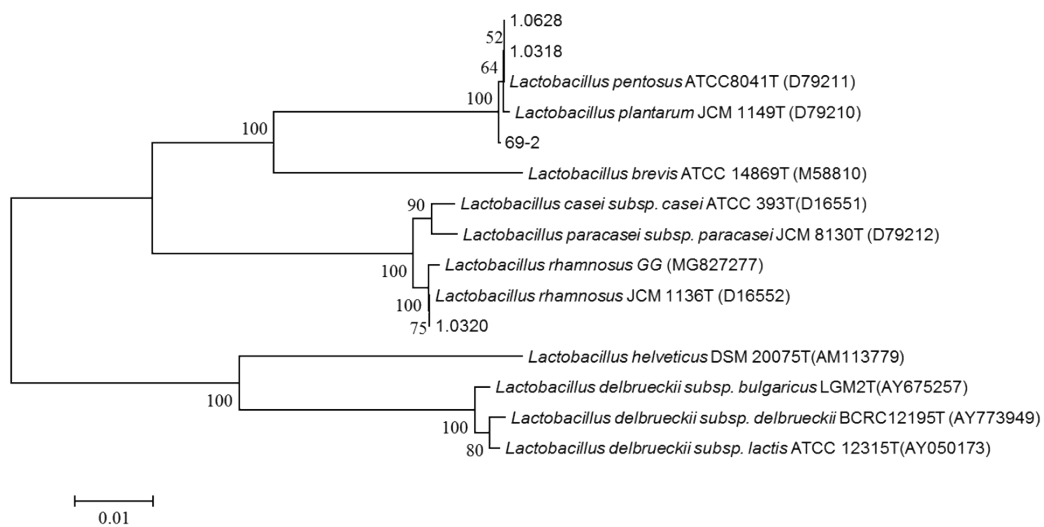**Supplementary material**



Fig. S1 Phylogenetic tree of *L. rhamnosus* 1.0320 and other strains based on 16S rRNA gene sequences.
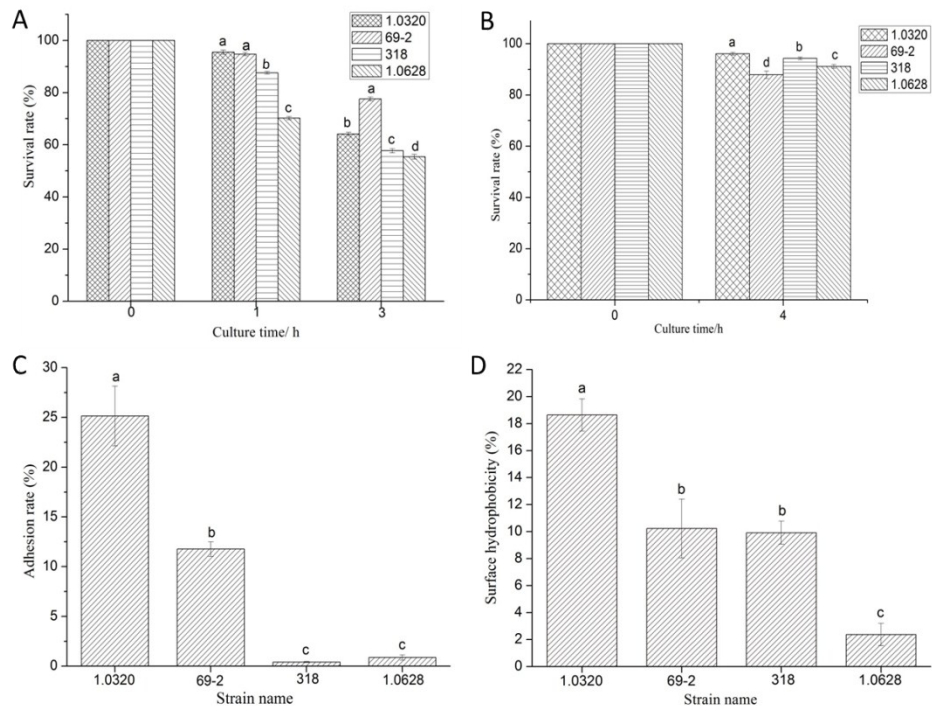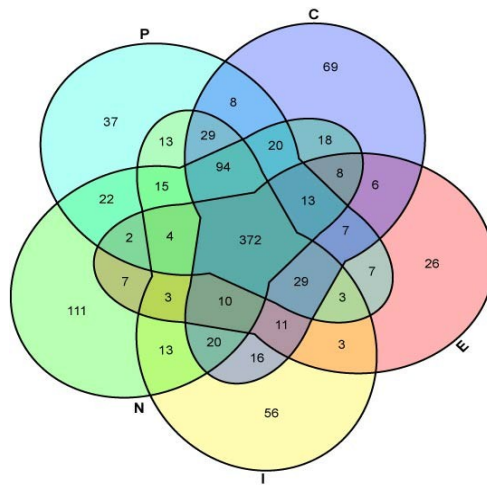
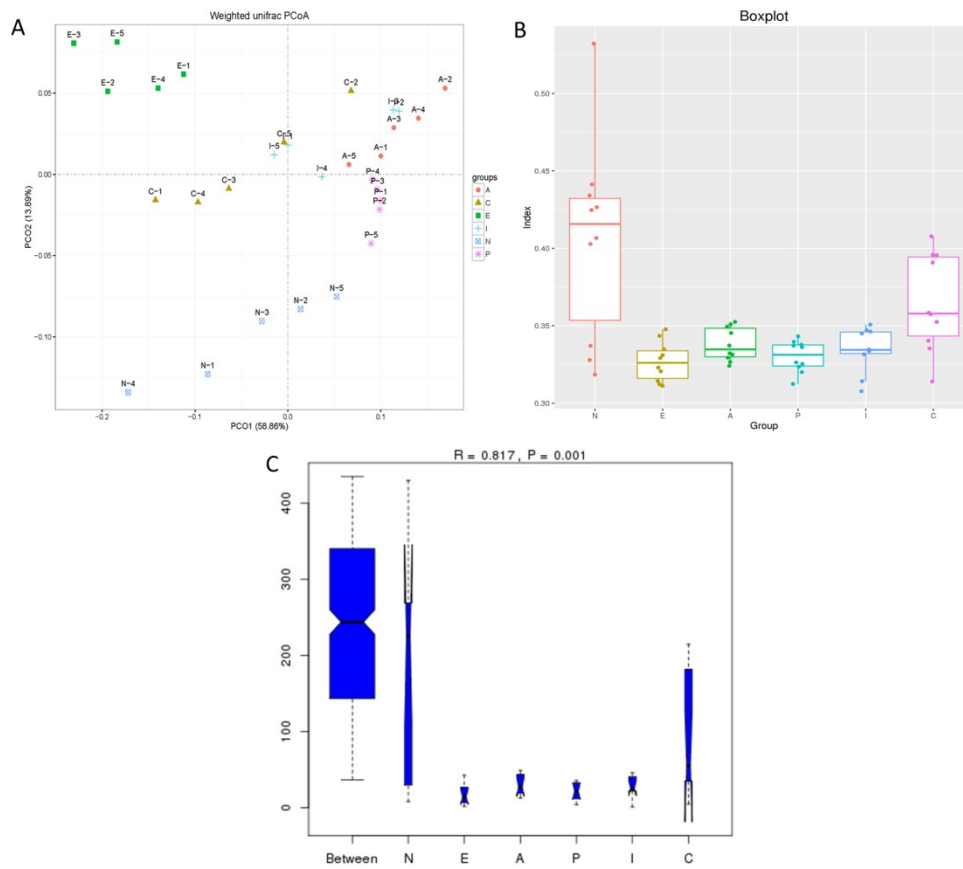Fig. S2 Determination of probiotic characteristics of *L. rhamnosus* 1.0320. (A) Acid resistance of Lactobacillus strains to pH3; (B) Bile salt resistance of Lactobacillus strains to 0.3% bile salt; (C) Adhesion ability of Lactobacillus strains to Caco-2 cells; (D) Surface hydrophobicity ability of Lactobacillus strains. All data are expressed as mean ± SD. Different letters indicate significant difference (P < 0.05) among groups.

Note：N：Normal group，E：Enteritis group，A：Antibiotic group，P：Probiotics group，I：Inulin group，C：Combination group
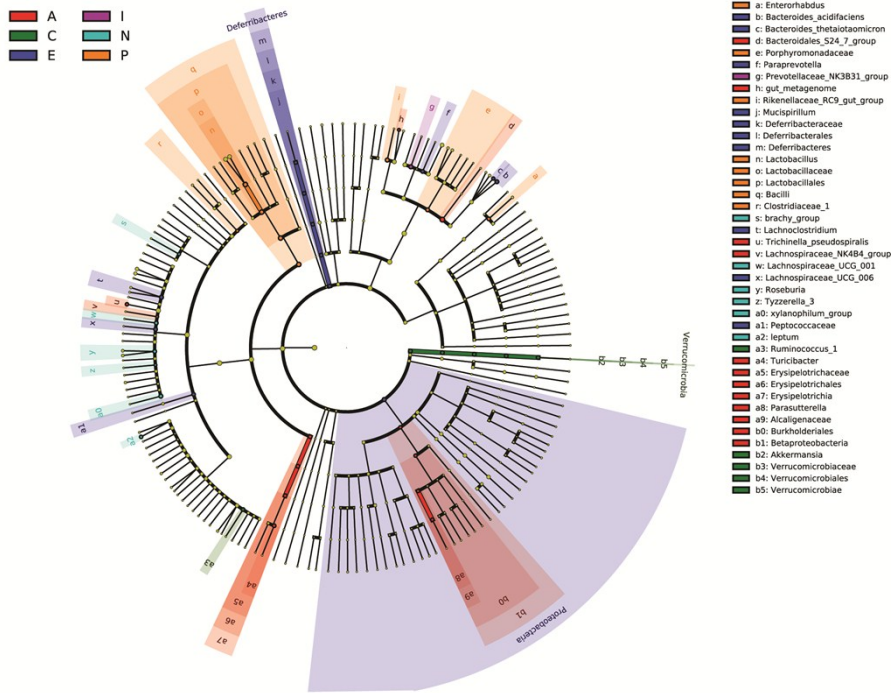
Fig. S3 VEEN diagram representation of the number of OTUs. n = 5 per group.

Note：N：Normal group，E：Enteritis group，A：Antibiotic group，P：Probiotics group，I：
Inulin group，C：Combination group

Fig. S4 Influences of *L. rhamnosus* 1.0320 combined with inulin treatment on gut microbiota β-diversity. (A) PCoA analysis; (B) Unifrac distance matrix analysis; (C) ANOSIM analysis. n = 5 per group.

Cladogram

a: Enterorhabdus
b: Bacteroides_acidifaciens
c: Bacteroides_thetaiotaomicron
d: Bacteroidales_S24_7_group
e: Porphyromonadaceae
f: Paraprevotella
g: Prevotellaceae_NK3B31_group
h: gut_metagenome
i: Rikenellaceae_RC9_gut_group
j: Mucispirillum
k: Deferribacteraceae
l: Deferribacterales
m: Deferribacteres
n: Lactobacillus
o: Lactobacillaceae
p: Lactobacillales
q: Bacilli
r: Clostridiaceae_1
s: brachy_group
t: Lachnoclostridium
u: Trichinella_pseudospiralis
v: Lachnospiraceae_NK4B4_group
w: Lachnospiraceae_UCG_001
x: Lachnospiraceae_UCG_006
y: Roseburia
z: Tyzzerella_3
a0: xylanophilum_group
a1: Peptococcaceae
a2: leptum
a3: Ruminococcus_1
a4: Turicibacter
a5: Erysipelotrichaceae
a6: Erysipelotrichales
a7: Erysipelotrichia
a8: Parasutterella
a9: Alcaligenaceae
b0: Burkholderiales
b1: Betaproteobacteria
b2: Akkermansia
b3: Verrucomicrobiaceae
b4: Verrucomicrobiales
b5: Verrucomicrobiae

Note：N：Normal group，E：Enteritis group，A：Antibiotic group，P：Probiotics group，I：
Inulin group，C：Combination group

Fig. S5 Lefse analysis of different samples. n = 5 per group.