CHEMICAL COMPOSITION AND FIBER CHARACTERIZATION OF NAPIER GRASS SPECIES (*PENNISETUM PURPURUEM)*

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ABSTRACT

CHEMICAL COMPOSITION AND FIBER CHARACTERIZATION OF NAPIER GRASS SPECIES (*PennisetumPurpureum*)

Lack of the petroleum sources today can be replaced by bio-fuel product. There is abundance of natural sources which can be applied to produce bio-fuel. Napier grass is one of the examples which widely used to produce ethanol. So, the main objectives of this research are to investigate the chemical composition of the Napier grass in the different pre-treatment condition and to observe the fiber characterization of the Napier grass fiber based on different pre-treatment. The results observed that the differentiation of the chemical composition among 2% NaOH, 2% acetic acid and untreated. The main chemical compositions of Napier grass lignin, cellulose, and hemi cellulose. The higher percentage of cellulose can be determined based on the 2% acetic acid treatment. Meanwhile, the percentage of lignin and hemicelluloses can be observed on untreated sample. Besides that, the fiber characterization of Napier grass was observed based on functional group and fiber surface morphology. Based on the FTIR analysis, the band 2894-2917 cm^{-1} was observed and it was corresponded to lignin composition. In addition, FTIR analysis also was recommended to observe reduction of the hemicelluloses and lignin content. In other hand, based on the fiber surface morphology which is SEM was applied, the treated samples were shown that the impurities on the fibers were removed. Commonly, the hemicelluloses and lignin also removed on the treated samples.