

PEER-REVIEW REPORT

Name of journal: *World Journal of Clinical Cases*

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Title: Gut microbiome: New perspectives for type 2 diabetes prevention and treatment

Provenance and peer review: Unsolicited Manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 04419139

Position: Peer Reviewer

Academic degree: MD, PhD

Professional title: Assistant Professor, Senior Scientist

Reviewer's Country/Territory: United States

Author's Country/Territory: China

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Reviewer chosen by: Yu-Lu Chen

Reviewer accepted review: 2023-09-15 04:31

Reviewer performed review: 2023-09-17 11:11

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Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Novelty of this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No novelty
Creativity or innovation of this manuscript	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No creativity or innovation

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

SPECIFIC COMMENTS TO AUTHORS

Scientific Quality This review summarizes the current research progress on the relationship between gut microbiota and type 2 diabetes, which has a certain scientificity. The article elaborates on the pathogenesis of gut microbiota in type 2 diabetes from multiple aspects, including bile acids, short-chain fatty acids, endotoxins, etc. It has some scientific value. The article summarizes well that the composition of gut microbiota in type 2 diabetic patients is different from that in normal people, which has a scientific basis. The discussion on therapeutic measures of gut microbiota regulation for type 2 diabetes has applied scientific significance. However, the specific mechanism discussion is not deep enough and lacks definite experimental data support. The article discusses some contents too briefly and needs to be supplemented and expanded, such as the endotoxin mechanism being summarized in only one sentence. It lacks the description of scientific details like research design, technical route, experimental methods, etc. These contents need to be supplemented.

Innovativeness Evaluation The review summarizes the relationship between gut microbiota and type 2 diabetes systematically and comprehensively, which has certain innovative value. It proposes gut microbiota as



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a new therapeutic target for type 2 diabetes and has some innovative insights. But the specific mechanism research is not innovative enough, and stays more in the redescription of existing research results. The gut microbiota regulation therapies also originate mostly from existing literature and need to propose more innovative perspectives. It does not point out the direction for the next step of research, which needs further innovation. **Main Deficiencies and Suggestions:** The mechanism discussion is not deep enough, more experimental data should be provided to enhance innovation. The treatment methods need to supplement more examples and cannot just stay as a brief overview of the original text. Increase the discussion on the limitations of current research and propose directions for subsequent innovative research. The concluding remarks could give a prospect for future research, to increase the scientific value of the article. During revision, focus on improving the scientificity, rigor, and innovation of the statements as a whole to make the full text more perfected. The key deficiency is that the review lacks solid experimental data support in the mechanism discussion, mainly based on the following points: The statements about the mechanisms are more theoretical and overview in nature, without providing too many specific experimental results. For example, in the bile acid mechanism part, no specific data are given on the impacts of FXR and TGR5 activation on glucose/lipid metabolism; in the short-chain fatty acids section, data are also lacking, such as the effects of different fatty acids on GLP-1 and PYY hormone secretion. The mechanisms mentioned in the article do not list the specific research literature that supports these views. Normally, it should be pointed out which literature first reported a certain mechanism, or which subsequent studies further verified this point. The content in this regard is relatively small in this paper. The elaboration of some mechanisms is too brief, needing expanded discussion and experimental data to support it. For example, the endotoxin mechanism is summarized in just one sentence, without specific results; the obesity relationship is



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just simply mentioned, without data support. Lack of clear data charts. Usually, the discussion of mechanisms is accompanied by experimental data charts for illustration, but this article also lacks in this aspect. No specific experimental data are provided in aspects like carbohydrate metabolism and glycogen synthesis, which should be the key processes of intestinal bacterial action. In summary, this review needs to supplement experimental result data in the mechanism discussion to improve the persuasiveness and scientificity of the viewpoints.