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**BIOPROCESSING OF RECOMBINANT  
E.COLI PRODUCING  $\beta$ -GLUCURONIDASE  
ENZYME**



**IIUM Press  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA**

# **Bioprocessing Of Recombinant *E. coli* Producing $\beta$ -Glucuronidase Enzyme**

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Edited By

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# Chapter 7

## Cell Disruption of Recombinant *E. coli* Producing $\beta$ -Glucuronidase by High Pressure Homogenizer

*Maizirwan Mel, Hamzah Mohd Salleh, Mohd Ismail Abdul Karim and Mohd Syazwan Osman*

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### 1. Introduction

$\beta$ -glucuronidase, the enzyme responsible for the degradation of various polysaccharides or the cleavage of glucurono-conjugates, is widely distributed in animal, plants, insects and bacteria, with particularly high concentrations in liver found in animals.  $\beta$ -glucuronidase plays an important role in the enterohepatic circulation of drugs and the hydrolysis by  $\beta$ -glucuronidase can contribute significantly to the overall biological activity or toxicity of a xenobiotic in mammals (Salleh et al., 2006).

Homogenization of solution containing cells using high pressure homogenizer (HPH) is a widespread technique for extrication intracellular products from the cells. This mechanical mode of cell disruption is currently being the general method of choice for the large-scale disruption of microorganism especially for recombinant *E. coli* (Goldberg, 19972). Homogenization technology is based on the use of pressure on liquids to subdivide particles or droplets present in fluids into the very smallest sizes and create a stable dispersion ideal for further processing. Homogenization features a high concentration