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# Microencapsulated *Lactobacillus Plantarum* for the Prevention of Depression in Chronic Restraint Mice Model

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## Introduction

Depression is a common mental disorder, which affected millions of people worldwide. Many drugs have been developed for the treatment of depression, but the safety and tolerability of drugs should be improved. Evidence has suggested that *Lactobacillus plantarum* has benefits on major depression disorders. However, gastric acid and bile may damage the probiotics in GI tract after the probiotics are orally administrated. This study developed a microencapsulation system based on zein to protect the probiotics and improve their survival.

## Characteristics of Microencapsulated *Lactobacillus Plantarum*

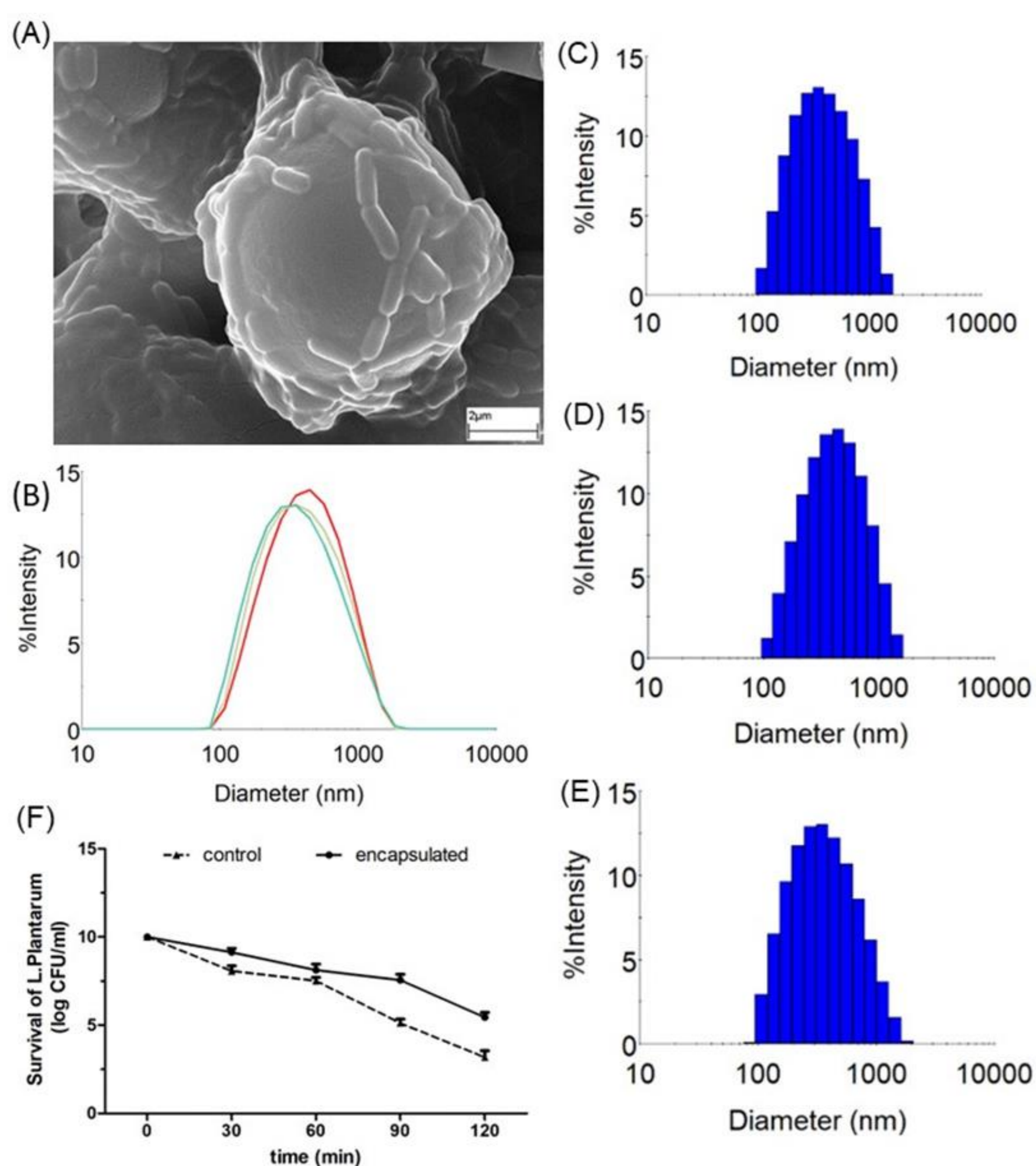
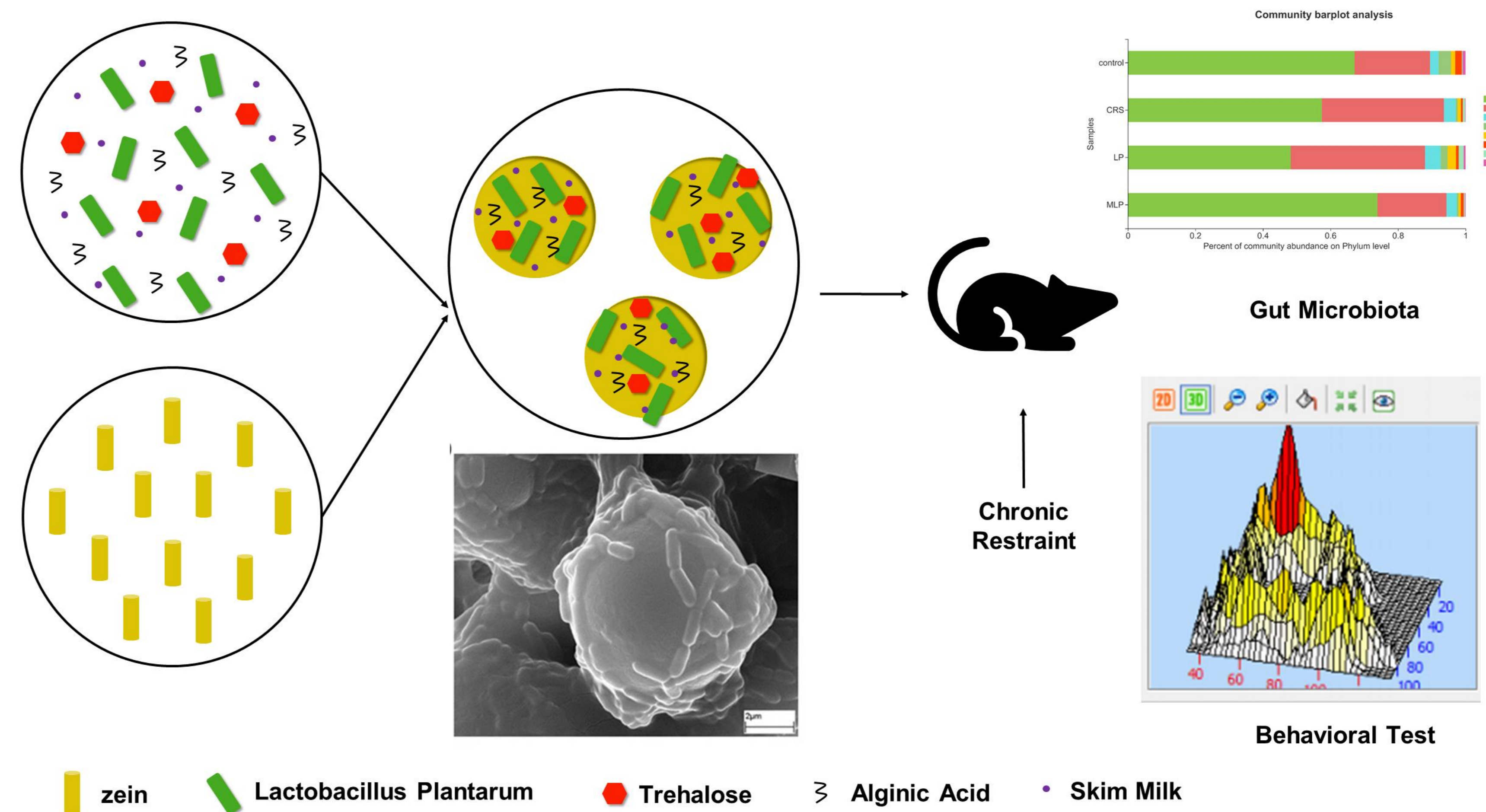


Figure 1. (A) SEM image of microencapsulated *L. plantarum*; (C-E) Particle size distribution of microencapsulated *L. plantarum*; (F) Survival number of *L. plantarum* in control sample and encapsulated sample.

## References

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- Messaoudi M, Lalonde R, Violle N, Javelot H, Desor D, Nejdi A, et al. Assessment of psychotropic-like properties of a probiotic formulation (*Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175) in rats and human subjects. *British Journal of Nutrition*. 2011;105(5):755-64.

## Graphic Abstract



## Effect of Microencapsulated *Lactobacillus Plantarum* on Behavioral Assessment and Gut Microbiota of CRS Mice

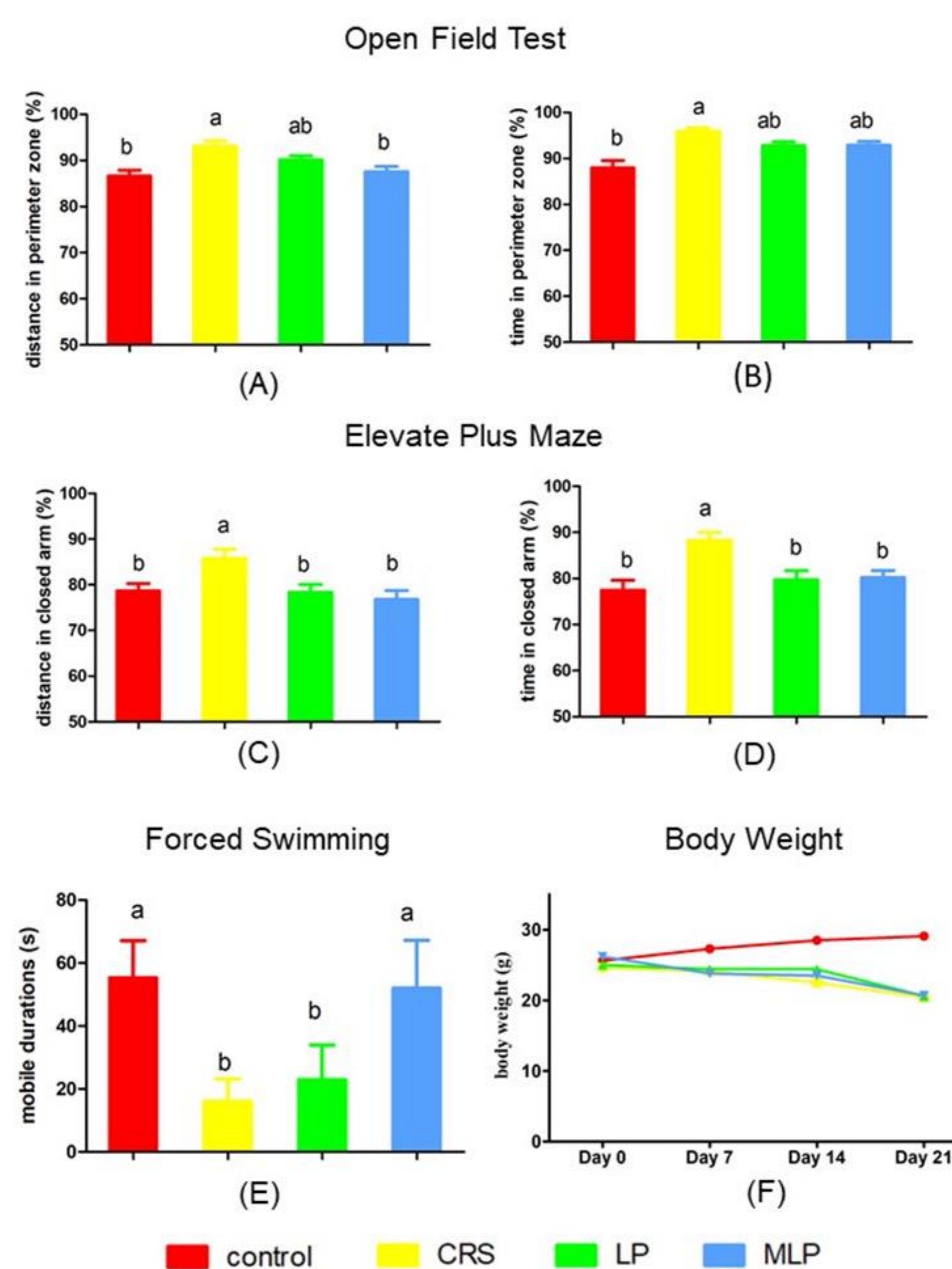


Figure 2. (A-B) Behavioral assessment results of OFT, (C-D) EPM, (E) FST, and (F) Bodyweight of mice. The different letters (a and b) indicate the significant difference ( $p < 0.05$ ).

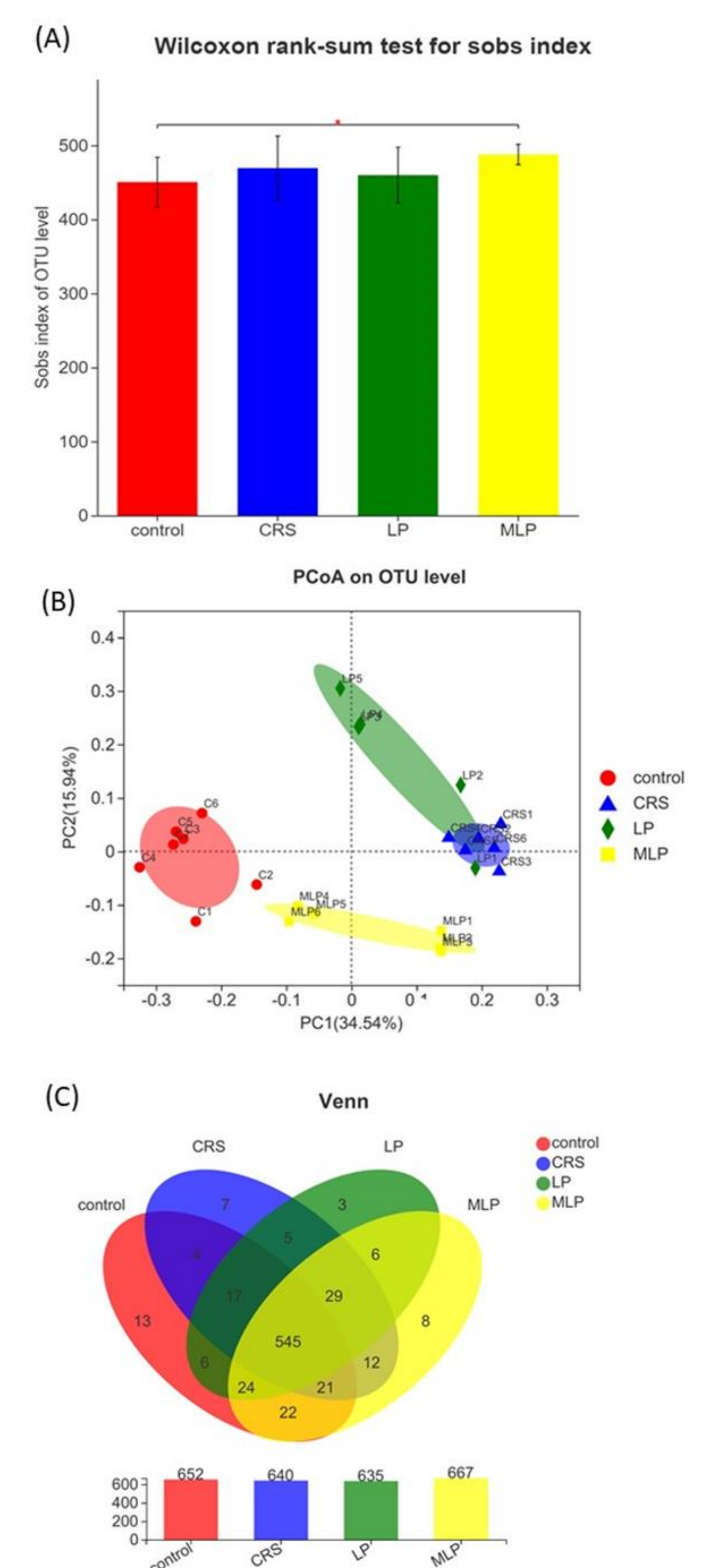


Figure 3. (A) The diversity index, (B) PCoA on OTU level, (C) the composition of gut bacteria bacterial on OTU level.

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