Supplementary Materials

Table S1. Criteria for scoring disease activity index

Score	Weight loss (%)	Stool consistency	Occult/gross bleeding
0	<1	Normal	Normal
1	1-5		
2	5-10	Loose stool	Hemoccult positive
3	10-15		
4	>15	Diarrhoea	Gross bleeding

Table S2. Criteria for scoring histology

Score	Degree of inflammatory	Infiltration degree of tissue Damage
0	No inflammatory cells	No damage
1	Infiltration around the base of the crypt	Goblet cell depletion
2	Infiltration into the mucosa	Extensive goblet cell depletion
3	Extensive infiltration into the mucosat	Crypts depletion
4	Infiltration within the submucosa	Extensive crypts depletion

Table S3. Primers of qPCR.

Gene	Forward Primer (5'-3')	Reverse Primer (5'-3')
TNF-α	ACCCTCACACTCACAAACCA	ATAGCAAATCGGCTGACGGT
IL-1β	GCTTCAGGCAGGCAGTATCA	AATGGGAACGTCACACACCA
IL-6	CCCCAATTTCCAATGCTCTCC	CGCACTAGGTTTGCCGAGTA
IL-10	AATAAGCTCCAAGACCAAGGTGT	CATCATGTATGCTTCTATGCAGTTG
iNOS	CAACAGGAACCTACCAGCTCACT	AGCCTGAAGTCATGTTTGCCG
COX-2	GAAATATCAGGTCATTGGTGGAGA	ATGCTCCTGCTTGAGTATGTCG
GAPDH	CCTCGTCCCGTAGACAAAATG	TGAGGTCAATGAAGGGGTCGT

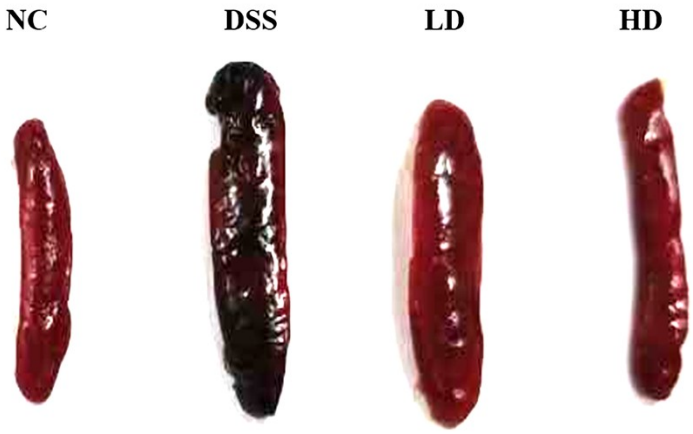

Fig. S1 Representative original images of livers in the NC, DSS, LD and HD group. (NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)

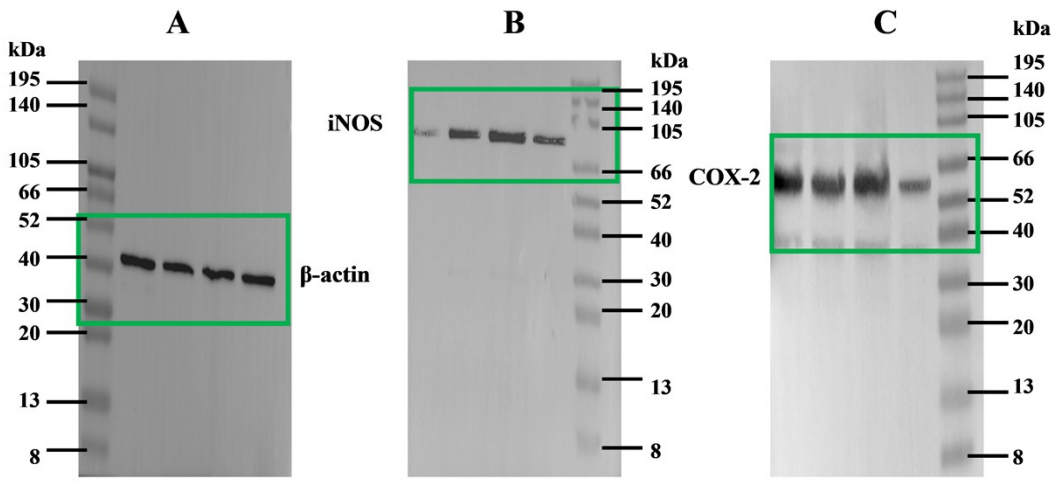

Fig. S2 Representative western blot original images of iNOS and COX-2. (A) Representative western blot original images of β-actin in the NC, DSS, LD and HD group. (B) Representative western blot original images of iNOS in the NC, DSS, LD and HD group. (C) Representative western blot original images of COX-2 in the NC, DSS, LD and HD group. (NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)

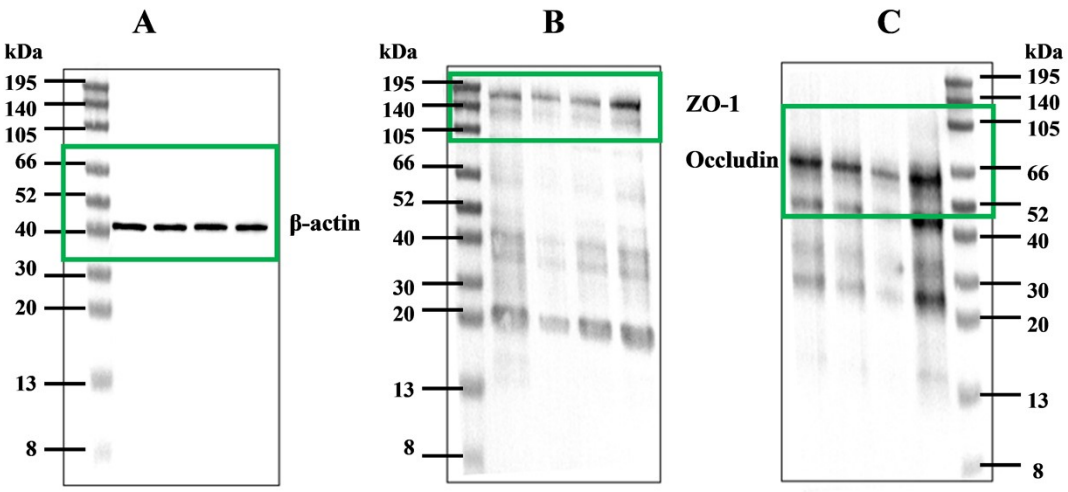

Fig. S3 Representative western blot original images of ZO-1 and Occludin. (A) Representative western blot original images of β-actin in the NC, DSS, LD and HD group. (B) Representative western blot original images of ZO-1 in the NC, DSS, LD and HD group. (C) Representative western blot original images of Occludin in the NC, DSS, LD and HD group. (NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)

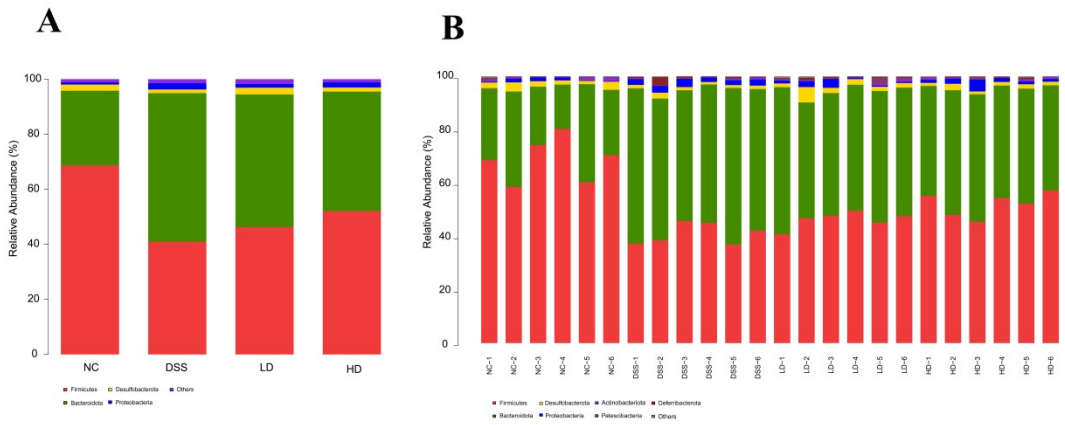

Fig. S4 Effect of D-tagatose on microbiota regulation at the phylum level. (A) Abundance of the colonic intestinal flora composition at the phylum level in NC, DSS, LD and HD group. (B) Abundance of the colonic intestinal flora composition at the phylum level in each mice in the NC, DSS, LD and HD group. (NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)

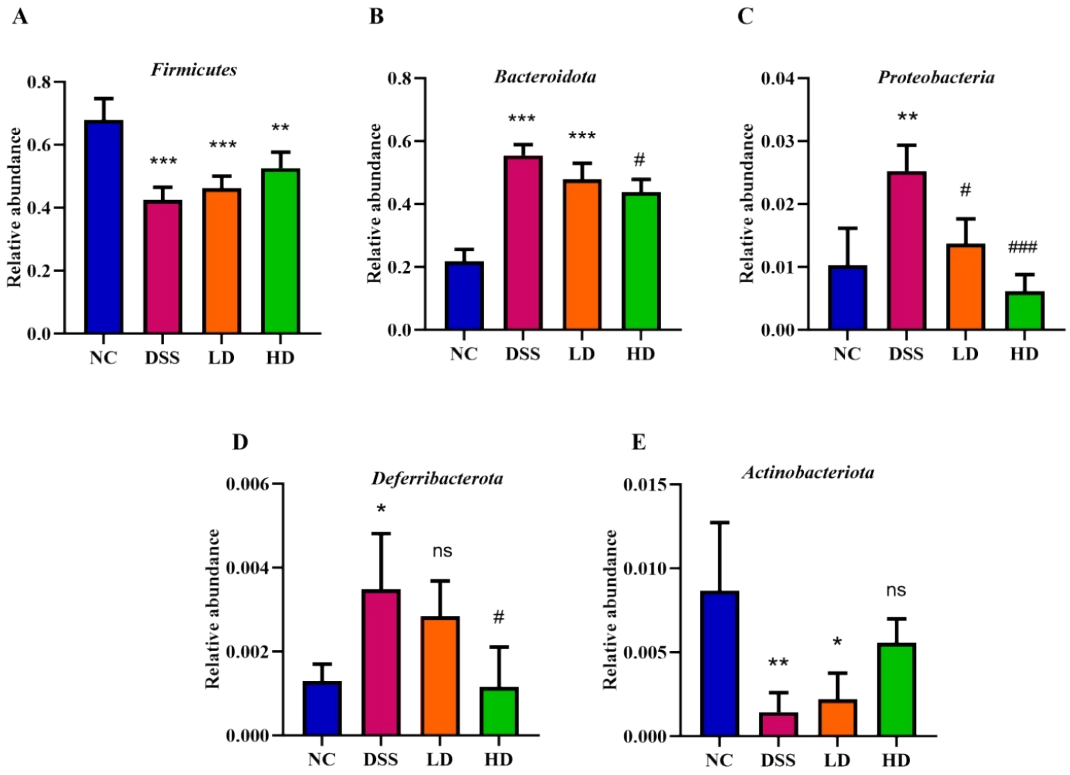

Fig. S5 Relative abundance of D-tagatose for microbiota regulation at phylum levels. (A) Abundance at the level of *Firmicutes*, (B) *Bacteroidetes*, (C) *Proteobacteria*, (D) *Deferribacterota*, (E) *Actinobacteria* in the NC, DSS, LD, and HD groups. (NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)

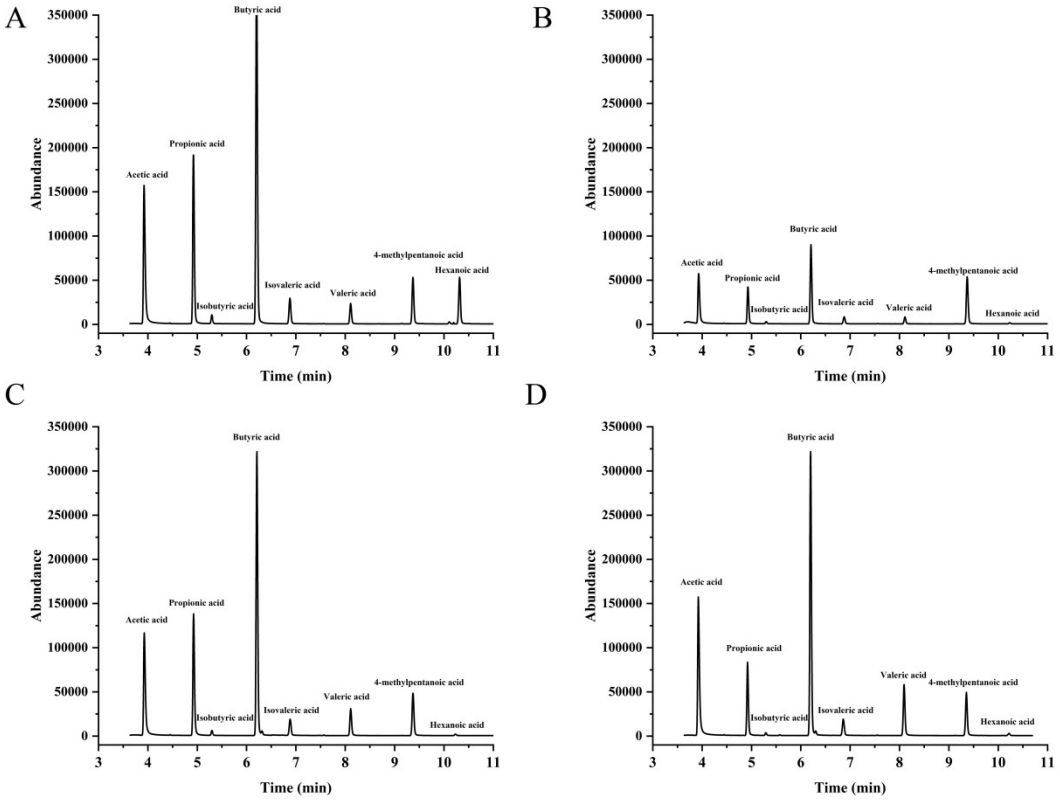

Fig. S6 Acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, isovaleric acid and hexanoic acid in the NC, DSS, LD, and HD groups were analyzed by GC/MSD. (A) Acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, isovaleric acid and hexanoic acid in the NC groups were analyzed by GC/MSD, (B) acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, isovaleric acid and hexanoic acid in the DSS groups were analyzed by GC/MSD, (C) acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, isovaleric acid and hexanoic acid in the LD groups were analyzed by GC/MSD, and (D) acetic acid, propionic acid, butyric acid, isobutyric acid, valeric acid, isovaleric acid and hexanoic acid in the HD groups were analyzed by GC/MSD. (Detection conditions of GC/MSD mass spectrometer as follows. GC conditions: The oven temperature was programmed to an initial temperature of 90 ℃; ramped to 160 ℃ at 10 ℃/min; then ramped at 40

℃/min to 240 ℃ and hold for 5 min. The carrier gas was helium at a flow rate of 1.0 mL/min. MSD conditions: Inlet temperature was 250 °C; ion source temperature was 230 °C; transfer line line temperature 250 °C, quadrupole temperature 150 °C. With the electricity sub-bombardment ionization source, the electron energy was 70 eV. NC was the control group, DSS was the model group, LD was the low-dose 50 mg/mL D-tagatose group, and HD was the high-dose 100 mg/mL D-tagatose group)