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REVIEWER'S REPORT

Manuscript No.: IJAR-51796 Date: 24-05-2025

Title: NON-THERMAL PROCESSING AND PACKAGING REQUIREMENTS: RECENT TRENDS AND APPLICATIONS

Recommendation:
Accept as it is.....**YES**.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		√		
Techn. Quality		√		
Clarity		√		
Significance		√		

Reviewer's Name: Mr Mir Bilal

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)
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Reviewer's Comment / Report

1. Relevance and Scope:
The study presents a comprehensive overview of recent advancements in non-thermal food processing technologies, underlining its relevance in the context of modern food safety, shelf-life extension, and consumer health consciousness. The research focus addresses a crucial and emerging field in food technology, with implications for both industrial applications and public health outcomes.

2. Content and Focus:
The abstract clearly articulates the motivation behind adopting non-thermal methods, namely to enhance food safety while maintaining nutritional and sensory qualities. It outlines key technologies such as cold plasma, high-pressure processing, pulsed electric fields, and pulsed light treatment. These are recognized methods in the industry and are well-suited to the paper's stated objectives. The inclusion of ohmic and microwave heating as volumetric heating techniques offers a comprehensive framework that bridges non-thermal and hybrid thermal approaches.

3. Analytical Depth:
The text demonstrates a sound understanding of the scientific and practical basis of non-thermal technologies. It contextualizes the limitations of traditional thermal methods and outlines how newer processes align with both environmental sustainability and consumer demand for minimally processed

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foods. The linkage between microbial inactivation and packaging interactions adds an important dimension to the study, emphasizing the interdependence of processing and packaging.

4. Language and Terminology:
The language is formal and technical, appropriate for an academic and professional audience. Terminology such as "thermal degradation," "volumetric heating," and "microbiological shelf life" is accurately used and indicates subject-matter expertise. The writing effectively communicates complex concepts without unnecessary oversimplification.

5. Organization and Structure:
Both the abstract and introduction are logically structured. The abstract introduces the topic, outlines the problem, presents the technological context, and ends with the study's objective. The introduction provides background on consumer demands, shortcomings of traditional methods, and sets up the rationale for exploring non-thermal technologies.

6. Literature Integration:
The reference to Jadhav et al. (2021) grounds the introduction in existing research and reinforces the discussion of health concerns related to thermal processing. This indicates that the study is built on a foundation of current academic work, enhancing its credibility.

7. Thematic Consistency:
There is a clear thematic coherence between the goal of reducing chemical additives, retaining food quality, and using energy-efficient, sustainable methods. The discussion reflects a well-integrated approach to the dual challenges of public health and technological efficiency.

Overall Assessment:
The document presents a well-articulated, relevant, and technically robust examination of non-thermal food processing technologies and their relationship with packaging needs. It is grounded in current scientific discourse and aligns with industry and consumer trends in food safety and sustainability.