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BIOPROCESSING OF RECOMBINANT E.COLI PRODUCING β-GLUCURONIDASE ENZYME

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Chapter 4

Control Strategy of Fed-Batch Fermentation of *E. coli* Producing Recombinant β-Glucuronidase

Maizirwan Mel, Mohd Ismail Abdul Karim, Azini Mat Sa'ud and Hamzah Mohd Salleh

1. Introduction

The function of fed-batch fermentation mode is to improve productivity when the microorganism is subject to growth limitation by substrate inhibition, the Crabtree effect, or product inhibition (Fordyce et. al., 1998). Fed-batch is generally superior to batch processing and is especially beneficial when changing nutrient concentrations affect the productivity and yield of the desired product (Lee et. al., 1999).

Since the primary goal of fermentation research is the cost-effective production of bio-products, it is important to develop a cultivation method that allows production of the desired product (Stanbury et. al., 2003). A large number of chemical processes, for example, fermentation processes, operate in fed-batch mode to avoid phenomenon such as substrate or product inhibition and to achieve high productivities (Kapadi et. al., 2004). Fed-batch processes are commonly used in industrial fermentations, for example, for the production of baker's yeast, some enzymes, antibiotics, growth hormones, microbial cells, vitamins, amino acids and other organic acids (Stanbury et. el., 2003).