Dear Editors and Reviewers

We are grateful to the reviewers for the constructive comments. We have made an attempt to revise the paper in accordance with the comments of the reviewers and feel that these revisions have greatly enhanced the quality of the manuscript.

Responses to the Comments by the Editor-in-Chief

1. I recommend the manuscript to be published in the World Journal of Clinical Cases. Before final acceptance, the author(s) must add a table/figure (medical imaging) to the manuscript. There are no restrictions on the figures (color, B/W).

Reply:

Thank you for your excellent suggestion. I attached a figure (Figure 1.) which shows the mechanisms of action of probiotics, prebiotics, synbiotics, and FMT.

Responses to the Comments by the reviewer 1:

1. The paper lacks tabular or schematic representations of the results.

Reply:

Thank you for your excellent suggestion. According to your suggestion, I made a figure (Figure 1.) which shows the mechanisms of action of probiotics, prebiotics, synbiotics, and FMT.

2. It should be emphasized in which type of IBS and the same applies to probiotic therapy and fecal transplantation.

Reply:

Thank you for your useful suggestion. According to your suggestion, I added discussion about subgroup analysis in gut microbiota in IBS subtypes, including diarrhea-predominant IBS (IBS-D), constipation-dominant IBS (IBS-C), and mixed bowel habit IBS subtype (IBS-M) in the section "*Characteristics of the gut microbiota in irritable bowel disease*". (Page 14, Lines 16-Page 14, Lines 26). Moreover, I added discussion about the efficacy of probiotics and FMT on each subtype of IBS, including IBS-D, IBS-C, and IBS-M. About the efficacy of probiotics on each subtype of IBS, the meta-analysis has shown a limitation that it remains whether a particular combination of probiotics, or a specific species or strain, is more likely to be effective, or there is a particular IBS subtype that is more likely to benefit. Moreover, about the efficacy of FMT on each subtype of IBS, the systematic review could not show the subgroup analysis because of a limited number of studies.

(Page 15, Lines 18-Page 15, Lines 22; Page 15, Lines 24-Page 15, Lines 25; Page 15, Lines 27-Page 15, Lines 28).

Responses to the Comments by the reviewer 2:

1. In the introduction, the author should state how many therapeutic interventions involving gut microbiota modulation are currently available and provide a concise definition of their intervention before proceeding to the details of each treatment.

Reply:

Thank you for your excellent suggestion. According to your suggestion, in addition to prebiotics and FMT, I added a definition and mechanisms of action of prebiotics and synbiotics in introduction part. (Page 3, Lines 11-Page 4, Lines 1).

2. Numerous papers on FMT in *Clostridioides difficile* have been published. The authors should demonstrate the subgroup analysis of some meta-analysis. For example, the type of feces used (frozen or fresh), the administration route (nasojejunal probe, colonoscopy, gastroscopy, FMT capsule), and the donor characteristics etc. should be discussed in this review.

Reply:

Thank you for your important and excellent suggestion. According to your suggestion, I demonstrated the subgroup analysis of some meta-analyses and systematic reviews about the administration route, type of feces (frozen, fresh, or encapsulated), frequency of FMT. These studies demonstrated that it is difficult to draw conclusions about the donor characteristics. (Page 7, Lines 14-Page 7, Lines 20).

3. Although FMT is not approved as a treatment for IBS, numerous studies have shown that probiotics improve IBS symptoms. The authors should expand on their discussion of probiotics in IBS, including specific bacteria that have been shown to improve IBS symptoms.

Reply:

Thank you for your important and excellent suggestion. According to your suggestion, I added a discussion about probiotics in IBS, including specific bacteria. The meta-analysis about probiotics in IBS demonstrated some probiotics, such as LacClean Gold, which consists of *Bifidobacterium* (*B.*) *longum*, *B. bifidum*, *B. lactis*, *Lactobacillus* (*L.*) *acidophilus*, *L. rhamnosus* and *Streptococcus thermophiles*, and the seven-strain combination of three *Bifidobacterium*, three *Lactobacillus* and one *Streptococcus* were associated with significant improvement in IBS global symptoms, and there was a trend

towards an improvement in global symptom scores or abdominal pain scores with LSL#3, a probiotic mixed with 4 *Lactobacilli* (*L.*) (*L. casei*, *L. acidophilus*, *L. delbrueckii* subsp., *Bulgaricus*), 3 *Bifidobacteria* (*B.*) (*B. longum*, *B. breve*, *B. infantis*) and a *Streptococcus* (*Streptococcussalivarius* subsp. *thermophilus*). (Page 15, Lines 10-Page 15, Lines 18).