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ISOLATION AND CHARACTERIZATION OF MICROORGANISMS B-GALACTOSIDASE PRODUCERS WITH POTENTIAL BIOTECHNOLOGICAL APPLICATION

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Abstract

Lactose is the main carbohydrate in milk, its degradation is due to the action of β-galactosidase on glucose and galactose. The objective of this work was to isolate new β-galactosidase-producing microorganisms and optimize their production. The isolates tested were obtained from dairy residues using X-gal as indicator for the production of the enzyme. An isolate obtained had the optimum culture conditions through fractional factorial design, analyzing the effect of temperature, concentrations of whey powder, yeast extract and lactose on the production of the enzyme. The enzyme was partially purified and characterized. The results showed the presence of β-galactosidase only in the cell precipitate and among the studied factors the temperature and the concentration of yeast extract had an effect on the production of the enzyme in 14 hours of culture. Cell enzyme solubilization tests demonstrated that sonication of these in phosphate buffer pH 7.0 for 20 minutes with 0.5% TritonX or 0.2% SDS were more efficient for release of the enzyme into the supernatant. The optimum activity of the enzyme obtained was at 45 °C and pH 7.0. Therefore, the V1 microorganism, based on the parameters evaluated

to date, has potential for the production of β-galactosidase with interesting characteristics, as well as the potential use of alternative means for production using whey powder.

Keywords:Lactase. Zero lactose food. Intolerance. Optimization.

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