

ABSTRACT

HYDROLYSIS OF CASSAVA WASTE UNDER ULTRASONICATION TREATMENT TO PRODUCE REDUCING SUGAR AND FERMENTATION FOR BIOETHANOL PRODUCTION

By

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In this study, the potential of hydrolysis of cassava waste under ultrasonication treatment to produce reducing sugar was investigated. The reducing sugar was subsequently subjected to fermentation assay using the bark of Raru tree and *Saccharomyces cerevisiae*. Hydrolysis experiments were carried out at fixed ultrasound frequency 40 kHz, under varied pH, time, and temperature. The concentrations of reducing sugar in the hydrolyzates was determined by using spectrophotometry UV-Vis. The results of hydrolysis experiments showed that the highest concentration of reducing sugar was obtained by hydrolysis at pH 2 for 90 minutes and temperature of 80 °C, with the content of 801 mg/L. Fermentation of the hydrolyzate which contains the highest sugar content indicated that the sugar can be converted into bioethanol. According to GC analysis, it was found that the concentrations of bioethanol from fermentation of filtrate and intact sample using the bark of Raru tree were 0,05% and 0,004, respectively, while using *Saccharomyces cerevisiae* were 0,17% and 0,26%, respectively.

Keywords: cassava waste, ultrasonication, hydrolysis, fermentation, the bark of Raru tree, *Saccharomyces cerevisiae*.