The effect of dissolved oxygen on xylose fermentation by Candida SP.

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ABSTRACT

In this research, the yeast Candida sp. was used to ferment xylose into ethanol. The effect of dissolved oxygen on ferment- ation was studied. The goal was to locate, quantitatively, the specific range of dissolved oxygen in which the yeast gives best fermentation performance. Fermentation was carried out under various initial sugar concentration (60 g/L; 90 g/L; 120 g/L; 150 g/L). Dissolved oxygen (0 ppm; 1.5 ppm; 2 ppm; 3 ppm; 8.2 ppm; 10 pm) was controlled by the aeration gas mixture (nitrogen and oxgen) while maintaining constant total gas flow rate (100 ml/ min-tank). The dissolved oxygen concentration in the fermentation broth was measured by DO- meter. Temperature effect was also studied. Results showed that 30 C was the optimum temperature, and the fermentation ceased at 35 C. Small concentration of oxygen (2 ppm) did enhance the fermentation, in terms of both rate and ethanol concentration. However, higher oxygen concentration affected the fermentation negatively.

Keywords : Xylose fermentation ; Dissolved oxygen ; Candida

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