Review Form 3

Journal Name:	**Journal of Advances in Medicine and Medical Research**
Manuscript Number:	**Ms_JAMMR_128918**
Title of the Manuscript:	**Activated Carbon Used As A Bone Substitute Helps Maintain Mechanical And Morphological Properties In An Experimental Rat Tibia Defect Model.**
Type of the Article	**Research Article**

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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Important Policies Regarding Peer Review

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PART 1: Comments

	Reviewer's comment	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	**This manuscript underscores activated carbon's potential as a cost-effective, biocompatible bone substitute, advancing biomaterial research for bone repair.**	
Is the title of the article suitable? (If not please suggest an alternative title)	**The title is informative but could be more concise. Suggested alternative: "Activated Carbon as a Bone Substitute: Enhancing Mechanical and Morphological Properties in a Rat Tibia Defect Model."**	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	**The abstract is comprehensive but could be improved with a few adjustments:** **1. Clarify the uniqueness of AC4: Emphasize why AC4 performed better than other AC types in biomechanical and histological evaluations.** **2. Highlight the implications: Briefly mention the potential clinical relevance of using AC as a bone substitute.** **3. Streamline the content: Avoid redundancy, such as repeating evaluations across groups; focus on key findings.** **Suggested addition: Summarize the broader applicability of AC4 for bone repair in humans.** **Suggested deletion: Reduce overly detailed descriptions of the control group and enzyme levels unless directly tied to outcomes.**	
Is the manuscript scientifically, correct? Please write here.	The manuscript is scientifically accurate but could improve by detailing the properties of the activated carbons and explaining AC4's superior performance.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	For accurate results and to enhance the quality of the present work, the authors are highly recommended to incorporate recently published data, such as https://doi.org/10.22377/ajp.v18i3.5632 and https://doi.org/10.22377/ajp.v18i01.5281, for improved statistical interpretation.	

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Is the language/English quality of the article suitable for scholarly communications?	The article's language is suitable for scholarly communication but could be refined for clarity and conciseness.	
Optional/General comments	1. Background and Context - What motivated the selection of activated carbon as a potential bone substitute material, and how does it compare to existing alternatives in terms of cost, availability, and efficacy? - Are there specific properties of AC4 that make it superior to AC1, AC2, and AC3? 2. Methodology - Were the activated carbon materials (AC1–AC4) subjected to any pre-treatment or modifications before application? If so, what was the rationale? - What criteria were used to determine the sample size of the experimental groups, and how were the animals randomized? - Were the biomechanical tests and histological evaluations conducted in a blinded manner to minimize bias? 3. Biological and Biomechanical Evaluations - Can the observed maintenance of ALP levels in AC-treated groups conclusively link AC to controlled bone formation? - Were there significant differences in the tissue organization or biomechanical properties among the four AC-treated groups beyond those noted for AC4? - How do the observed mechanical properties of AC4-treated bones compare to natural bone in terms of long-term durability? 4. Safety and Toxicity - Were any adverse effects observed at the implantation site or systemic toxicity beyond the reported lack of hepatic and renal alterations? - Were any inflammatory markers or immune responses measured to assess the biocompatibility of the activated carbons? 5. Study Design Limitations - Could the study have benefited from a longer observation period to assess the durability and integration of the repaired bone? - How do the experimental conditions in a rat tibia defect model translate to human clinical applications? 6. Future Directions - Based on the findings, are there plans to further optimize the properties of AC4 or investigate its performance in more complex bone defect models? - How could this research be expanded to include comparisons with other known bone substitutes like hydroxyapatite or bioactive glass?	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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