Review Form 3

Journal Name:	**Journal of Advances in Biology & Biotechnology**
Manuscript Number:	**Ms_JABB_123523**
Title of the Manuscript:	**EFFECT OF HYDROTHERMAL AND NON-THERMAL TREATMENTS ON FUNCTIONAL AND NUTRITIONAL PROPERTIES OF PEARL MILLET GRAIN AND FLOUR**
Type of the Article	**Original Research Article**

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PART 1: Review Comments

Compulsory REVISION 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. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	**1. Introduction** The manuscript discusses the impact of hydrothermal (parboiling) and non-thermal (cold plasma, gamma radiation) treatments on pearl millet's nutritional and functional properties. While the subject matter is relevant, the introduction lacks depth in explaining the scientific background of these treatments and their broader implications. This section could benefit from a more detailed **2. Objectives** The stated aim is clear, but it would be helpful to narrow down the objectives further. For instance, explaining why these specific treatments were chosen over others would strengthen the argument for their application.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	**. Methodology** The methodology section is detailed, but several technical deficiencies need to be addressed: • **Parboiling Process**: The description of the parboiling process could benefit from more details regarding temperature control, specific duration for soaking, and the exact drying technique used. This would enhance reproducibility. • **Cold Plasma and Gamma Radiation Treatments**: The manuscript describes the treatments adequately but lacks sufficient details about equipment calibration, sample handling, and environmental conditions during storage. These factors could affect the results significantly, and their omission weakens the experimental rigor. • **Nutritional and Functional Analysis**: The methodologies for assessing moisture, fat, protein, and fiber content are cited from the AOAC, but it would be better to provide the specific modifications used for millet, if any. Additionally, providing more clarity on the statistical significance of the results and the software used for statistical analysis would improve the overall scientific robustness. **4. Results and Discussion** The results section is comprehensive but lacks critical engagement with the findings: • **Moisture Content**: While the manuscript provides data on moisture content over time, there is insufficient discussion of the broader implications of the results. For instance, how does the observed moisture reduction via gamma radiation compare to other grains in similar storage conditions? More context and comparison with existing literature are needed.	

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.	• **Nutritional Parameters**: The results for fat, protein, and fiber content are well presented, but the authors fail to explain the practical significance of the findings. The decrease in crude fiber in treated samples compared to controls is briefly noted but should be discussed in relation to how these changes could affect the grain's usability in food products. • **Functional Properties**: The manuscript discusses water absorption capacity (WAC), oil absorption capacity (OAC), foaming capacity (FC), and emulsifying capacity (EC), but the discussion is superficial. For example, the reasons why parboiling was more effective than cold plasma in improving WAC are not explained adequately. Similarly, the practical applications of these functional properties in the food industry should be expanded. **5. Figures and Tables** The manuscript contains several figures and tables, but they are not well integrated into the discussion. The authors should refer to specific figures more explicitly in the text and explain their significance more clearly. Additionally, some of the figures (such as Figure 2 on moisture content) are difficult to interpret due to a lack of axis labels and unclear legends. **6. Conclusion** The conclusion reiterates the findings but does not provide enough insights into future applications or research directions. The conclusion should also address the practical implications of extending the shelf life of pearl millet through these treatments. **7. Technical Deficiencies** • **Lack of In-depth Discussion**: The manuscript often lists results without delving into their broader significance or comparison with other studies. The discussion would benefit from engaging with recent literature on similar treatments in other cereals and grains. • **Reproducibility Issues**: Key methodological details, especially related to treatment conditions and statistical analysis, are missing. These omissions could hinder reproducibility. • **Insufficient Comparison to Controls**: While control samples are used, the manuscript does not consistently highlight the statistical significance of the differences between treated and control groups. • **Limited Discussion on Packaging Materials**: Although the manuscript mentions that MPP outperformed LDPE in controlling moisture content, the reasons behind this observation are not sufficiently discussed. This could be a major focus in terms of practical implications for grain storage.	
Are subsections and structure of the manuscript appropriate?		
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.		

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Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.		
Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**		
Optional/General comments	**Recommendation** • **Decision**: **Major Revisions Required** • **Reasons**: The manuscript presents a promising study but lacks scientific depth in the discussion of the results, methodology transparency, and technical precision. The presentation of figures and tables is unclear, and the implications of the findings are not adequately explored. Major revisions are needed to address these deficiencies before the manuscript can be reconsidered for publication. The manuscript is **not ready for acceptance** in its current form, and significant improvements in both technical details and critical engagement with the findings are necessary.	

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)*	

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