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Session HMB06 Microbiome-Host Interactions I

## 3445. Improvement of Gut Microbiome by Oral Administration of Liquid-Suspension *Bacillus Clausii* Spores in the Rabbit Model

June 10, 2022, 10:00 AM - 5:00 PM

Exhibit and Poster Hall

### Authors

**T. T. Nguyen**, P. D. Le, A. P. T. Bui, A. T. V. Nguyen, A. H. Nguyen; ANABIO R&D Ltd. Company, Ha NOI, Viet Nam

### Disclosures

**T.T. Nguyen:** None.

### Abstract

The use of probiotics in the human digestive system has increased considerably over the last decade. The purpose of this study was to investigate the efficacy of *Bacillus clausii* ANA39 on the gut microbiome in a rabbit model by using the Next-Generation Sequencing (NGS) Illumina MiSeq platform targeting the V4 region of the 16S rDNA. The rabbits were orally administrated with *B. clausii* spores at the dosages of 0.93 (A1 group) and 2.80 mL/kg rabbit/day (A2 group). Our data revealed that after 28 days of continuous feeding, ANA39 live-counts increased over time in both groups at the time points 7, 21 and 28 days; with their values for A1 and A2 groups at day 28 were 0.4 and  $7.8 \times 10^6$  CFU/g faeces, which were 4.4 and 10-fold higher compared to those at day 21, respectively. No *B. clausii* were detectable at three time points of study. NGS of gut microbiome analysis has revealed that at the phylum level, the administration of ANA39 decreased the percentages of Proteobacteria (90%) and Firmicutes (30%), Synergistetes (89%) and increased the percentage of Bacteroidetes and Actinobacteria. The abundance of Proteobacteria was reduced and the relative proportion of Actinobacteria was enhanced. Proteobacteria produce enterotoxins that often cause gastroenteritis or anaphylaxis. Synergistetes are suggested to be opportunistic pathogens and they are also present in sites of human diseases such as cysts, abscesses, and areas of periodontal disease. Overall, our results demonstrated that *B. clausii* ANA39 promote the proliferation of beneficial bacteria in the intestinal tract and inhibit the proliferation of harmful bacteria in rabbit model.