

ABSTRACT

Oil palm is one of the leading agricultural commodities in Indonesia which has a major role in producing crude palm oil from processing fresh fruit bunches. Palm oil solid waste in the form of empty fruit bunches contains 45.95% cellulose so it has the potential as a raw material for bioethanol production. Bioethanol is produced with 4 stages, one of which is hydrolysis. The hydrolysis process plays a role in converting hemicellulose or organic waste into glucose with the help of acids, bases and enzymes. This study aims to determine the effect of the amount of sulfuric acid solvent and the best hydrolysis time on the glucose content produced from Empty Palm Bunches (EPB). In this study, EPB was pretreated with NaOH for 1 hour, then hydrolyzed using H₂SO₄, concentrations of 2%, 3%, 4%, and 5% with variations in hydrolysis time for 30, 60, 90, and 120 minutes. The glucose produced from the hydrolysis process was fermented with *Saccharomyces cerevisiae* for 5 days. The results showed that the highest glucose content was obtained from the hydrolysis process at 4% sulfuric acid concentration with a time of 90 minutes, which amounted to 9.8%.

Keywords: Cellulose, pretreatment, acid hydrolysis, bioethanol.