Tables

Table S1 Dietary energy distribution of NFD and HFD

Nutritional components	NFD (kcal%)	HFD (kcal%)
Protein	20	20
Carbohydrate	70	20
Fat	10	60
Total	100	100

Table S2 Composition of NFD and HFD

Ingredient	NFD		HFD	
	g	kcal	g	kcal
Casein	200	800	200	800
L-Cystine	3	12	3	12
Corn Starch	506.2	2024.8	0	0
Maltodextrin 10	125	500	125	500
Sucrose	72.8	291.2	72.8	291.2
Cellulose, BW200	50	0	50	0
Soybean Oil	25	225	25	225
Lard	20	180	245	2205
Mineral Mix S10026B	50	0	50	0
Vitamin Mix V10001C	1	4	1	4
Choline Bitartrate	2	0	2	0
FD&C Yellow Dye #5	0.04	0	0	0
FD&C Blue Dye #1	0.01	0	0.05	0
Total	1055.05	4037	773.85	4037.2

Figure legends

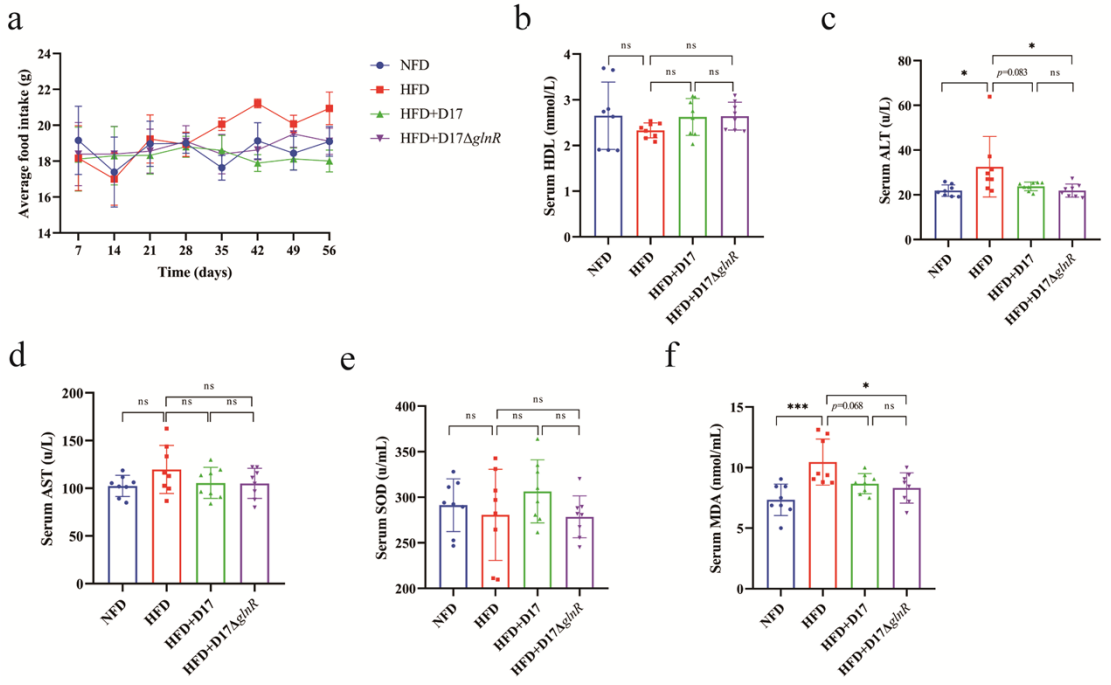

Fig. S1. *L. brevis* D17 and its *glnR*-deletion strain D17Δ*glnR* supplementation directly improved phenotypic metrics associated with obesity. (a) Average food intake. (b) Serum HDL. (c) Serum ALT. (d) Serum AST. (e) Serum SOD. (f) Serum MDA. The data are presented as mean ± SD, n=8. The statistical test was determined using one-way ANOVA with Tukey's post-hoc tests for multiple comparisons. ns, no significance; *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$.

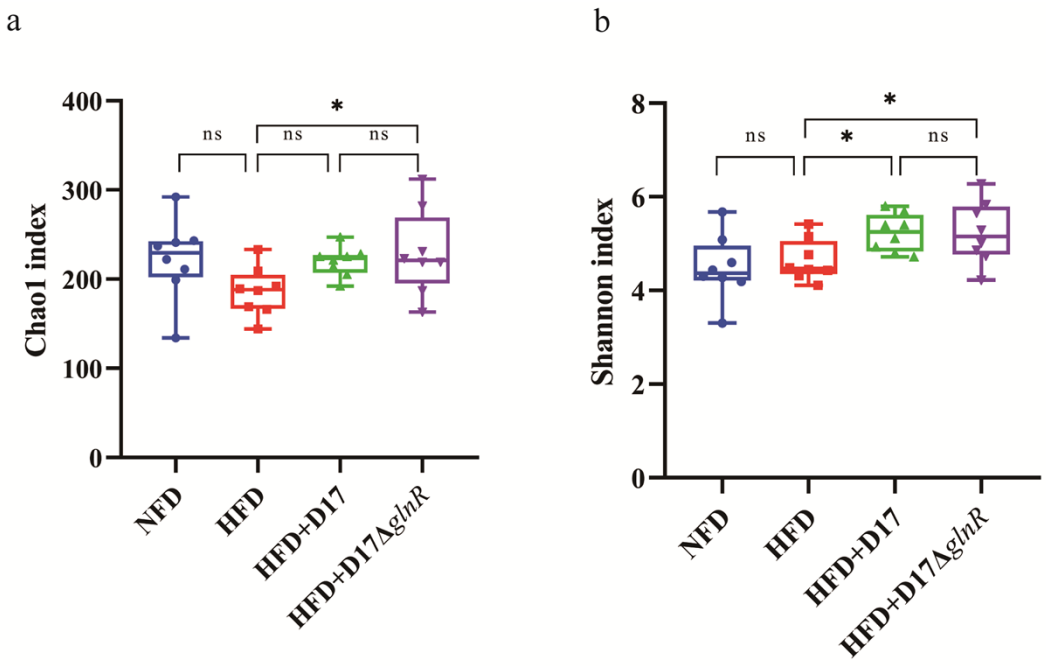

Fig. S2. Effects of *L. brevis* D17 and its *glnR*-deletion strain D17Δ*glnR* intervention on gut microbiota alpha diversity in mice. (a) Chao1 index. (b) Shannon index. The data are presented as mean ± SD, n=8. The statistical test was determined using one-way ANOVA with Tukey's post-hoc tests for multiple comparisons. ns, no significance; *, $p < 0.05$; **, $p < 0.01$; ***, $p < 0.001$.