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PEER-REVIEW REPORT

Name of journal: *World Journal of Diabetes*

Manuscript NO: 86182

Title: Gut Microbiome Supplementation as Therapy for Metabolic Syndrome

Provenance and peer review: Invited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 03647029
Position: Peer Reviewer
Academic degree: PhD
Professional title: Professor
Reviewer's Country/Territory: China
Author's Country/Territory: United States

Manuscript submission date: 2023-06-09

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-06-11 08:46

Reviewer performed review: 2023-06-15 00:57

Review time: 3 Days and 16 Hours

Scientific quality	[ ] Grade A: Excellent [ ] Grade B: Very good [Y] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Novelty of this manuscript	[ ] Grade A: Excellent [ ] Grade B: Good [Y] Grade C: Fair [ ] Grade D: No novelty
Creativity or innovation of this manuscript	[ ] Grade A: Excellent [ ] Grade B: Good [Y] Grade C: Fair [ ] Grade D: No creativity or innovation

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Scientific significance of the conclusion in this manuscript	[ ] Grade A: Excellent [ ] Grade B: Good [Y] Grade C: Fair [ ] Grade D: No scientific significance
Language quality	[ ] Grade A: Priority publishing [Y] Grade B: Minor language polishing [ ] Grade C: A great deal of language polishing [ ] Grade D: Rejection
Conclusion	[ ] Accept (High priority) [ ] Accept (General priority) [ ] Minor revision [Y] Major revision [ ] Rejection
Re-review	[ ] Yes [Y] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous
	Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

In the manuscript titled "Gut Microbiome Supplementation as Therapy for Metabolic Syndrome", the authors performed clinical and in vivo and in vitro experiments by collecting Prebiotic, Probiotic, Synbiotic and Postbiotic gut microbiomes to demonstrate the association with metabolic and other related diseases. This review contains some interesting findings that are valuable for the study of Metabolic Syndrome through gut microbes for prevention and treatment. However, this manuscript lacks Abbreviations, which we think is necessary, and too much of this manuscript reviews the experiments of previous articles, and the lack of our own unique insights and original explorations are the main defects of this manuscript. Therefore, major revisions must be made before this manuscript can be accepted for publication in the World Journal of Diabetes. Major comments: 1. reduction in the Firmicutes to Bacteroidetes ratio, what would be the effect; decrease in Enterococci and Enterobacteriaceae, Facecalibacterium prausnitzii and Bifidobacteria with a decrease in Bacteroides, and does not explain clearly what effect an increase or decrease in the ratio would have. 2.This statement needs reference: It is known that obesity, T2DM and CVD are caused or worsened by multiple factors like

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genetic predisposition, environmental factors, unhealthy high calorie diet, and sedentary lifestyle. 3.An increased production of SCFA has been found in obesity and decreased production of butyrate and propionate is seen in T2DM. In mice studies, butyrate was shown to be associated with increased production of Lachnospiraceae and Proteobacteria and decreased production of Clostridiaceae. SCFA can reduce obesity, so why is it contrary to the results of the latter experiment. And butyrate and propionate are produced by Postbiotics? The article describes how either an increase or a decrease in their ratio can be harmful to metabolism. 4. This statement needs reference: Various studies in animals have shown their benefits in improving gut microbiome composition. 5. The overall beneficial effects of supplementation are more significant while administering multiple strains together rather than one. There is no explanation whether it is the cumulative effect of each probiotic or multiple probiotics working at the same time, please cite to proof. 6. Another study with 40 participants with insulin resistance were placed in a double-blind trial and given either Akkermansia muciniphila or a placebo, and the study showed reduction in inflammatory markers and improved insulin sensitivity in the Akkermansia muciniphila group. What is this sentence trying to say at the end? I think it is not a summary of this article and should be placed at the front. 7. The table can be further refined, for example, what are the effects and what can be done through what mechanism. 8. Figure2, 3, 4 in The beneficial effects of prebiotics , postbiotics , probiotics on the gut microbiome consistent, what are the different differences in their effects, compared to the common use or which one is the best, in order to be more intuitive, and then have a I think it is necessary to have a longitudinal comparison of the figure.

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Reviewer's code: 02459759
Position: Associate Editor
Academic degree: MD

Professional title: Professor

Reviewer's Country/Territory: China

Author's Country/Territory: United States

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Reviewer chosen by: Geng-Long Liu

Reviewer accepted review: 2023-07-03 02:58

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Review time: 10 Days and 11 Hours

Scientific quality	[ ] Grade A: Excellent [ ] Grade B: Very good [Y] Grade C: Good [ ] Grade D: Fair [ ] Grade E: Do not publish
Novelty of this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No novelty
Creativity or innovation of this manuscript	[ ] Grade A: Excellent [Y] Grade B: Good [ ] Grade C: Fair [ ] Grade D: No creativity or innovation

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Conclusion	[ ] Accept (High priority) [Y] Accept (General priority) [ ] Minor revision [ ] Major revision [ ] Rejection
Re-review	[ ] Yes [Y] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [ ] Onymous
	Conflicts-of-Interest: [ ] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

This manuscript provides new ideas for the treatment of metabolic syndrome by gut microbiota. The current research progress on the role of probiotics and probiotics in metabolic syndrome has been summarized. The author has also analyzed the differences and shortcomings in animal research and clinical research, and while summarizing, has its own insights, which is highly commendable. However, there are also some shortcomings in this manuscript. Currently, there are relatively many studies on the role of gut microbiota in metabolic diseases, and the topic is not novel. Moreover, the specific mechanism of beneficial gut microbiota in improving metabolic syndrome has not been explained in detail. It would be better if we could elaborate on the mechanism in detail.