

# **BIOPROCESSING OF LACTIC ACID BY FERMENTATION TECHNIQUE**

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# Chapter 6

## Determination of Critical $pO_2$ Level and Process Online Monitoring of Lactic Acid Fermentation by *Lactobacillus rhamnosus*

*Maizirwan Mel, Mohamed Ismail Abdul Karim,  
Mohammad Ramlan Mohammad Salleh, and Rohane  
Abdullah*

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### Abstract

This chapter discussed about the influenced of critical point of dissolved oxygen ( $pO_2$ ) level control on *Lactobacillus rhamnosus* fermentation producing lactic acid in laboratory scale fermenter using different  $pO_2$  level operating conditions. The  $pO_2$  level have been selected to be the main parameter in order to determine whether *L.rhamnosus* can significantly grow and produce lactic acid or not due to its aerobic characteristic. Together with  $pO_2$ , other parameters such as fixed agitation and pH control were also chosen. In this research, the best condition for production of lactic acid has been obtained at Run 1 with 16.85 g/L or 1.68% production yield at condition of 5%  $pO_2$  level, agitation speed of 100 rpm and pH 6.

**Keyword(s):** *Lactic acid, Lactobacillus, fermentation,  $pO_2$ , critical*