

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME III

Editors:

Md. Zahangir Alam
Ahmed Tariq Jameel
Azura Amid



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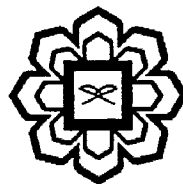
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**Department of Biotechnology Engineering
Faculty of Engineering
International Islamic University Malaysia**



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CHAPTER 18

FOWL CHOLERA VACCINE PRODUCTION: SCREENING AND OPTIMIZATION OF MEDIA IN SHAKE FLASK CULTURE

Maizirwan Mel¹, Mohd Ismail Abdul Karim¹, Nor Jannah Yob¹, Intan Zahrah Samsury¹, Sharifah Syed Hassan² and Akma Ngah Hamid²

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ABSTRACT

The screening and optimization for fowl cholera vaccine production were carried out in shake flask experiments with composition 10% of inoculums and 90% of media. The experiments were designed and analyzed using Statsoft software “STATISTICA Version 6.0”. Initially seven variables were screened using Plackett Burman Design. The result of screening in shake flasks indicated that glucose, sodium hydrogen carbonate and sodium chloride were the main variables that affected the *P. multocida* fermentation. These three variables were then optimized and analyzed by using Box Behnken design. The optimization and critical values of glucose, sodium hydrogen carbonate and sodium chloride were obtained which correspond to 2.651g, 5.052 g, and 5.437 g, respectively. The correlation between these three variables on protein concentration and total cell number were investigated using Response Surface Methodology. These critical concentrations of the glucose, sodium hydrogen carbonate and sodium chloride were transferred to second part of the project for scale-up fermentation in 2 liter laboratory scale fermenter.

INTRODUCTION

Optimization of media is traditionally done by varying one factor while keeping the other factors at a constant level; the one-factor-at-a-time technique. The technique is tedious when large number of factors has to be investigated. Statistically based experimental designs are more efficient in dealing with large number of variables. Moreover, interactions between factors will not be obtained using one factor at a time technique.