

PEER-REVIEW REPORT

Name of journal: *World Journal of Stem Cells*

Manuscript NO: 90791

Title: Evaluation of genetic response of mesenchymal stem cells to nanosecond pulsed electric fields by whole transcriptome sequencing

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 07715770

Position: Peer Reviewer

Academic degree: N/A

Professional title: N/A

Reviewer's Country/Territory: Iran

Author's Country/Territory: China

Manuscript submission date: 2023-12-13

Reviewer chosen by: Jin-Lei Wang

Reviewer accepted review: 2024-01-08 15:47

Reviewer performed review: 2024-01-08 16:56

Review time: 1 Hour

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input 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 Grade E: Do not publish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 checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No scientific significance
Language quality	<input type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input checked="" 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 checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input type="checkbox"/> Yes <input checked="" 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

I have carefully reviewed the manuscript entitled "Evaluation of the genetic response of mesenchymal stem cells to nanosecond pulsed electric fields by whole transcriptome sequencing." Overall, the study is well designed and intriguing; however, there are some minor points that require attention from the authors. Sincerely yours, Reza Soltani
Department of Biology and Anatomical Sciences, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

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Manuscript NO: 90791

Title: Evaluation of genetic response of mesenchymal stem cells to nanosecond pulsed electric fields by whole transcriptome sequencing

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 07715772

Position: Peer Reviewer

Academic degree: N/A

Professional title: N/A

Reviewer's Country/Territory: Iran

Author's Country/Territory: China

Manuscript submission date: 2023-12-13

Reviewer chosen by: Jin-Lei Wang

Reviewer accepted review: 2024-01-09 16:17

Reviewer performed review: 2024-01-09 16:24

Review time: 1 Hour

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 checked="" type="checkbox"/> Grade B: Good <input type="checkbox"/> Grade C: Fair <input type="checkbox"/> Grade D: No scientific significance
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input 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 checked="" type="checkbox"/> Accept (General priority) <input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input type="checkbox"/> Yes <input checked="" 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

It has good quality... It does not need to be reviewed again

PEER-REVIEW REPORT

Name of journal: *World Journal of Stem Cells*

Manuscript NO: 90791

Title: Evaluation of genetic response of mesenchymal stem cells to nanosecond pulsed electric fields by whole transcriptome sequencing

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 07720789

Position: Peer Reviewer

Academic degree: N/A

Professional title: N/A

Reviewer's Country/Territory: Brazil

Author's Country/Territory: China

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Reviewer chosen by: Jin-Lei Wang

Reviewer accepted review: 2024-01-12 15:20

Reviewer performed review: 2024-01-22 03:17

Review time: 9 Days and 11 Hours

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Novelty of this manuscript	<input checked="" type="checkbox"/> Grade A: Excellent <input 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 checked="" type="checkbox"/> Grade A: Excellent <input 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	[Y] Grade A: Excellent [] Grade B: Good [] Grade C: Fair [] Grade D: No scientific significance
Language quality	[Y] Grade A: Priority publishing [] Grade B: Minor language polishing [] Grade C: A great deal of language polishing [] Grade D: Rejection
Conclusion	[Y] Accept (High priority) [] Accept (General priority) [] Minor revision [] Major revision [] Rejection
Re-review	[Y] Yes [] No
Peer-reviewer statements	Peer-Review: [Y] Anonymous [] Onymous
	Conflicts-of-Interest: [] Yes [Y] No

SPECIFIC COMMENTS TO AUTHORS

Dear authors The manuscript entitled "Evaluation of the genetic response of mesenchymal stem cells to nanosecond pulsed electric fields by whole transcriptome sequencing" is important for the area of regenerative medicine as it contributes to the construction of knowledge about the biology and function of MSCs, which are considered one of the most promising cells for regenerative therapies. The manuscript brings, through usual methods, results on the transcriptome of bone marrow MSCs after electrical stimulation, which has the potential to contribute to less invasive strategies in regenerative medicine. The study briefly presented conclusions appropriate to the data it provided. The study contributed to filling gaps in knowledge about the effect of nsPEFs on MSCs at the entire transcriptomic level. Furthermore, the study is innovative for bringing insights into the effect of pulsed electric fields on a nanosecond scale on the transcriptome of bone marrow MSCs, bringing new mechanistic information on the transcriptome of MSCs pretreated with nsPEFs, such as, for example, in the exosome pathway, in migration/proliferation and in the cellular differentiation pathway, fundamental properties for the repair/regeneration of tissues and organs. Therefore, the



**Baishideng
Publishing
Group**

7041 Koll Center Parkway, Suite
160, Pleasanton, CA 94566, USA
Telephone: +1-925-399-1568
E-mail: office@baishideng.com
<https://www.wjgnet.com>

work brings interesting insights into the therapeutic potential of nanosecond pulsed electrical fields in tissue repair and regeneration. However, I highlight the concern of the number of MSC donors, whether it is sufficient and the species of the donor (specify the species further). And why didn't you use human MSC? Perhaps with these adjustments the conclusion about the effect of ndPRFs on MSCs would be more assertive. Also, MSCs present biological and functional differences according to the tissue and anatomical region, therefore, it would be interesting to evaluate whether the same results are repeated in MSCs from cartilage, skin and other tissues that are more accessible to nanosecond pulsed electric field therapy. Also, in the future it would be important to evaluate whether nsPEFs can affect chromatin accessibility and the cell fate of MSCs (as the authors themselves suggest in the discussion). Despite the excellent contribution for understanding the to the transcriptome of MSCs stimulated with nsPEFs, it would be essential to further investigate the proteome of these cells under the same conditions and cross-reference the results with transcriptome data obtained in this work. It would be important to determine whether nsPEFs are affecting the cellular senescence or neoplasia pathway, a normal cellular fate when the cell is under certain stress. I suggest that you expose the cell type used in the captions and change the "one million MSCs" methodology to cell density (cells/cm²). I congratulate the authors for presenting a concise and coherently organized work capable of impacting regenerative medicine.