



June 26 – 27, 2014 at Kasetsart University, Bangkok, Thailand

# Screening of Nutrient Parameters for Lactic Acid Production by *Lactobacillus rhamnosus* 1-7 in Molasses Fermentation Using Plackett-Burman Design

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## Abstract

Lactic acid is one of the functional and valuable compounds utilized in food, pharmaceutical and chemical industries while Poly lactic acid (PLA) is a biodegradable polymer that has a variety of applications. In recent years, microbial conversion of renewable raw materials has become an important objective in industrial biotechnology. Sugarcane molasses can be considered as potential renewable raw materials in PLA production. It is available in many countries as byproduct of sucrose production, which can be used as substrate for lactic acid fermentation. The objective of this study is to screen and analyses the important nutrient constituents was carried out using Plackett-Burman experimental design for lactic acid production by *Lactobacillus rhamnosus* 1-7 grown in molasses fermentation. Plackett-Burman experimental design was used to evaluate ten medium components added to molasses. Five variables namely Meat extract (10g/L), Calcium Carbonate (5g/L), Yeast extract (5g/L), Peptone (10g/L), and Di-potassium hydrogen phosphate (2g/L) of 10 variables the effect increased lactic acid production. The concentrations of these five components as well as the molasses were further optimized using the response surface method.

**Keywords:** Lactic acid, *Lactobacillus rhamnosus*, molasses, poly lactic acid, renewable raw material