Optimization of the cultural conditions of immobilized cells for enzyme excretion and cell lysis

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ABSTRACT:
Recombinant enzyme excretion is essential, as it allows the active and stable production of protein. However, enzyme excretion, especially in Escherichia coli, may cause cell lysis. Using the cell immobilization technique, increased enzyme excretion and reductions in cell lysis can be obtained. In this study, the optimization of the cultural conditions on cyclodextrin glucanotransferase (CGTase) excretion and the cell lysis of immobilized E. coli on hollow fiber membranes using response surface methodology was investigated. CGTase activity was 831.74 U/ml with 9.44 U/ml of cell lysis under optimum conditions (25 °C of post-induction temperature, 0.011 mM IPTG and pH 8.8). The optimization of the cultural conditions of immobilized cells was successfully performed in this study

KEYWORDS:
Cell lysis; CGTase excretion; Free cell; Immobilized cell; Optimization

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