

# Review of: "Techno-Economic Fermentative Microbe-Based Industrial Production of Lactic Acid (LA): Potential Future Prospects and Constraints"

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Potential competing interests: No potential competing interests to declare.

## Comments:

I have reviewed the manuscript titled "Techno-Economic Fermentative Microbe-Based Industrial Production of Lactic Acid (LA): Potential Future Prospects and Constraints". The manuscript provides a comprehensive overview of the techniques used in both industrial and lab-scale lactic acid production, with a particular focus on the production of lactic acid derived from sugarcane bagasse. It also highlights the potential of using second-generation lactic acid to expand sugar industries and produce bio-based fuel. The topic is crucial, and a thorough review is necessary for interested researchers. However, the manuscript needs better structuring, and it should address major comments. There is a strong correlation between lactic acid and microbial constraints, so it would be helpful to include a graphical representation and a diagram in the revised manuscript. This will require significant changes.

1. Authors should significantly modify and rewrite the abstract section showcasing the importance of the title. Introductory sentences are to be avoided in the abstract.
2. Authors should modify keywords and arrange them alphabetically. Please mention appropriate keywords that support your manuscript.
3. Authors should modify the Highlights section to be more precise and not overlap with the other points.
4. Authors should incorporate recent references in the introduction section supporting the statements. The introduction section needs to be more structured.
5. The biotransformation from lignin to lactic acid should be explained in the introduction section. Equations or flowcharts to support the statements can be used.
6. Authors must add more updated and relevant references in the "Biomass Recalcitrance and Carbohydrate Recovery" section.
7. Authors may be uniform with the abbreviations used throughout the text, either adding the expanded form only in the list (for each abbreviation used) or using the expanded form the very first time it is referred to in the text.
8. The techniques mentioned, like the DLCA technique and COBRA, can be scientifically explained in the mentioned section.
9. In section 4, the Valorisation of Bagasse-HSES is mentioned, but its explanation is missing.
10. Figure number 2 can be omitted, replacing it with a more suitable demonstration or a graph.
11. Chemical names and formulas should be written scientifically throughout the manuscript.

12. Authors should recheck all abbreviations throughout the MS, and the font is not justified.
13. References should be incorporated to justify the discussion section.
14. The MS needs more speculative revision, taking care of the smallest details. It needs to undergo some thorough modifications by the authors to get the article published. It may be rewritten, with all terminologies being consistent throughout. It requires thorough revision.