

Figure S1. Effect of probiotic compounds on serum cytokines in a mouse model of constipation, (A)IL-2. (B) IL- 4. (C) IL-6. (D) IL-10. (E) IL-12. (F) IL-17. (G) TNF- α . (H) TNF- γ . Data are means with SEM; a-d: Different letters indicate significant differences ($P < 0.05$), and the same letters and no letters have no difference significance.

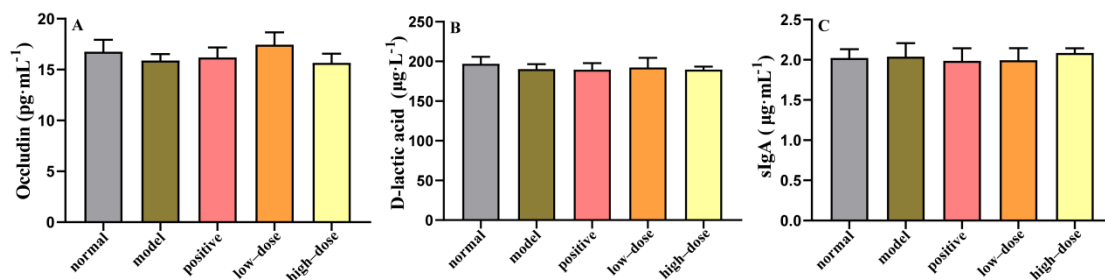


Figure S2. Effect of probiotic compounds on serum indexes in a mouse model of constipation. (A) Occludin. (B) D-lactic acid. (C) sIgA. Data are means with SEM; a-d: Different letters indicate significant differences ($P < 0.05$), and the same letters and no letters have no difference significance.

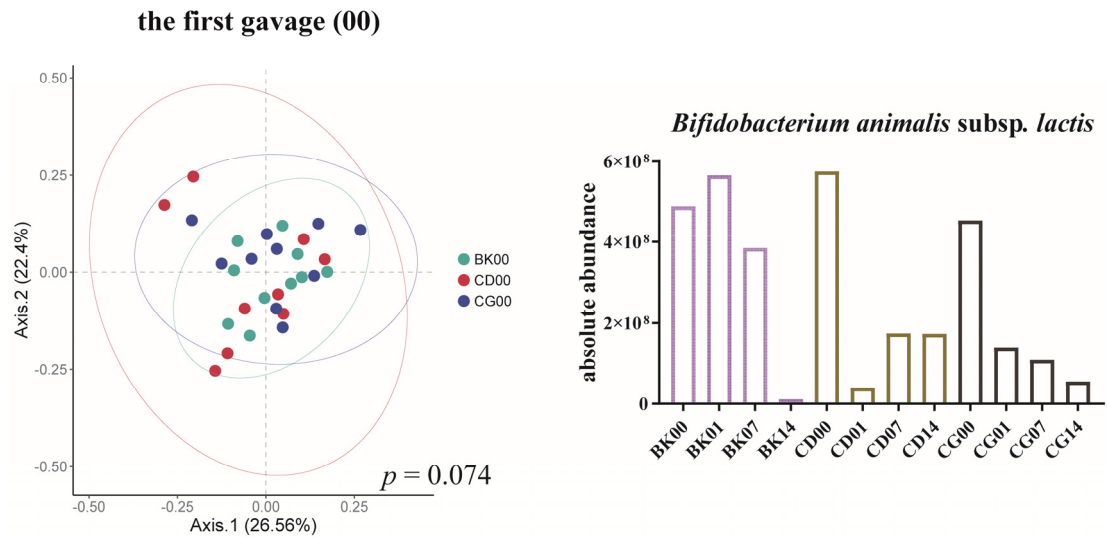


Figure S3. Principal component analysis based on Bray-Curtis distance matrices showed difference in the β -diversity of the gut microbiome at the first gavage and the absolute abundance of the *Bifidobacterium animalis* subsp. *lactis*.

Component	Amount (μ L)
Taq mix	25
341F	1.5
806R	1.5
DNA	2
dd H ₂ O	20

Table S1: Bacterias 16S rRNA V3-V4 50 μ L PCR reaction system. PCR condition: 95 $^{\circ}$ C 5 min, 95 $^{\circ}$ C 30 s, 52 $^{\circ}$ C 30 s, 72 $^{\circ}$ C 30s, 30 cycles, 72 $^{\circ}$ C 10 min, 12 $^{\circ}$ C 10 min.