



## The influence of various operating conditions on specific cake resistance in the crossflow microfiltration of yeast suspensions

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Received 28 November 2007; accepted revised 6 June 2008

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### ABSTRACT

In this paper, a multi-regression method was used to study the influence of different operating conditions on the specific cake resistance (SCR) of yeast suspensions in order to optimize the operating conditions in the crossflow microfiltration. The experimental results showed that the crossflow velocity, transmembrane pressure, concentration and temperature had an obvious influence on the SCR. The SCR decreased with the rising temperature, and increased with the increasing crossflow velocity or pressure, and also increased with the increase of the concentration in the range of 1.0–3.0 g/l first and then decreased in the range of 3.0–5.0 g/l. The relative degrees of the influence of the crossflow velocity, concentration, transmembrane pressure and temperature on the SCR of yeast suspensions were 38.85%, 28.32%, 19.34%, and 13.49%, respectively. A reasonably quantitative regression relationship between the SCR ( $\alpha$ ) and the crossflow velocity ( $U$ ), transmembrane pressure ( $P$ ), feed concentration ( $C$ ) and temperature ( $T$ ) was obtained as follows:  $\alpha = 4.3652 \times 10^{14} U + 1.2256 \times 10^{15} P + 1.8224 \times 10^{13} C - 2.9467 \times 10^{12} T + 1.4704 \times 10^{14}$ .

*Keywords:* Influence; Operating conditions; SCR; Crossflow microfiltration; Multi-regression method

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