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Preparation of Whey Syrup by Immobilized β -Galactosidase

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A pilot plant, with immobilized β -galactosidase (IMG) in a plug flow reactor, was established to prepare whey syrup from cheese whey. The effects of space velocity and lactose concentration on the initial rate of lactose hydrolysis (IRLH) and the operational temperature effect on the half-life and productivity of IMG were investigated. When the space velocity of whey was controlled at 0.6 l/(l·min), consolidation and channeling did not occur in the pilot plant. A better IRLH was obtained when the whey had high lactose concentration. With an increase in operational temperature in the pilot plant, the IRLH was increased. However, the half-life of IMG was shortened, as a result, the productivity of IMG decreased. The best temperature was 10°C for the operation of the pilot plant. The plant could be operated for as long as 50 days at 10°C if the IMG is washed by sterilized deionized water for 1 h each day. When the IRLH decreases to 10%, the IMG is treated by phosphate buffer solution (0.01 M, pH 6.4) and tetramethylammonium chloride solution (0.03%, pH 2.5) for 30 min, respectively. These results show that the developed pilot plant had prospects in the dairy industry because it could be operated continuously for a long period, the washing and sterilization were simple, and the rate of lactose hydrolysis (RLH) was more than 80% in the whey syrup.

Keywords: [whey syrup](#), [immobilized \$\beta\$ -galactosidase](#), [plug flow reactor](#)[\[PDF \(488K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)

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