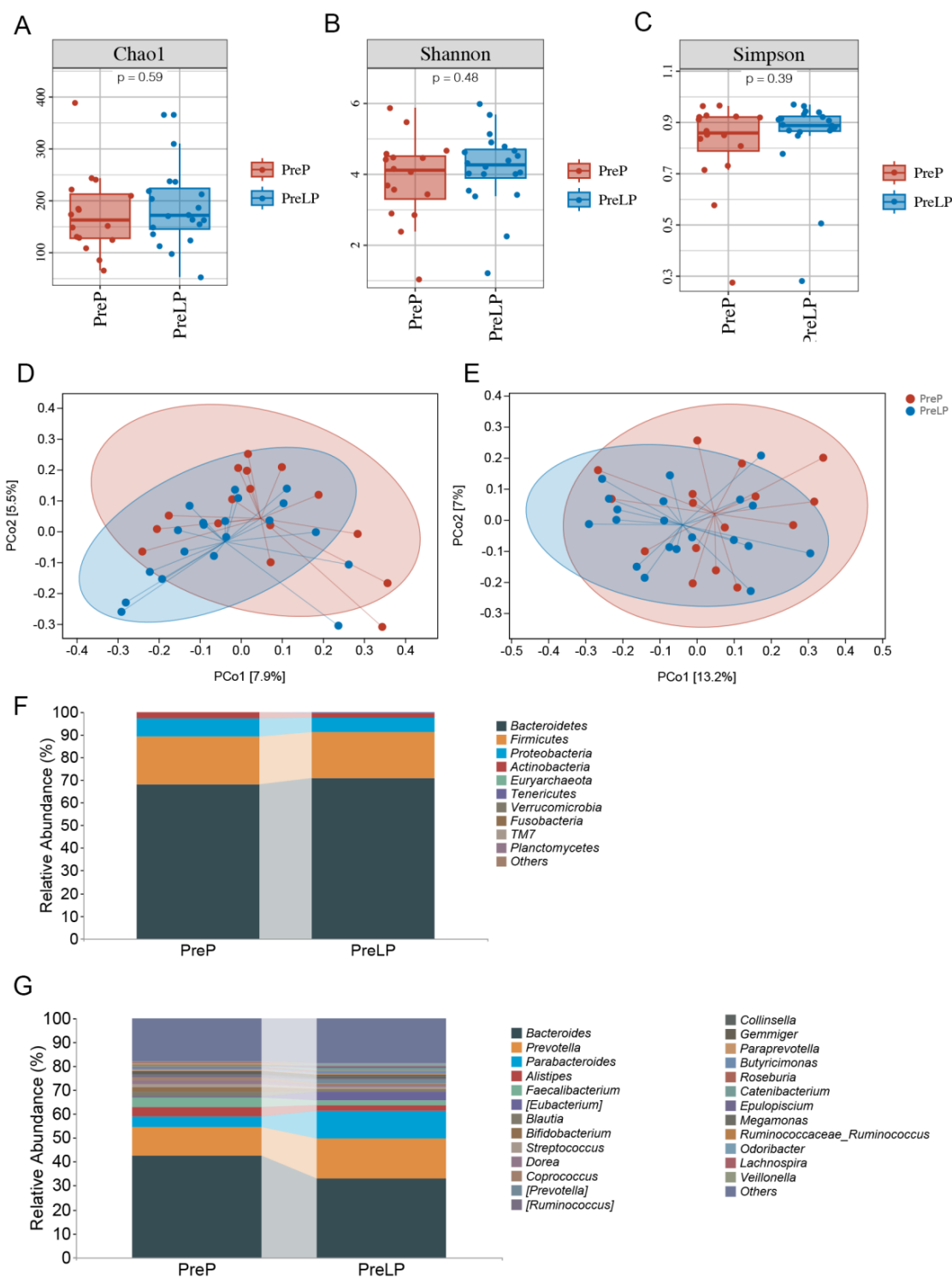
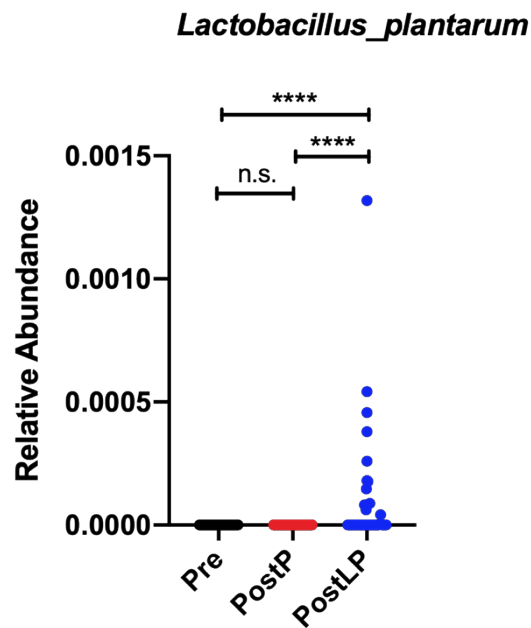


## Supplementary materials



**Supplementary figure 1: There were no significant differences in the diversity and composition of the preoperative intestinal microbiota of CHD patients. (A) The Chao1 index. (B) The Shannon index. (C) The Simpson index. (D) PCoA of  $\beta$ -diversity based on the Jaccard distance. (E) PCoA of  $\beta$ -diversity based on the unweighted UniFrac. (F) Species composition at the phylum level. (G) Species composition at the genus level. PreP, Preoperative**

placebo group; PreLP, Preoperative *Lactobacillus plantarum* group.



Supplementary figure 2: Relative abundance of *Lactobacillus plantarum* in the faeces of postoperative patients.

Pre, Preoperative group; PostP, Postoperative placebo group; PostLP, Postoperative *Lactobacillus plantarum* group. \*\*\*\* $p < 0.0001$ .

Supplementary Table 1: Gastrointestinal symptom scores in preoperative patients.

Variables	Placebo Group (n=57)	Probiotics Group (n=55)	t/Z/ $\chi^2$	P-value
GSRs total score	0 (0-0)	0 (0-0)	-0.288	0.773
Pain/discomfort	0 (0-0)	0 (0-0)	-0.361	0.718
Heartburn	0 (0-0)	0 (0-0)	-0.982	0.326
Reflux	0 (0-0)	0 (0-0)	0.000	1.000
Nausea	0 (0-0)	0 (0-0)	-1.446	0.148
Abdominal gurgling	0 (0-0)	0 (0-0)	0.000	1.000
Bloating	0 (0-0)	0 (0-0)	-0.290	0.771
Belching	0 (0-0)	0 (0-0)	-1.018	0.309
Flatulence	0 (0-0)	0 (0-0)	-1.018	0.309
Constipation	0 (0-0)	0 (0-0)	0.000	1.000
Diarrhea	0 (0-0)	0 (0-0)	0.000	1.000
Loose stools	0 (0-0)	0 (0-0)	0.000	1.000
Hard stools	0 (0-0)	0 (0-0)	-0.496	0.620
Urgency	0 (0-0)	0 (0-0)	0.000	1.000
Incomplete	0 (0-0)	0 (0-0)	0.000	1.000

<b>evacuation</b>				
<b>Tiredness</b>	0 (0-0)	0 (0-0)	-1.05	0.294

**Supplementary Table 2: Preoperative and intraoperative variables of included patients.**

<b>Variables</b>	<b>Placebo Group (n=57)</b>	<b>Probiotics Group (n=55)</b>	<b>t/Z/χ<sup>2</sup></b>	<b>P-value</b>
<b>NT-proBNP, ng/L</b>	52.00 (50.00-122.00)	50.00 (50.00-184.50)	-0.33	0.741
<b>HbA1c, %</b>	5.30 (5.10-5.50)	5.20 (5.10-5.50)	-0.738	0.461
<b>STB, μmol/L</b>	12.80 (8.70-16.60)	11.30 (8.70-15.90)	-0.623	0.533
<b>Cr, μmol/L</b>	62.30 (54.8-77.30)	66.20 (58.6-86.40)	-2.226	0.026
<b>WBC count, ×10<sup>9</sup>/L</b>	5.76 (4.97-6.84)	5.50 (4.68-7.48)	-0.012	0.991
<b>RBC count, ×10<sup>12</sup>/L</b>	4.50±0.64	4.48±0.60	-0.202	0.840
<b>Platelet count, ×10<sup>9</sup>/L</b>	210.68±59.86	218.38±59.62	0.679	0.498
<b>Hemoglobin, g/L</b>	133.77±17.23	131.98±18.24	-0.53	0.597
<b>Neutrophil count, ×10<sup>9</sup>/L</b>	3.25 (2.61-4.26)	3.25 (2.86-4.28)	-0.227	0.820
<b>Lymphocyte counts, ×10<sup>9</sup>/L</b>	1.75 (1.44-2.10)	1.71 (1.37-2.27)	-0.08	0.937
<b>Monocyte count, ×10<sup>9</sup>/L</b>	0.44 (0.33-0.50)	0.43 (0.32-0.47)	-0.856	0.392
<b>Right atrial diameter, mm</b>	42.60±9.20	42.33±9.12	-0.156	0.877
<b>Left atrial diameter, mm</b>	32 (30-39)	33 (30-38)	-0.694	0.488
<b>Pulmonary artery diameter, mm</b>	25 (22-28)	25 (21-30)	-0.318	0.750
<b>LVEF, %</b>	64 (58-67)	65 (59-70)	-0.697	0.486
<b>Operative time, h</b>	3.50 (2.00-4.50)	3.25 (2.00-4.50)	-0.277	0.782

<b>Intraoperative blood transfusion, n (%)</b>	20 (35.10)	17 (30.90)	0.221	0.638
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Data are presented as n (%), mean  $\pm$  standard deviation or median (interquartile range). NT-proBNP, N-Terminal Pro-Brain Natriuretic Peptide; HbA1c, Glycated hemoglobin A1c; STB, Serum total bilirubin; Cr, Creatinine; WBC, White blood cell; RBC, Red blood cell; LVEF, Left ventricular ejection fraction.

**Supplementary Table 3: Postoperative adverse events in included patients.**

<b>Variables</b>	<b>Placebo Group (n=57)</b>	<b>Probiotics Group (n=55)</b>	<b>t/Z/<math>\chi^2</math></b>	<b>P-value</b>
<b>Insomnia</b>	4 (7.00)	5 (9.10)	0.003	0.955
<b>Fever</b>	5 (8.80)	3 (5.40)	0.099	0.753
<b>Cough</b>	4 (7.00)	1 (1.80)	0.765	0.382
<b>Rehospitalization</b>	1 (1.80)	0 (0.00)	-	1.000

**Supplementary Table 4: Indicators related to gastrointestinal symptoms in postoperative patients.**

<b>Variables</b>	<b>Placebo Group (n=57)</b>	<b>Probiotics Group (n=55)</b>	<b>t/Z/<math>\chi^2</math></b>	<b>P-value</b>
<b>GSRS total score</b>	7 (3.5-9.5)	4 (3-7)	-1.833	0.067
<b>Pain/discomfort</b>	1 (0-1)	0 (0-1)	-0.241	0.809
<b>Heartburn</b>	0 (0-0)	0 (0-0)	-0.278	0.781
<b>Reflux</b>	0 (0-1)	0 (0-1)	-0.889	0.374
<b>Nausea</b>	1 (0-1)	1 (0-2)	-0.304	0.761
<b>Abdominal gurgling</b>	0 (0-0)	0 (0-0)	-0.794	0.427
<b>Bloating</b>	1 (0-1)	0 (0-1)	-2.842	0.004
<b>Belching</b>	0 (0-0)	0 (0-0)	-0.082	0.934
<b>Flatulence</b>	0 (0-1)	0 (0-1)	-0.603	0.546

<b>Constipation</b>	1 (0-1)	0 (0-1)	-1.946	0.052
<b>Diarrhea</b>	0 (0-0)	0 (0-0)	-0.624	0.533
<b>Loose stools</b>	0 (0-0)	0 (0-0)	-0.152	0.879
<b>Hard stools</b>	1 (0-1)	0 (0-1)	-2.174	0.030
<b>Urgency</b>	0 (0-0)	0 (0-0)	-1.255	0.209
<b>Incomplete evacuation</b>	0 (0-0)	0 (0-0)	-1.052	0.293
<b>Tiredness</b>	0 (0-0)	0 (0-0)	-0.071	0.943
<b>Time of first stool, d</b>	3 (1.5-3)	2 (2-4)	-0.422	0.673
<b>Antiemetics use, n (%)</b>	17 (29.8)	16 (29.1)	0.007	0.932
<b>Antidiarrheal use, n (%)</b>	4 (7.0)	1 (1.8)	0.765	0.382
<b>cathartics use, n (%)</b>	7 (12.3)	6 (10.9)	0.051	0.821