

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

TESIS

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ABSTRACT

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

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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 (*Dioscorea 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 V_{maks}/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