

**The Feasibility of Lignocellulosic degradation from pineapple
(*Ananas comosus*) wastes on batch ethanol fermentation by
Saccharomyces cerevisiae TISTR 5013**

By	Mr. Chakrit	Choljararux
Advisor	A. Suchawadee	Wiratthikowit
Faculty		Biotechnology
Academic Year		2004

ABSTRACT

This research had studied about the effect of lignocellulosic degradation from pineapple (*Ananas comosus*) wastes on batch ethanol fermentation by *Saccharomyces cerevisiae* TISTR 5013 which concerned in the degradation of pineapple (*Ananas comosus*) wastes to glucose, and the production of ethanol. The pineapple (*Ananas comosus*) wastes were obtained from fresh market and were used as the raw materials for the ethanol fermentation. The objectives of this study were extracted glucose from pineapple waste and used this sugar solution as starter medium for yeast growth and ethanol fermentation. This objective could lead to reduce wastes and got value-added product from new source of raw material because Thailand is agricultural country. Some compositions (sugar and salt) of the degraded medium solution were determined. The obtained medium solution was used as starter medium on batch fermentation by

II

Saccharomyces cerevisiae TISTR 5013. The study of growth and ethanol fermentation on batch type fermentor was performed in order to investigate that pineapple wastes could use as raw material for ethanol fermentation which was the new source of raw materials, reduce the bio-waste and value-added product could be produced.

The results were shown that the percentage of waste almost around 49 – 52 % or half-half with edible part. The sugar analysis of neutralized solution was 31.25 grams per liters, and the salt analysis of neutralized solution was 9.243 %. After passed the separation process of salt from sugar, the sugar analysis was 30.20 grams per liters and salt analysis was 0.0975 %. Then this neutralized solution could be used as starter medium for study the yeast growth and ethanol fermentation in next part.

The study of yeast growth and ethanol fermentation on batch type fermentation was performed and the result was shown that the cell was increase while amount of glucose was reduced and at the termination of exponential phase of cell growth then the ethanol production was started to produce. So the final ethanol production, amount of glucose and cell dry weight were 2.4 %, 0.433 grams per liters, and 3.440 grams per liters, respectively.

According to the results of this study, degraded sugar that obtained from the pineapple (*Ananas comosus*) wastes could be used as raw material to produce ethanol on batch type fermentation. The utilization of this bio-waste could lead to a reduction of biodegradable wastes from the fresh market, and lead to get value-added product.