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First and second generation lactic acid production

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Lactic acid is a compound widely used in food, pharmaceutical, medical and chemical industries. Produced from sugars through fermentation, it has emerged as a potential chemical compound to synthesize renewable and biodegradable plastics, uses in medical field, as well as possible precursor of higher cost molecules in the chemical industry. Its use on industrial scale is still limited due to the relatively high cost of production, comparing to petrochemical products. In order to the lactic acid produced by fermentation be economically competitive, it is necessary to keep low costs which is linked to process performance (upstream and downstream processes). Bearing all this in mind, the performance of the microorganisms *Lactobacillus delbrueckii*, *Lactobacillus plantarum* and *Bacillus coagulans* were evaluated aiming the production of L lactic acid. The production strategy intends to facilitate both production and purification of lactic acid with positive impacts on costs and environment, meaning lower costs and no undesired by-products. Tests were performed in bioreactors using different substrates and conditions for each microorganism. Alternative fermentations strategies were tested and their performance evaluated. As results, it was possible to achieve high lactic acid titer, productivity and yields, as well as optimize the conditions for two substrates: one for 1G-lactic acid production, and other for 2G-lactic acid production.

Biography

Regiane Alves de Oliveira is a researcher with a bachelor in biological sciences, currently developing a doctoral thesis on Bioenergy field, in partnership with University of Campinas, National Laboratory for Bioethanol Science and Technology, and Leibniz-Institut für Agrartechnik und Bioökonomie e.V. (ATB). She has experience of multidisciplinary works developed with professionals in chemistry, engineering, and natural sciences areas. The current focus is on microbiology, bioprocesses, biochemicals, enzymes, biofuels, and Bioeconomy.

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