaps of the correlation between immune parameters and genera in jejunum and colon. The correlation between inflammatory cytokines and genera. Heatmaps was created according to the result of Pearson correlation analysis. The significant correlations are presented as * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

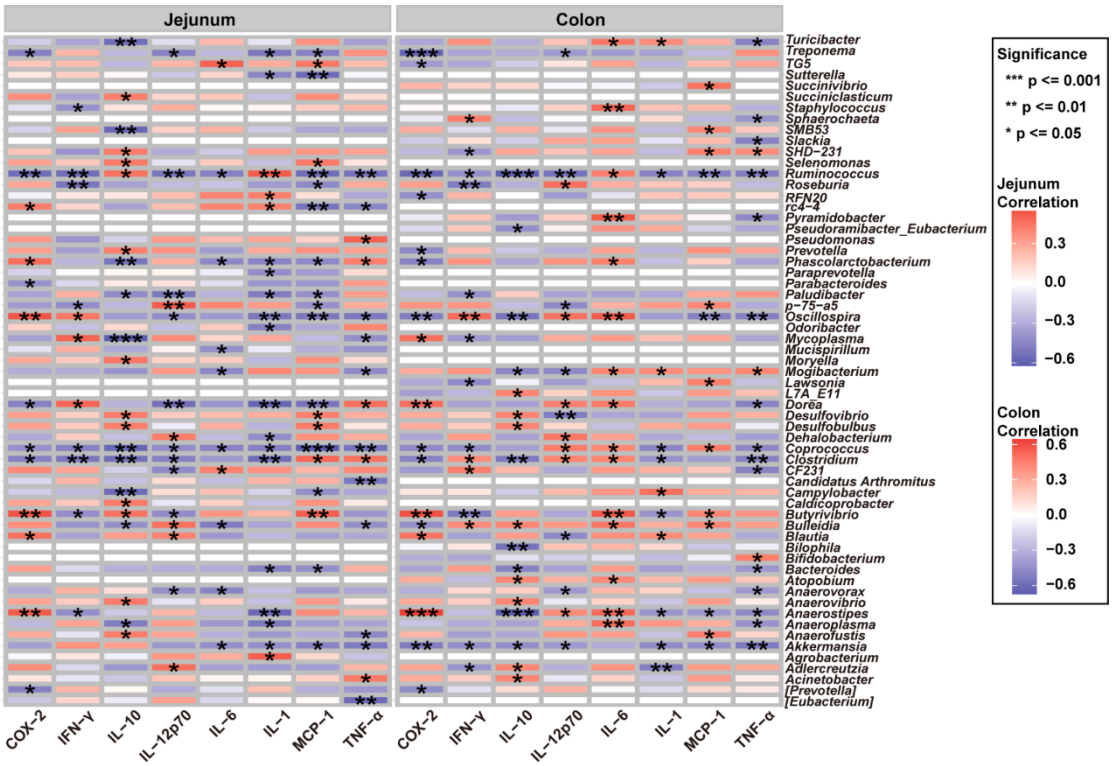
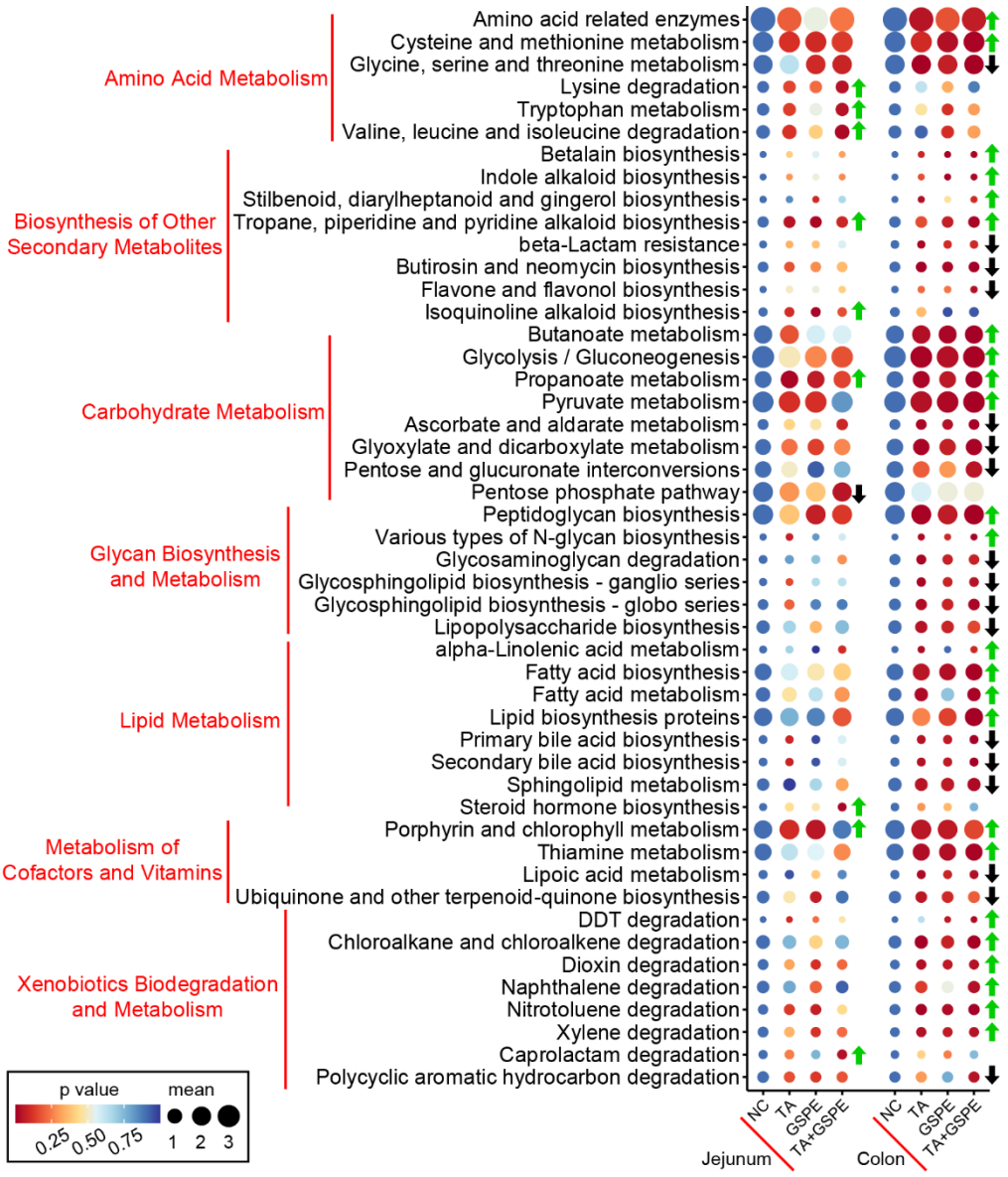


Figure S7. Tannins alter gut microbiota metabolic functions in jejunum and colon. With supplying different polyphenols, the minified potential function of jejunal and colonic microbiota is signed by black arrow, while raised that is marked with green arrow, compared to NC. Statistical differences are analyzed by *t*-test between NC and other 3 groups. DDT: 1,1,1-Trichloro-2,2-bis(4-chlorophenyl) ethane.



Supplemental References:

(1) National Center for Biotechnology Information. PubChem Compound Summary for CID 16129778, Tannic acid. https://pubchem.ncbi.nlm.nih.gov/compound/Tannic-acid. Accessed June 16, 2022.

(2) National Center for Biotechnology Information. PubChem Compound Summary for CID 107876, Procyanidin. https://pubchem.ncbi.nlm.nih.gov/compound/Procyanidin. Accessed June 16, 2022.