

ABSTRACT

HYDROLYSIS OF TARO TUBER STARCH UNDER THE INFLUENCE ULTRASONIKASI REDUCTION AS TO PRODUCE RAW SUGAR BIOETHANOL

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This research was conducted to study the potential of taro tuber as raw material for bioetahnol production. For this purpose, as series of hydrolysis experiments was carried out under the influence of ultrasound energy at fixed frequency of 40 kHz to produce a reducing sugar at different pHs, times, and temperatures. Reducing sugar in the hydrolyzates was determined by UV-Vis spectrophotometry method. The results showed the highest reducing sugar concentration (1969.2 mg / L) for primary tuber was achieved by hydrolysis at pH 2, for 90 minutes, at a temperature of 80 0C. For a sample of secondary tuber the optimum condition is hydrolysis at pH 2, for 60 min at 70 0C with a reducing sugar concentration produced was 691.8 mg / L. Fermentation test using the powdered bark of raru plant and *Saccharomyces cerevisiae* fermentation showed that both agents are capable of converting the reducing sugar into bioethanol. The concentrations of bioetahol produced using *Saccharomyces cerevisiae* are 20.63% from primary tuber and 26.31% from secondary tuber. The concentrations of bioetahol produced using the bark of raru plant are 5.0% from primary tuber and 2.87% from secondary tuber.

Keywords: *Tuber taro, ultrasonikasi, hydrolysis, fermentation, wood raru, Saccharomyces cerevisiae.*