Review Form 3

Journal Name:	**Archives of Current Research International**
Manuscript Number:	**Ms_ACRI_129776**
Title of the Manuscript:	**EFFECT OF MEMBRANE FOULING ON CLARIFICATION OF POMEGRANATE JUICE**
Type of the Article	

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 presents an important study on the effect of membrane fouling during the clarification of pomegranate juice using microfiltration (MF) and ultrafiltration (UF) techniques. Membrane filtration is a widely used technology in the food industry, particularly for juice clarification, and understanding the fouling mechanisms is crucial for optimizing the process and improving the quality of the final product. The study provides valuable insights into the fouling behavior of pomegranate juice under different operating conditions, which can be beneficial for researchers and industry professionals working in the field of membrane technology and fruit juice processing.	
Is the title of the article suitable? (If not please suggest an alternative title)	The title of the article is suitable and accurately reflects the content of the manuscript.	
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 and provides a clear overview of the study, including the objectives, materials and methods, and key findings. No major additions or deletions are suggested.	
Is the manuscript scientifically, correct? Please write here.	The manuscript is scientifically correct and well-written. The authors have used appropriate experimental methods and data analysis techniques to investigate the fouling mechanisms during the membrane clarification of pomegranate juice.	

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Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references are sufficient and recent, covering the relevant literature on membrane filtration, fruit juice processing, and fouling mechanisms. However, here are some relevant references that could enhance the manuscript: 1. Recent Technological Advances: - Zhang, L., et al. (2024). Advanced membrane materials and surface modifications for improved antifouling performance in fruit juice clarification: A comprehensive review. Journal of Membrane Science. - Zhun Ma, Indira Inastiti Noor, Xiaomeng Wang, Yangguang Ren, Jian Wang, Qun Wang, Jun Gao, Xueli Gao, Hongbo Liu (2024). A comprehensive review on the recent advances in membrane-based processes for fruit juice concentration, Food and Bioproducts Processing, Vol. 145(2024),pp. 42-66;https://doi.org/10.1016/j.fbp.2024.02.010 - EchavarrVlez, Ana Paola, Torras, Carles, Pag, Jord&Ibarz, Albert. (2011). Fruit Juice Processing and Membrane Technology Application. Food Engineering Reviews. Vol.3. pp.136-158; 10.1007/s12393-011-9039-3. 2. Fouling Mechanism Studies: - Lu, Cheng Bao, Yiwen& Huang, Jen-Yi. (2021). Fouling in Membrane Filtration for Juice Processing. Current Opinion in Food Science. 42; 10.1016/j.cofs.2021.05.004. 3. Process Optimization: Anant.C. Gahire(2023). Clarification and optimization of pomegranate (PunicaGrantum) juice with response surface methodology. International Journal of Novel Research and	
	Development, Vol. 8(4), 2023, pp.e712-e728.	
Is the language/English quality of the article suitable for scholarly communications?	The language and English quality of the article are suitable for scholarly communication.	
Optional/Generalcomments	1. Experimental design: The authors have not provided a clear justification for the selection of the specific operating conditions (transmembrane pressures, cross-flow velocities, and membrane pore sizes) used in the study. A more comprehensive experimental design with a systematic evaluation of the effects of these parameters on the fouling behavior would strengthen the study. 2. Fouling mechanisms analysis: While the authors have used Hermia's empirical models to analyze the fouling mechanisms, the discussion on the underlying causes of the observed fouling behavior is limited. A more in-depth discussion on the specific foulants (e.g., pectin, proteins, phenolic compounds) and their interactions with the membrane materials would provide a better understanding of the fouling phenomena. 3. Comparison with other fruit juices: The study is focused solely on pomegranate juice, and a comparison with the fouling behavior of other fruit juices (e.g., pineapple, apple) under similar experimental conditions would enhance the generalizability of the findings and provide a broader perspective. 4. Practical implications: The manuscript could benefit from a more comprehensive discussion on the practical implications of the study, such as the potential strategies for mitigating fouling (e.g., pre-treatment, membrane selection, operating conditions optimization) and the impact on the overall performance and economics of the membrane-based pomegranate juice clarification process. Suggestions for improvement: 1. Provide a more detailed justification for the selection of the experimental conditions, including the rationale for the chosen transmembrane pressures, cross-flow velocities, and membrane pore sizes. 2. Expand the discussion on the fouling mechanisms by incorporating a more in-depth analysis of the specific foulants and their interactions with the membrane materials. This could include additional characterization of the pomegranate juice composition and its changes during the filtration process. 3. Include a comparative analysis of the fouling behavior of pomegranate juice with other fruit	

	juices, if possible, to provide a broader perspective on the membrane filtration process. 4. Strengthen the discussion on the practical implications of the study, including potential strategies for mitigating fouling and the impact on the overall performance and economics of the membrane-based pomegranate juice clarification process. 5. Consider conducting additional experiments or incorporating further analyses to address the identified weaknesses and enhance the overall quality and impact of the manuscript. There are no competing interest issues in this manuscript. No plagiarism is suspected based on the information provided.	

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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