

Production of Xylitol *Candida tropicalis* HY200 Using Repeated-Batch Fermentation

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ABSTRACT

For industrial xylitol production, the improvement of volumetric productivity and yield is important. Flocculation of isolated *Candida tropicalis* HY200 was systemically investigated to elucidate the mechanism and used for cell cycles in repeated batch fermentations for the production of xylitol from xylose. The operating mode of the repeated batch fermentation was cyclically composed of batch fermentation in fresh medium, separation of cells from the culture broth by flocculation, withdrawal of the culture broth containing products, and refilling of the fresh medium. Repeated-batch fermentations were performed with 6 rounds of fermentations. It took about 20 min for the flocculation of above 85% and about 10 min to withdraw the culture broth and refill the fresh medium, thus requiring only about 30 min for conversion of one batch to the next batch. The flocculent HY200 allowed repeated batch fermentation with easy means of cell recycles by flocculation over 6 rounds of fermentation for the production of xylitol from xylose, resulting in high productivity of 4.6 g xylitol/l/h in average in each recycle batch and 6.3 g xylitol/l/h in maximum in the final sixth batch. Cell recycle by flocculation was very fast, convenient, economically beneficial, and thus potentially applicable for the industrial scale of xylitol production.

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