

Supplementary materials

Tab. S1 Probiotic characteristics of LAB

Strains	Simulated gastric digestion (%)	Simulated intestinal digestion (%)	Surface hydrophobicity (%)	Adhesive rate (%)	Cholesterol removal rate (%)
<i>L. lactis</i> 102-1	42.50±1.09 ^b	47.53±0.79 ^b	61.13±1.05 ^a	48.35±0.83 ^c	42.75±1.02 ^b
LP 23-1	57.32±1.24 ^a	56.37±1.15 ^a	64.86±1.21 ^a	73.24±0.89 ^a	52.43±0.89 ^a
LP 1.0314	37.36±0.95 ^c	40.37±1.04 ^c	49.73±0.94 ^b	61.74±0.58 ^b	21.36±0.75 ^d
LP 1.0624	55.65±0.72 ^a	45.20±0.75 ^b	37.85±0.86 ^c	65.27±1.16 ^b	36.83±0.91 ^c

Note: The simulated gastric digestion test was incubated in the simulated gastric fluid (pepsin: 3 g/L, pH 2.5) for 3 h.

The simulated intestinal digestion test was incubated in the simulated intestinal fluid (pancreatin: 1 g/L and bile salts: 3 g/L, pH 8.0) for 3 h.

L. lactis 102-1 (*Lactococcus lactis* 102-1), LP 23-1 (*Lactobacillus plantarum* 23-1), LP 1.0314 (*Lactobacillus plantarum* 1.0314) and LP 1.0624 (*Lactobacillus plantarum* 1.0624).

All data are expressed as the mean ± SD. Different letters indicate significant differences ($P < 0.05$) in the same column line.

Tab. S2. The ingredients of the diets

Ingredients	D12450B Normal diet (g/100 g)	D12492 High fat diet (g/100 g)
Casein	20.00	20.00
L-Cystine	0.30	0.30
Corn Starch	31.50	0
Maltodextrin	3.50	12.50
Sucrose	35.00	6.88
Cellulose	5.00	5.00
Soybean Oil	2.50	2.50
Lard	2.00	24.5
Mineral Mix	1.00	1.00
Dicalcium phosphate	1.30	1.30
Calcium Carbonate	0.55	0.55
Potassium Citrate, 1 H ₂ O	1.65	1.65
Vitamin Mix	1.00	1.00
Choline Bitartrate	0.20	0.20

Tab. S3 Primer sequence

Gene	Forward primer (5' to 3')	Reverse primer (5' to 3')
FABP	CATCCGGTCAGAGAGTACTTTT	TAGGGTTATGATGCTCTTCACC
FATP4	GGTTACCTGTACTIONCCGAGATC	CCTTTTTCAAGGTCTGTGCAAA
CD36	CTTTGAAAGAACTCTTGTGGGG	GTCTGTGCCATTAATCATGTCG
FFAR3	CCTGCTGCTGTTCTGCCTTTC	GCGGTGAGATAGATGGTGGTGAA
G		
TLR-4	GCCATCATTATGAGTGCCAATT	AGGGATAAGAACGCTGAGAATT
NF-κB	CAAAGACAAAGAGGAAGTGCAA	GATGGAATGTAATCCCACCGTA
IκB-α	TATTTGAAACTGGAAGCAGC	CCGGAAGAAAAGCTGTAAACAT
ZO-1	CTGGTGAAGTCTCGGAAAAATG	CATCTCTTGCTGCCAAACTATC
Occludin	CAGGATGCCAATTACCATCAAG	GGGTTCACTCCCATTATGTACA
Claudin-1	AGATACAGTGCAAAGTCTTCGA	CAGGATGCCAATTACCATCAAG
Muc2	CGAGCACATCACCTACCACATCAT	TCCAGAATCCAGCCAGCCAGTC
C		
β-actin	GACCTCTATGCCAACACAGT	CACCAATCCACACAGAGTAC

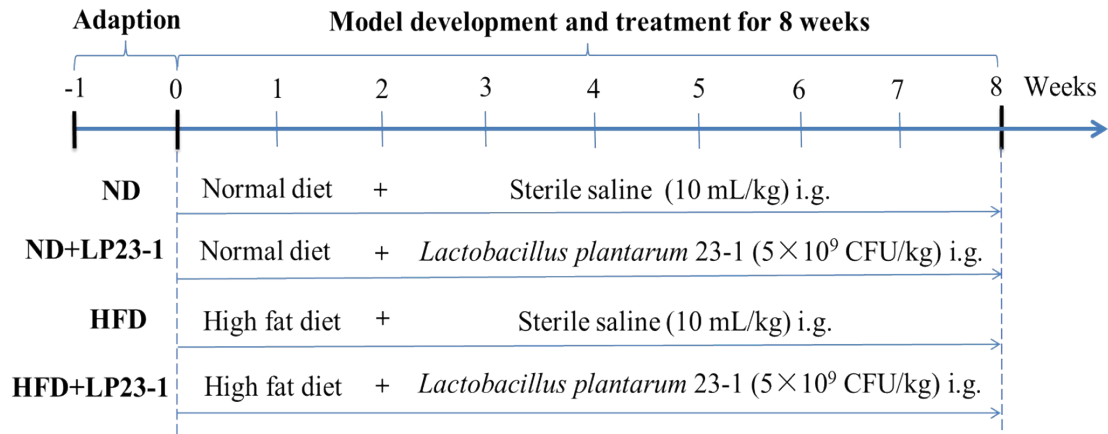


Fig. S1 Design of animal experiment. i.g.: Intra-gastric gavage. Treatment once a day for 8 weeks.