

Pretreatment Limbah Kulit Pisang Kepok (*Musa Paradisiaca L*) Sebagai Bahan Baku Bioetanol Menggunakan Microwave Dan Naoh

*(Pretreatment Of Kepok Banana (*Musa Paradisiaca L*) Waste Using Microwave And Naoh As Bioetanol Raw Materials)*

Supervised by:Zeni Ulma, SST., M.Eng. (Supervisor Thesis)

Riska Putri Kuslina

Renewable Energy Engineering Study Program

Department of Engineering

ABSTRACT

The increasing demand for energy results in the availability of petroleum dwindling. One of the efforts to reduce the use of petroleum is to use bioethanol as an alternative fuel. The purpose of this study was to remove lignin content and increase the cellulose and hemicellulose content in kepok banana peels as raw material for bioethanol. This study used a completely randomized design (CRD) with 2 factors each with 3 treatment levels. The method used in the pre-treatment process of kepok banana peel waste used the concentration of NaOH solution (0.5M, 0.75M, and 1M) and microwave heating time (4 minutes, 8 minutes, and 12 minutes). If there is a difference in the mean of the test, it is continued with the DMRT (Duncan's Multiple Range Test). The highest cellulose content was obtained in variation V3t1(1M 4 minutes) 33.00%, the highest hemicellulose content was obtained in variation V2t2(0.75M 8 minutes) 22.00%, and the lowest lignin content was in variation V3t1(1M 4 minutes). The best results were in the pretreatment process, then the hydrolysis stage was carried out using a 1 M HCL concentration solution, the yield was 14° brik and 24.870% reducing sugar.

Key word : *pretreatmen, kepok banan peel, bioethanol*

