

ABSTRACT

Banana plantain is one of the foods that contain a high amount of carbohydrates, so it can be used as raw material for making alternative fuels. This study aims to determine the levels of alcohol, lactic acid and methane gas produced by fermenting plantain bananas with 4, 6, 8 grams of yeast variation and 1, 3, 5, 7 and 10 days of fermentation. The research method used is the anaerobic fermentation process, which in this method does not require air or oxygen. After that the bananas were steamed for 30 minutes, then fermented using yeast *Saccharomyces cerevisiae* and the titration process with 0.1 N and 0.1 M NaOH liquid to determine the alcohol and lactic acid levels, while for methane gas using the MQ-4 sensor. The results of the analysis of this study indicate that the highest alcohol content produced is 0.135%, while the lactic acid content is 0.024%. And the result of the maximum methane gas content is 665 ppm, so the residue from this research of fermented plantain banana cannot be used or processed further as an alternative fuel, because the value of lactic acid, alcohol, and methane gas obtained from the fermentation process has not reached the level that should be, namely for the minimum level of alcohol/ ethanol 94.0%-99.5%, and the minimum content of methane gas is 45%.

Keywords: *Fermentation, residue, plantain bulu, alternative fuel.*