Intestinal linoleic acid contributes to the protective effects of *Akkermansia muciniphila* against *Listeria monocytogenes* infection in mice

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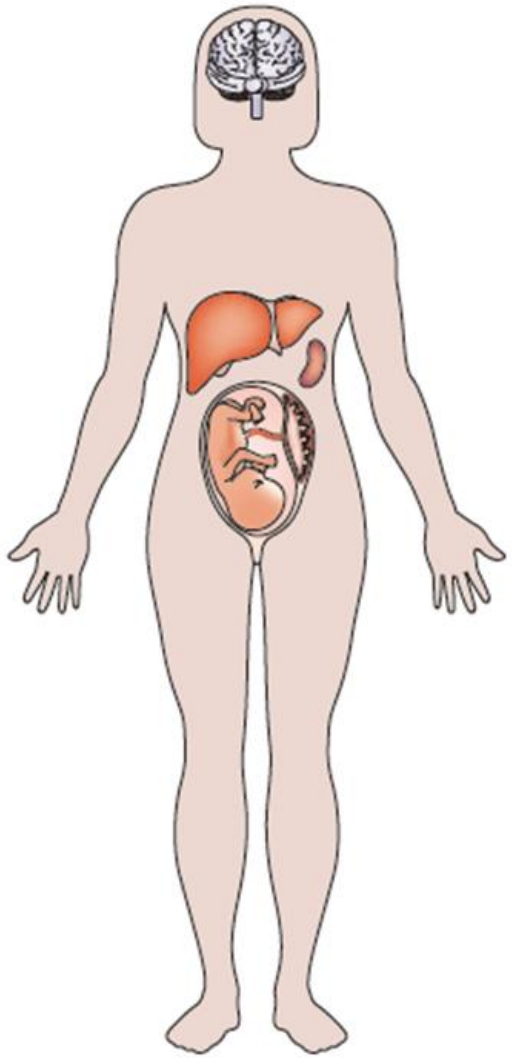
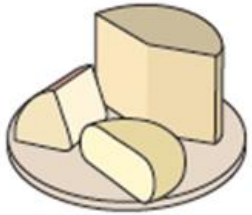
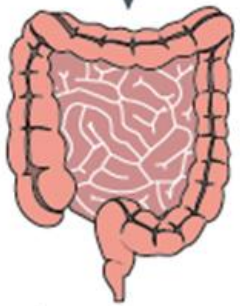
Introduction



Listeria monocytogenes-
contaminated food





Intestine

Lymph
node

Blood vessel

Liver

Bloodstream

Spleen

Brain

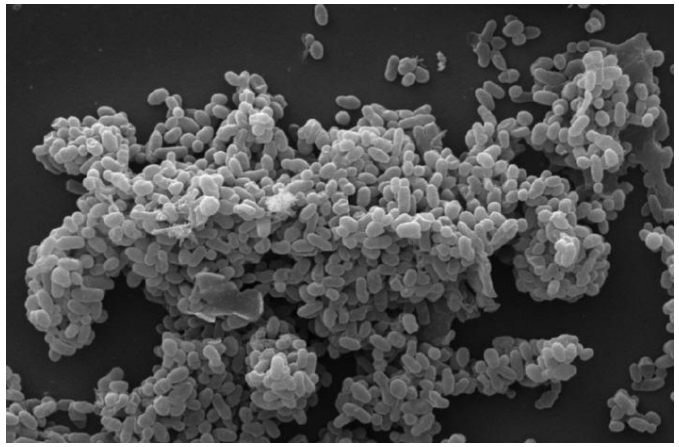
Placenta

Fetus

Listeria monocytogenes

Mortality

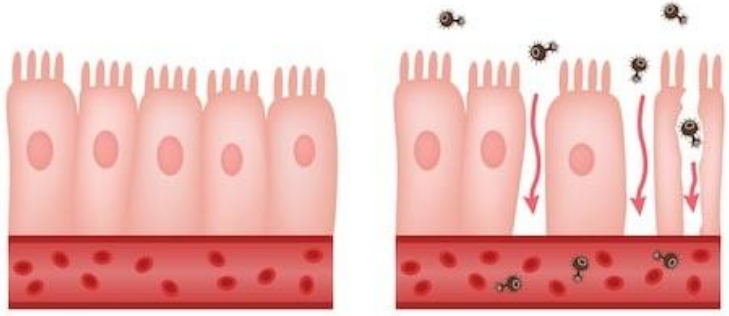
Introduction



Akkermansia muciniphila

Probiotics

?



Pathogens

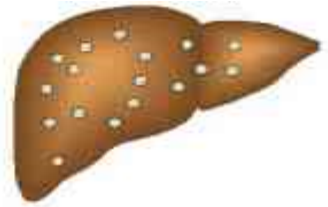
Safe

Obesity

Insulin Resistance

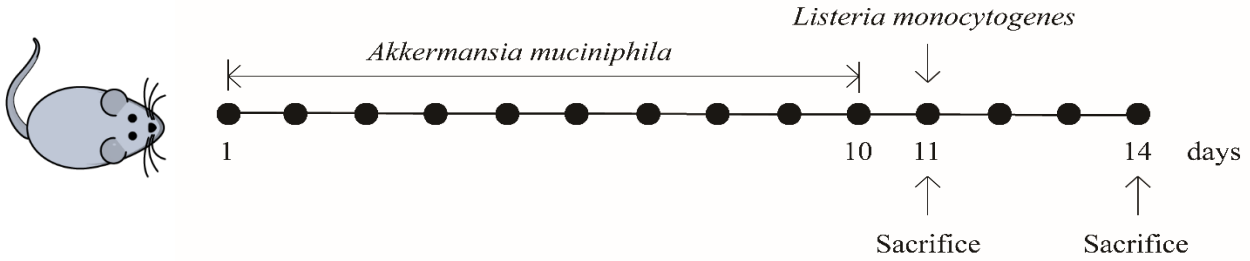
Functional

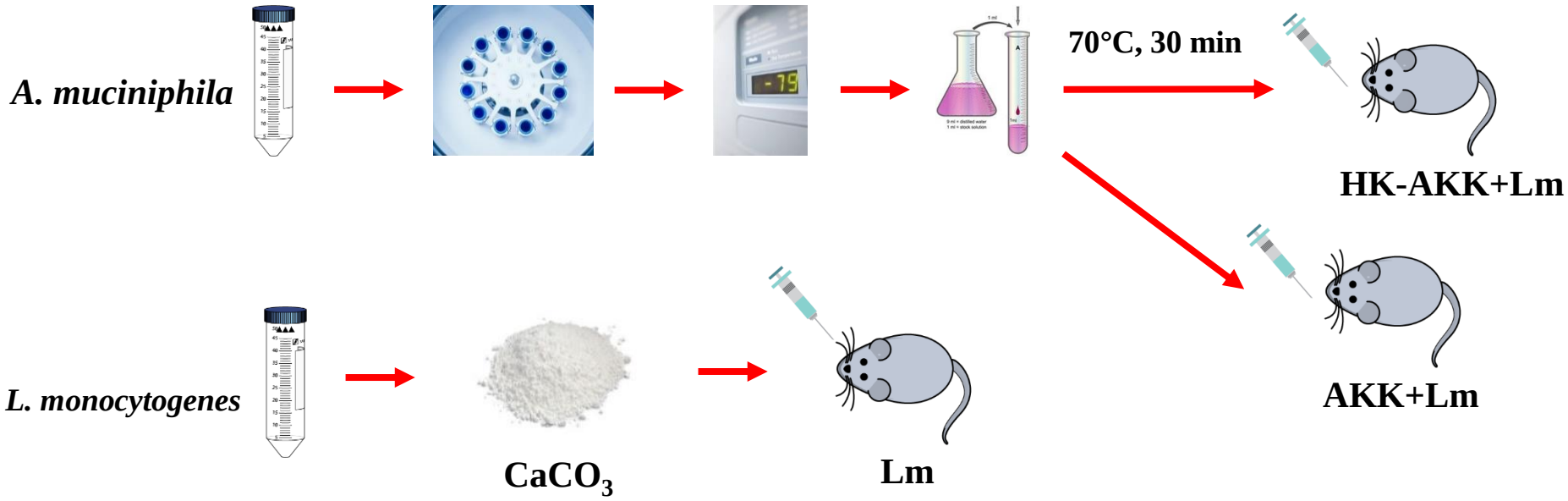
Serum cholesterol



NAFLD

Materials and Methods





The mice were divided into different groups:

(1) Control (PBS); (2) AKK; (3) HK-AKK; (4) Lm; (5) AKK+Lm; (6) HK-AKK+Lm

Results

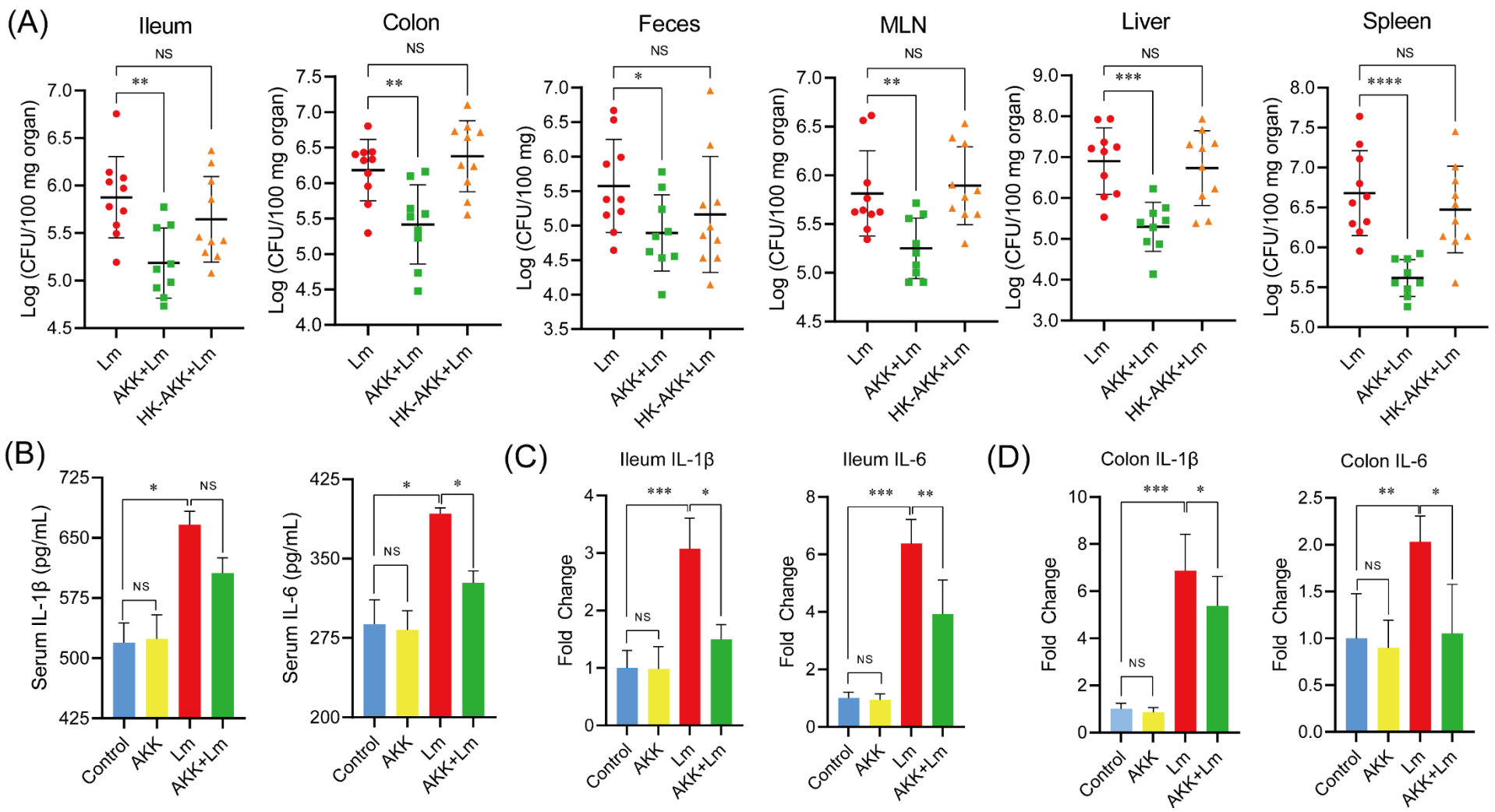


Figure 1 (A-D). Live *A. muciniphila* alleviates listerial infection and *L. monocytogenes* induced inflammation in mice

Results

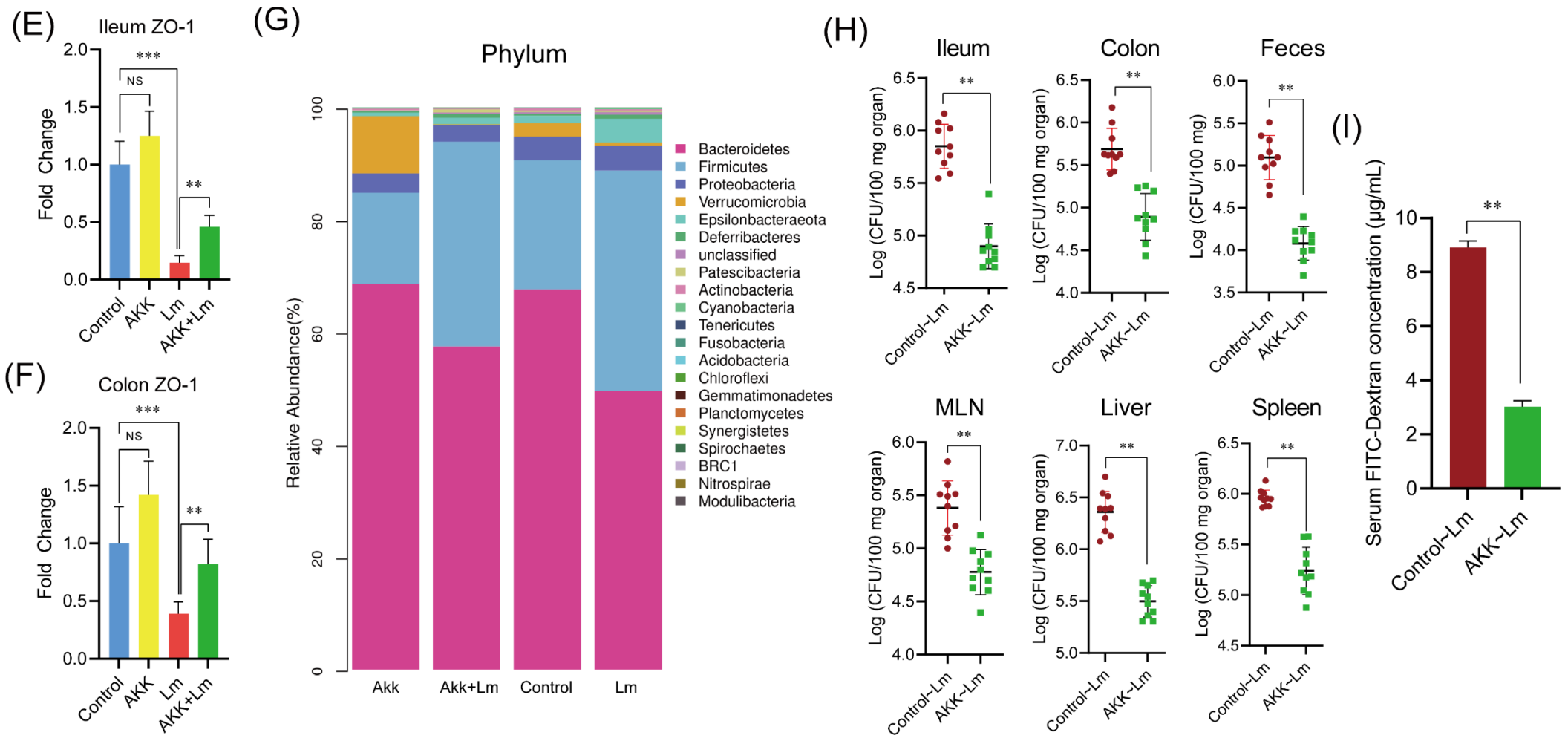


Figure 1 (E-I). *A muciniphila* alleviates listerial infection in mice through enhancing intestinal epithelial barrier and modulating gut microbiota.

Results

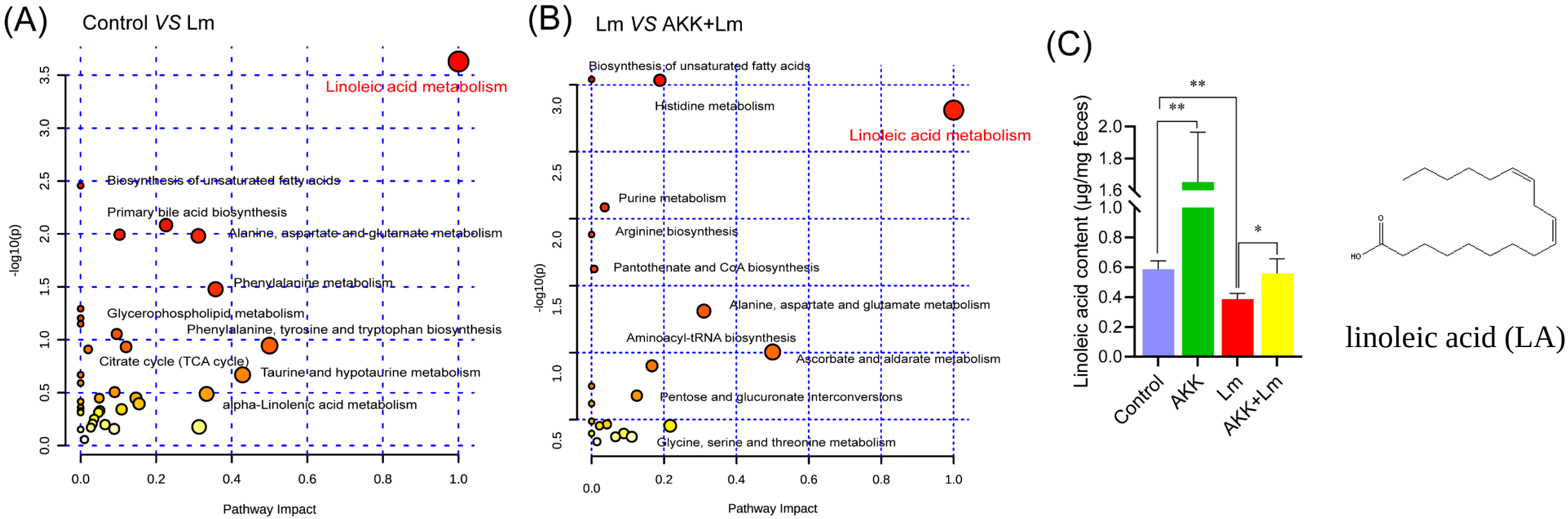


Figure 2 (A-C). A. muciniphila pretreatment increased the levels of gut linoleic acid metabolic pathway in mice

Results

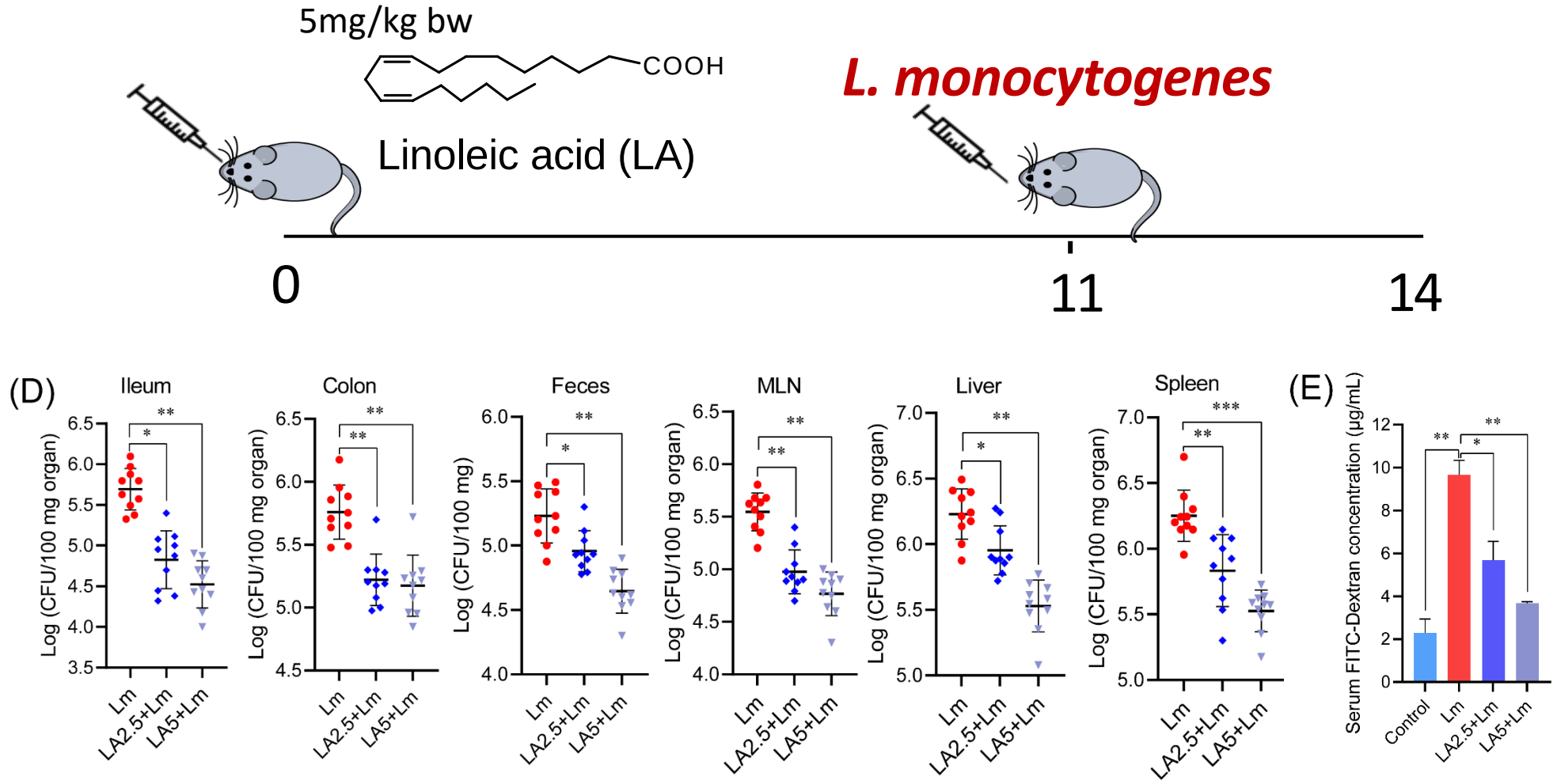


Figure 2(D-E). The gut metabolite linoleic acid attenuated *L. monocytogenes* infection by strengthens epithelial barrier.

Results

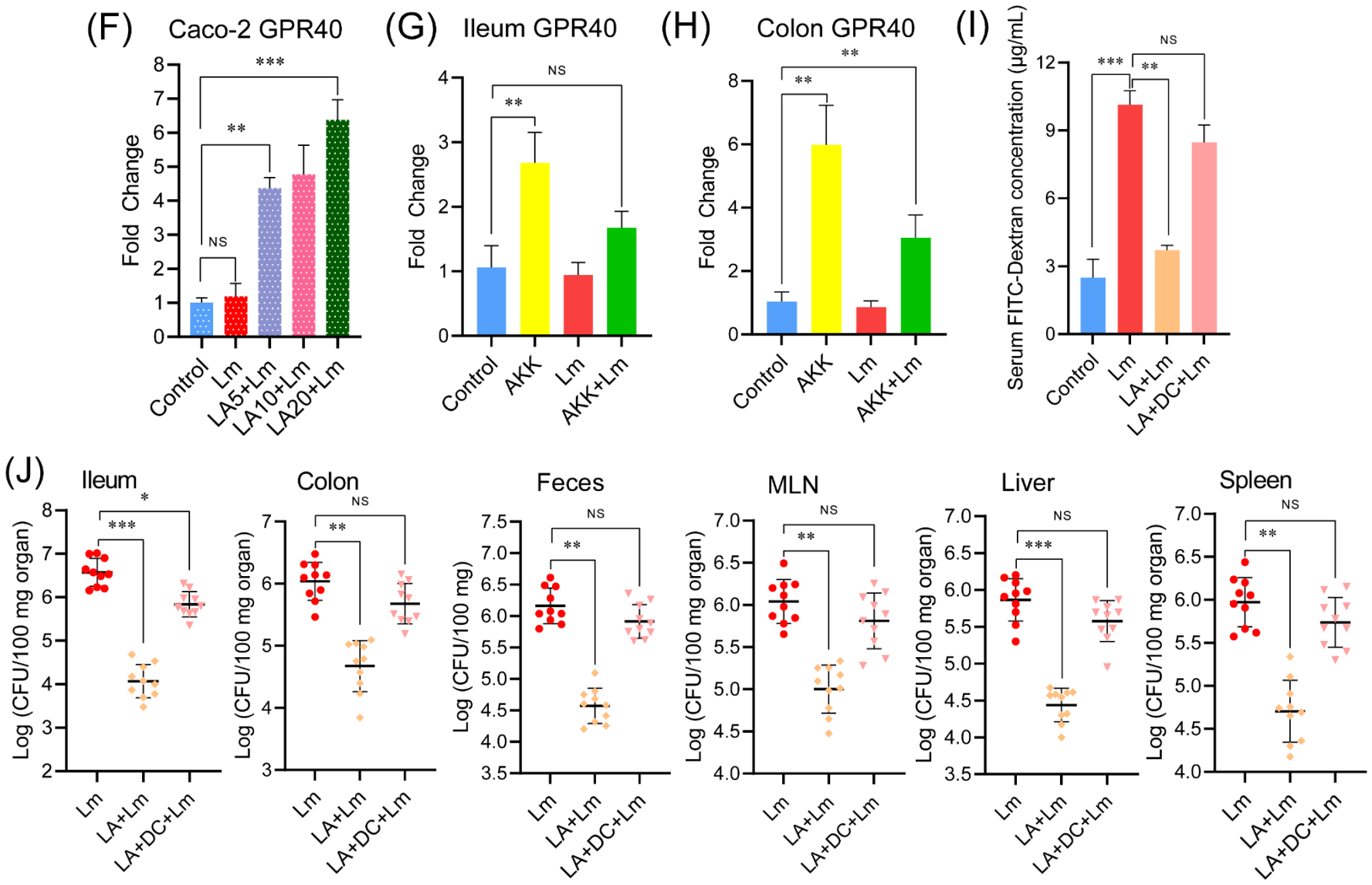


Figure 2 (F-J). Linoleic acid stimulated GPR40 pathway to attenuate *L. monocytogenes* infection in mice

Summary

- Live *Akkermansia muciniphila* mitigated *Listeria monocytogenes*-induced infection in mice.
- Live *A. muciniphila* strengthened intestinal epithelial barrier and modulated gut microbiota.
- Metabolomic analysis demonstrated an increased intestinal level of linoleic acid.
- Linoleic acid protected intestinal epithelial barrier in a GPR40 dependent manner.

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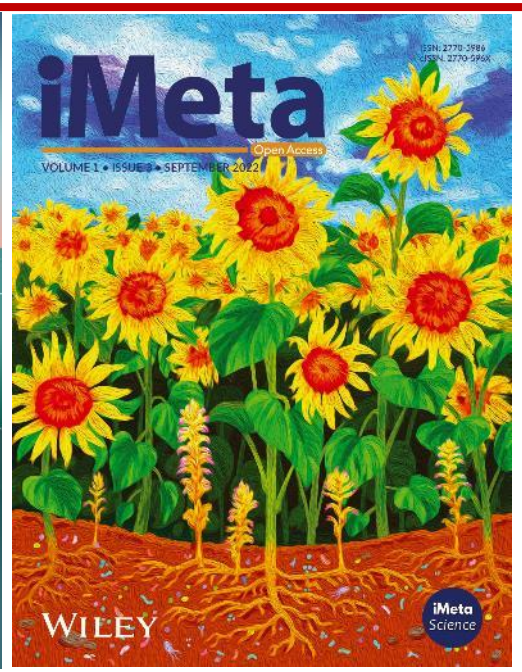

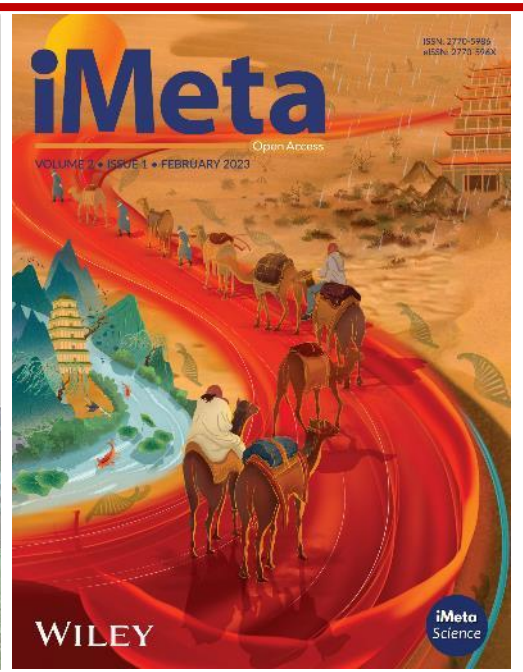

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