BIOPROCESSING OF LACTIC ACID BY FERMENTATION TECHNIQUE

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Chapter 12

Optimization of Process Parameters Using Response Surface Design on Distribution Coefficient of Lactic Acid

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Abstract

This chapter discussed about the optimization of process parameters using response surface design on the distribution coefficient of lactic acid. The persistent demand of pure and naturally produced lactic acid in food and beverage applications attracted researcher's interest towards process development for maximum recovery of lactic acid from fermentation broth. The paper presents the characteristics of Triisooctyl amine extractant for reactive lactive acid extraction. The reactive extraction method was developed to separate lactic acid from its aqueous solution. In this method, the amine in the solvent phase reacts with the lactic acid in the aqueous phase, resulting in the extraction of acid into the organic phase, which was determined by distribution coefficient of lactic acid. Triisooctyl amine was used as the solvent with 1-decanol as a diluent. Optimization of process condition was done with different values of initial lactic acid concentration, pH, stirring rate, the amount of Triisooctyl amine in 1-decanol, and the ratio of organic phase volume to aqueous phase volume, V_{org}/V_{aq}. The effects of all those parameters on the distribution