

## ABSTRACT

Currently, bagasse waste has not been optimally utilized. Bagasse or what can also be called biomass contains high enough organic matter such as cellulose, hemicellulose and lignin that has the potential to be used as bioenergy such as bioethanol. One of the biomass that has the potential to be used as raw material for bioethanol is bagasse. Bagasse contains 45.26% cellulose, 23.01% hemicellulose, and 19.72% lignin. In this study, bagasse was obtained from sugarcane ice drink sellers. A total of 360 g of bagasse was chopped into 50-60 mesh size and baked for 1 hour at 60-70°C. Then take 30 g of bagasse and add 250 ml of 1 N NaOH solution, heat at 121°C for 1 hour and take the residue. The residue was put into a glass beaker and added 200 ml of distilled water, added enzymes according to the treatment (0.4 g and 0.6 g) and adjusted the pH to 4.5-5, then heated using a hot plate at 45°C for the time according to the treatment (30 minutes and 40 minutes). Separate the solution and residue using filter paper to obtain the hydrolysis solution. The hydrolysis results were put into the fermenter, fermentation was carried out anaerobically at pH 4.5-5. Next, put the bread yeast that has been made into a starter as much as 300 ml into the fermenter container and stored in a dark place for 7 days. The fermentation solution was put into a distillation flask with a temperature setting of 78-80°C. The highest bioethanol content was obtained at 99.54% with 0.6 g enzyme treatment at 40 minutes hydrolysis time.

**Keywords:** cellulase enzyme, enzyme hydrolysis, pretreatment, xylanase enzyme.