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.

In the abstract part,

- The language is generally clear, but consider revising sentences for conciseness and coherence. For instance, the phrase "The literature often uses milled biomass as a substrate, which doesn't accurately represent the impact of the pretreatment type on biogas generation" could be clarified for better readability.
- Additionally, consider including a sentence on future directions or areas of research that could build on this study.

In the Introduction section,

The introduction effectively introduces the significance of lignocellulose, especially sugarcane bagasse, in the production of chemicals, emphasizing the challenges in pretreatment and enzyme hydrolysis.

- The introduction references the use of organosolv fractionation for sugarcane bagasse pretreatment, which is valuable. However, including more recent or specific citations related to advancements in pretreatment methods would strengthen the introduction.
- The inclusion of global statistics on sugarcane production and its significance, especially in countries like Brazil, India, China, Thailand, and Pakistan, adds depth to the introduction. Ensure that the statistics are the most current available.
- The connection between sugarcane production and the transition from fossil fuels to bio-economies, as emphasized by the International Energy Agency, is crucial. Consider elaborating on how the utilization of sugarcane by-products aligns with sustainable development goals.
- The transition from discussing global sugarcane production to the specific case of Pakistan's sugar industry is somewhat abrupt. Consider smoothing this transition to maintain a logical flow in the narrative.
- There are certain sentences that are too long and complex. Consider breaking them into smaller paragraphs for better readability and comprehension.
- Introduce abbreviations upon first use (e.g., SCB, LCBs, IL, MEA) to enhance clarity for readers who may not be familiar with the specific terminology.
- In section 6.1, discuss potential future directions in the field of D-lactic acid production. Highlight any emerging technologies, ongoing research trends, or areas where further investigation is needed.
- In sections 6.2 and 6.3, the provided information is detailed and comprehensive. However, it might be beneficial to

organize the content into sections or subsections for better readability. For example, separating information on conventional fermentation, fed-batch fermentation, solid-state filtration, and immobilized microbial strains into distinct sections would make it easier for readers to follow. The term "TYP characteristics" is mentioned in the context of fermentation processes, but it would be beneficial to explicitly define or explain what "TYP" refers to and its significance in this context.

- In section 6.3, expand on the genetic modifications made to microorganisms, particularly in the case of Saccharomyces cerevisiae. Discuss the implications of these modifications on the overall efficiency and productivity of lactic acid production. Consider incorporating a section that compares and contrasts the various studies mentioned, identifying common trends, differences, and potential areas for further research. Enhance the discussion of results, emphasizing key findings and their significance in the context of lactic acid production. Highlight any novel approaches or improvements over existing methods.
- In the conclusion part, it is well written.