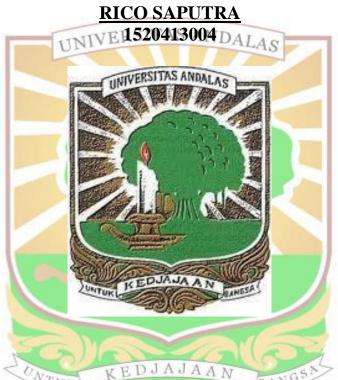
HIDROLISIS ENZIMATIS PATI UMBI GADUNG (Dioscorea hispida Dennst) MENGGUNAKAN ENZIM DARI RAYAP (Nasutitermes.sp)

UNTUK PRODUKSI BIOETANOL

TESIS

Oleh :



Pembimbing : 1. Prof. Dr. Zulkarnin Chaidir 2. Dr. rer. nat. Syafrizayanti

PROGRAM PASCASARJANA

JURUSAN KIMIA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

UNIVERSITAS ANDALAS

PADANG

2017

ABSTRACT

HYDROLYSIS ENZYMATIC OF SOLUBLE STARCH FROM YAM (Dioscorea hispida Dennts) USING ENZYME FROM TERMITE (Nasutitermes.sp) FOR BIOETHANOL PRODUCTION

By: Rico Saputra, S.Si

(Supervised by Prof. Dr. Zulkarnin Chaidir and Dr. rer. nat. Syafrizayanti)

The enzyme has the ability to hydrolyze a complex molecule being simple molecule, which work on Specific substrate. Price enzymes its expensive and enzymes from microorganisms tend to have more low activities under biorefinery condition and easy inhibited. The aim of this work is to develop a process for producing bioethanol from yam (Discorea hispida Dennts) as the substrat and using crude enzyme from *Nasutitermes sp.* The method consists of two steps. Firstly, determinated optimum condition of crude enzyme (pH 3,0 to 6,0), incubation time (10 to 100 minutes), temperature (30 to 75°C) and substrate concentration (1 to 5% w/v). Second, producing bioethanol with different nitrogen source (peptone and urea) and varying time of fermentation (24,48,72) and 96 h). The optimum condition of enzyme was pH 5,4; incubation time for 20 min; and temperature at 60°C, the optimum of substrate concentration is 5% for yam (D. hispida Dennts) substrate and Vmaks/K_M 2,9060. The highest fermentation efficiency 49,22% for 96 h with peptone as a nitrogen source. Then it can be concluded that the enzyme crude extract from Nasutiterme.sp able to hydrolyze starch of tubers yam (D. hispida Dennts) to bioethanol production.

Key word : Yam (D. hispida Dennts), Nasutitermes.sp, Bioethanol