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## REVIEWER'S REPORT

Manuscript No.: **IJAR-53354** Date: 18-08-2025

**Title: Evaluation of fermentation kinetics and ethanol yields of watermelon juice using two types of yeast**

**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 Name: Mir Tanveer

**Reviewer's Comment for Publication.**

### Abstract:

The abstract clearly frames the study within the context of agricultural production in Senegal, highlighting the problem of post-harvest losses in watermelon. The research objective is to evaluate and compare the fermentation performance of two yeast strains during alcoholic fermentation of watermelon juice (*Citrullus lanatus*). The methodology is outlined with reference to fermentation duration (07 days), monitoring of physicochemical parameters, and the comparative approach involving a commercial yeast strain (Lsaff) and a strain traditionally used for barley beer fermentation (Lorg). The results emphasize significant strain-dependent differences in ethanol yield, sugar consumption, pH, and total acidity. Notably, Lsaff demonstrated higher conversion efficiency and faster sugar consumption, while the control indicated sugar utilization without alcohol production, pointing to the activity of a non-alcohol-producing native flora. The conclusion underscores the influence of yeast strain selection on fermentation outcomes and positions watermelon juice as a viable substrate for value-added alcoholic fermentation products. The abstract is concise, informative, and well structured.

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Keywords:

The selected keywords—*watermelon, alcohol fermentation, yeasts, fermentation kinetics*—are precise and relevant, capturing the biological, chemical, and technological focus of the study.

Introduction:

The introduction provides a clear rationale for the study by situating ethanol production within its global importance as a renewable resource with applications across multiple industries. It highlights ethanol's dual significance as both an energy substitute and a raw material in diverse industrial sectors such as food, pharmaceuticals, and cosmetics. The description of ethanol as a versatile metabolite derived from biomass establishes the scientific and industrial value of pursuing alternative substrates, such as watermelon juice, for fermentation processes. The text also reflects the strategic importance of renewable energy resources, presenting ethanol as a sustainable alternative to fossil fuels while simultaneously supporting industrial innovation.

Clarity and Structure:

The paper follows a clear and logical structure, beginning with the problem context (watermelon post-harvest losses in Senegal), defining the aim (comparing yeast performance in fermentation), outlining the methodology, and presenting the outcomes in relation to ethanol yields and fermentation kinetics. The writing maintains an academic tone with technical precision, and the inclusion of quantitative results in the abstract strengthens its scientific presentation.

Methodological Orientation (as described in abstract):

The methodology is experimental, involving comparative fermentation trials over seven days at room temperature. Monitoring of key fermentation indicators—sugar consumption, ethanol yield, pH, and total acidity—allows for evaluation of yeast strain efficiency. The inclusion of a control fermentation highlights the role of native microbial flora, distinguishing between sugar metabolism and ethanol production. This approach effectively links microbiological processes with chemical outcomes.

Findings and Scope of Impact:

The findings emphasize strain-specific performance differences: Lsaff shows superior substrate-to-alcohol conversion and sugar consumption, while Lorg lags in efficiency. The absence of alcohol in the control fermentation despite sugar loss underscores the influence of

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microbial flora on fermentation pathways. These results contribute to knowledge about yeast strain optimization for fruit-based ethanol production and point to the potential of watermelon juice as a sustainable, value-added product. By connecting agricultural waste reduction with bioethanol production, the study aligns with both food security and renewable energy objectives.

Overall Assessment:

The text provides a well-organized evaluation of watermelon juice as a fermentation substrate, framed within broader industrial and energy concerns. It highlights the impact of yeast strain selection on ethanol yield and fermentation kinetics while situating the research in the context of agricultural utilization and sustainable bioresource management. The report underscores both the scientific contribution and the practical significance of the study.