

PEER-REVIEW REPORT

Name of journal: *World Journal of Stem Cells*

Manuscript NO: 91577

Title: Effects of high glucose and severe hypoxia on the biological behavior of mesenchymal stem cells at various passages

Provenance and peer review: Invited manuscript; Externally peer reviewed

Peer-review model: Single blind

Reviewer's code: 05990944

Position: Peer Reviewer

Academic degree: MD

Professional title: Doctor

Reviewer's Country/Territory: China

Author's Country/Territory: Jordan

Manuscript submission date: 2023-12-30

Reviewer chosen by: AI Technique

Reviewer accepted review: 2023-12-31 04:52

Reviewer performed review: 2024-01-03 03:06

Review time: 2 Days and 22 Hours

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 Grade E: Do not publish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 checked="" type="checkbox"/> Minor revision <input 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

Dear authors, I have reviewed your paper on "Biological behavior of different passages of mesenchymal stem cells in stress microenvironment". After careful reading, I have the following suggestions for the paper: 1. Research methods: In the methods section, the authors need to provide more detailed experimental steps and parameters so that other researchers can repeat the experiment. 2. Data analysis: In the results section, the authors need to describe the results in detail, including statistical methods and significance tests so that readers can better understand. 3. Discussion section: The discussion section will need to explore the deep biological significance of the experimental results and how they compare to previous studies. At the same time, the authors also need to discuss the limitations of the experimental results and the direction of future research. 4. The language and writing are generally clear, but there are a few areas where clarification or edits would improve readability. 5. The title: The title seems incomplete and the authors can consider to perfect the title. I suggest that stress microenvironment be modified as stressful microenvironments. Overall, this is a well-written and scientifically sound paper. With a few minor revisions, I believe it has the potential to make a valuable

contribution to the field of stem cell biology.

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Reviewer's code: 05742562

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Academic degree: MD

Professional title: Doctor

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Author's Country/Territory: Jordan

Manuscript submission date: 2023-12-30

Reviewer chosen by: AI Technique

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Reviewer performed review: 2024-01-22 03:48

Review time: 22 Days and 3 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 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
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	Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

SPECIFIC COMMENTS TO AUTHORS

Title: The title, "Biological behavior of different passages of mesenchymal stem cells in stress microenvironment," adequately reflects the main subject and hypothesis of the manuscript. It clearly conveys that the study investigates the impact of stress factors on mesenchymal stem cells at various passages and explores the implications for therapeutic use. **Abstract:** The abstract effectively summarizes the work described in the manuscript. It provides a concise overview of the background, aims, methods, results, and conclusions of the study. The abstract accurately reflects the main findings, including the distinct effects of stress factors on MSCs at different passages and the suggestion that senescence may be a protective mechanism for MSCs under stress conditions at higher passages. **Key Words:** The key words appropriately reflect the focus of the manuscript, encompassing stress factors, mesenchymal stem cells, passages, proliferation, senescence, apoptosis, and therapeutic applications. **Background:** The manuscript adequately describes the background, present status, and significance of the study. It provides a clear context for the research by discussing the therapeutic potential of mesenchymal stem cells and highlighting the gaps in knowledge regarding the effects



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of stress factors on MSCs at different passages. **Methods:** The manuscript provides sufficient detail on the methods employed, including the stress conditions, evaluation parameters (WST-1, SA- β -gal, Annexin V), and the specific passage numbers (6, 8, and 10) investigated. The methods section is clear and allows for the reproducibility of the study. **Results:** The research objectives are achieved through the experiments described in the study. The results section effectively presents the findings, detailing the effects of stress factors on proliferation, senescence, and apoptosis at different passages of MSCs. **Discussion:** The discussion interprets the findings adequately and logically. It highlights key points, discusses the scientific significance and relevance to clinical practice, and accurately addresses the paper's contributions to research progress in the field. **Illustrations and Tables:** The figures, diagrams, and tables are sufficient, good quality, and appropriately illustrative. Legends adequately describe and reflect the images/illustrations shown. **Biostatistics:** The manuscript does not provide specific information about biostatistics. It is recommended to include details on statistical methods and analyses if applicable. **Units:** The manuscript meets the requirements of using SI units. **References:** The manuscript appropriately cites relevant and authoritative references in the introduction and discussion sections. No issues with self-citation, omission, incorrect citation, or over-citation are apparent. **Quality of Manuscript Organization and Presentation:** The manuscript is well-organized, concise, and coherent. The style, language, and grammar are accurate and appropriate. **Research Methods and Reporting:** The manuscript follows the appropriate standards for reporting research findings, as outlined in the provided guidelines. **Ethics Statements:** The manuscript did not provide information about ethics statements. Authors should submit formal ethics documents for review and approval. **Original Findings and New Hypotheses:** The original findings of the study include the distinct effects of stress factors on MSCs at different passages. The study suggests a protective role of senescence for MSCs under



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stress conditions at higher passages. **Quality and Importance:** The manuscript presents important findings, proposing new insights into the biological characteristics of MSCs under stress. The conclusions appropriately summarize the data and offer unique insights into the field. **Limitations and Future Directions:** The limitations of the study are not explicitly stated. Authors should address any limitations, propose future directions, and highlight questions/issues that remain to be solved. **Impact on Science and Practice:** The manuscript has the potential to impact both basic science and clinical practice by advancing our understanding of how stress factors influence the biological characteristics of MSCs and providing implications for optimizing therapeutic applications. Overall, the manuscript is well-structured and presents valuable insights, but attention is needed in addressing specific points related to biostatistics, ethics statements, limitations, and future directions.