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.

General:

This paper is a review perspective of previous research. It lacks an exploration of techno-economic aspects relating to lactic acid production. Meanwhile, techno-economics is the focus of the study, as mentioned in the paper's title. Therefore, it needs to match the title and content. Additionally, there is inconsistency in this paper. Some paragraphs explain an out-of-context topic, i.e., bioethanol production, while the main idea is lactic acid production. So, they need to be corrected to focus on the problems of lactic acid production.

Comments:

1. Figure 1 explains the biomass resources for bioethanol production. It is out of context, so it needs correction to explain the biomass resources for lactic acid production.
2. Please pay attention to the quotation and description of the lignin component: previous: lignin is a 20-30% component, next: lignin is a major component of 60%. Please look at this part:

chart in Figure 1. SCB is a lignocellulosic biomass with varying percentages of cellulose, hemicellulose, and lignin, ranging from 40-50%, 25-35%, and 20-30% [6]. Lignin is a major constituent, accounting for 60%. SCB is a renewable,

3. Figure 2 depicts a process of obtaining high purity of lactic acid. However, the description is not clear. It should be drawn in the structure of a process flow chart. It also needs to highlight the process unit resulting in the high purity of lactic acid.
4. This paragraph is not consistent in idea. Initially, it explains lactic acid, but at the end of the paragraph, it explains bioethanol production. Please refer to this part:

A study successfully synthesized D-lactic acid from xylose and glucose using *Lactobacillus pentosus* and L-lactate dehydrogenase-deficient *Lactobacillus plantarum*. The process yielded homo-D-lactic acid at 41 grams per liter, with an 88% yield and 98.7% optical purity. The study also utilized saccharification and fermentation methods to produce D-lactic acid from delignified hardwood pulp. 2G ethanol is a promising alternative to increase biofuel production and aligns with global goals to expand renewable energy. Bioethanol production from sugarcane bagasse is depicted in Figure 3.

5. Figure 3: bioethanol production from sugarcane bagasse. It is out of context. Please explain clearly about Figure 3, or it should be corrected to match the context of lactic acid production.
6. Figure 4 draws an SSF process, but it explains unclearly. An acid hydrolysis of SCB (Figure 4) will result in a liquid fraction followed by SSF. Actually, acid hydrolysis will result in a fermentable sugar and does not need saccharification to get a fermentable sugar. Please make an explanation about this problem.