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.

The presented section provides a comprehensive overview of the valorization of sugarcane bagasse (SCB) for lactic acid production, elucidating the significance of lignocellulosic feedstocks in the context of bio-based chemicals. The inclusion of statistical data on global sugarcane production, particularly in Brazil, India, China, Thailand, and Pakistan, adds relevance to the discussion. The emphasis on Pakistan's sugar industry and its potential role in the bio-economy aligns with the current global shift towards sustainable practices. The integration of figures and charts aids in visualizing the biomass distribution and its relevance to 1G, 2G, and 3G bioethanol production.

However, there are notable shortcomings in both technical content and language expression. Firstly, while the section highlights the challenges associated with conventional pretreatment methods, such as dilute acid and steam explosion, it lacks a critical evaluation of the discussed organosolv fractionation method. A comparative analysis with other pretreatment techniques and a discussion on its limitations would enhance the robustness of the review. Additionally, the transition between discussing sugarcane production statistics and biomass composition is somewhat abrupt, requiring smoother transitions for improved coherence.

From a language perspective, there are instances of redundancy and verbosity that could be addressed to enhance clarity and conciseness. The term "lignocellulosic feedstocks" is repetitively used, and a more varied vocabulary could contribute to a more engaging narrative. Moreover, there are minor grammatical issues and awkward sentence constructions that may hinder the overall readability of the text.

To enhance the technical depth, the review could benefit from a more in-depth exploration of the specific challenges faced in SCB valorization to lactic acid, particularly focusing on the hurdles associated with lignin extraction, inhibitory substances, and byproduct production. Furthermore, the section lacks a thorough discussion on the state-of-the-art advancements in the field, such as the role of ionic liquids and genetically engineered microbes in overcoming these challenges.

In conclusion, while the section presents valuable insights into the potential of SCB for lactic acid production, addressing the aforementioned technical and language-related shortcomings would significantly improve the overall quality of the review. Incorporating a more critical analysis of the proposed organosolv fractionation method, refining language expression for clarity, and delving deeper into recent advancements in the field would contribute to a more impactful and

informative manuscript.