

STUDY ON THE EFFECT OF YEAST CONCENTRATION AND  
FERMENTATION TIME ON BIOETHANOL PRODUCTION  
FROM *Eucheuma denticulatum*  
(N.L.Burnian) F.S Collins & Harvey

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## ABSTRACT

### **STUDY ON THE EFFECT OF YEAST CONCENTRATION AND FERMENTATION TIME ON BIOETHANOL PRODUCTION FROM *Eucheuma denticulatum* (N.L.Burman) F.S.Collins & Hervey**

This study aims to study the effectiveness of different yeast concentration and different fermentation time on the bioethanol production yield from the red seaweed, *Eucheuma denticulatum* (N.L.Burman) F.S.Collins & Hervey. By conducting a standardized, low concentration and high temperature acid hydrolysis on the seaweed upon the fermentation stage, findings showed that a minimum of yeast concentration of 20 wt% is needed to produce any alcohol while the minimum amount of fermentation time is 72 hours. Higher yeast concentrations and longer fermentation time would increase the ethanol yield, yet a yeast concentration above 30 wt% and fermentation time extending beyond 120 hours would result in an inefficient and unproductive bioethanol production.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

The world lives on fuel supply for its growth of population and its' desire for a higher standard of living. With the energy demand rising exponentially to 44,268 kilo tonnes in 2007 with the soaring surge of population (Leahy *et al.*, 2013), so a variety of alternative and renewable energy sources are studied.

Among the latest four renewable energy alternatives which are hydrogen, natural gas and syngas, biofuel pose as the most sustainable, effective and environment-friendly source as of yet. Consequently, the field of biofuel is continuously studied and developed in order to improve its sustainability and reliability as a source of energy.

One of the many raw materials used for harvesting this type of biomass energy, is seaweed. Bioethanol can be fermented from all kinds of seaweed by