

Effects of the Immobilization of Recombinant *Escherichia Coli* on Cyclodextrin Glucanotransferase (CGTase) Excretion and Cell Viability

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ABSTRACT

The excretion of recombinant enzymes is a preferred approach for protein expression because of the associated high level of expression, low level of proteolysis, ease of purification and more favorable folding environment. However, cell lysis is one of the major drawbacks in the excretion of enzymes when using *Escherichia coli* as a host. In this study, the effects of different polymer of hollow fiber membrane and culture conditions on the enzyme excretion, cell lysis and plasmid stability of immobilized *E. coli* were investigated. The cells immobilized on a hollow fiber membrane composed of a polyvinylidene fluoride (PVDF) polymer exhibited a 2–4-fold increase in CGTase excretion, over a 100% increase in plasmid stability and 28–60% reduction in cell lysis compared with free cells. Hence, the immobilization of *E. coli* using a hollow fiber membrane was demonstrated to increase enzyme excretion and cell stability.

KEYWORDS: Free cells; Enzyme activity; Cell lysis; Adsorption; Hollow fibers

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