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SCREENING OF LACTIC ACID PRODUCING MICROORGANISMS WITH ALTERNATIVE SUBSTRATES

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Owing to its availability and low cost, biomass has been studied as source for achieving products with high added value. In Brazil, the great alcohol and sugar production generates lignocellulosic residues of great potential for biotechnological processes. Also, the Brazilian production of biodiesel generates crude glycerol that can be metabolized by several microorganisms aiming products of industrial interest. Lactic acid is such a product, since it is the raw material for producing biodegradable plastic. The present work had the objective of selecting microorganisms capable of using hydrolysate of sugarcane biomass or crude glycerol as substrate for producing lactic acid. Sugarcane biomass was steam exploded at 18 bar and 4 min, concentrated by evaporation and autoclaved at pH 2, resulting in a hydrolysate, which had pH adjusted to 6 by last. The crude glycerol was obtained from a biodiesel production plant. 14 strains gathered from collections were used for performing shaker tests using the hydrolysate and the crude glycerol for the production of lactic acid. The first had 20 g.L⁻¹ of sugar content and second was used at 10 g.L⁻¹ of initial concentration. The experiments were performed for 48 h at 30 °C and 37 °C. The quantification of lactic acid isomers was done by HPLC. With the hydrolysate all strains showed some growth. Regarding lactic acid production, four strains produced quantities above 2.0 g.L⁻¹, with highest production of 4.5 g.L⁻¹. With the glycerol only one showed production with concentration of 3.5 g.L⁻¹, the remained presented concentrations below 1.0 g.L⁻¹. This initial study showed that, among the strains evaluated, there are potential microorganisms for the development of a biotechnological process for the production of lactic acid.