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

Betânia Lunelli[1]

1 PUC Campinas

Potential competing interests: No potential competing interests to declare.

This manuscript reviews the industrial production of lactic acid from the sugar fermentation of lignocellulosic materials, particularly sugarcane bagasse. Although the subject is pertinent, the manuscript's technical quality and novelty raise considerable concerns.

The work's title proposes a technical and economic assessment of lactic acid production via fermentation. However, the work does not present studies on the economic viability of lactic acid production, although numerous studies have been published on this subject in recent years.

As far as technical quality is concerned, the work has some conceptual and typographical errors, as well as information inconsistent with the aim of the study.

Page 4/31 states that "Lignin is a major constituent, accounting for 60%," which is incorrect. The principal constituent of lignocellulosic biomass is cellulose.

Figure 1 (page 5/31) does not include sugarcane, one of the leading representatives of the first and second generations.

On page 7/31, Figure 2 should be replaced with a more representative one, such as a block diagram showing the main steps of the process, from the raw material to the final molecule.

On page 9/31, the sentence "D-lactic acid, a type of lactic acid, is primarily produced by bacteria by converting carbohydrates into L-lactic acid" is incorrect. The correct phrase is " L-lactic acid, a type of lactic acid, is primarily produced by bacteria by converting carbohydrates into L-lactic acid."

In the 3rd paragraph on page 10/31, the phrase " 2G ethanol is a promising alternative to increase biofuel production and aligns with global goals to expand renewable energy" is missing from the text. The authors are talking about the production of D-L-lactic acid and add information about 2G ethanol in the middle of the text.

Figure 3 shows the stages of producing 1G and 2G ethanol, but no reference is given. The authors of the figure should be credited.

What is the purpose of this figure? Is the objective to show that part of the sugars from sugarcane, both 1st and 2nd

generation, could be used to produce lactic acid? If so, the steps of lactic acid production should be presented in the diagram, highlighting their potential for integration.

On page 14/31, Table 4 is mentioned, but it is not presented in the article.