MAKING BIOETHANOL FROM PINEAPPLE SKIN WASTE (Ananas comosus L. Merr) BY ENZIMATION AND FERMENTATION PROCESS

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Abstrak

Indonesia has a great potential to produce bioenergy such as bioethanol. Almost of all commodities in agriculture sector can result a biomass, the one of them is waste of pineapple skin. Total of pineapple’s production is 20 tonnes/hectare with percentage of pineapple’s skin waste 23% and reduced sugar content 17% make pineapple skin potential as an energy source bioethanol.

The process to make consists of four stages, they are preparation, hydrolysis, fermentation and distillation stage. The preparation stage, such as cutting, straightening and separating the waste of leather with pineapple juice. Hydrolysis stage consists of two processes, they are liquifikasi using \( \alpha \)-amylase enzymes at \( 90^\circ C \) for 2 hours and saccharification using enzyme gl\( \text{\textmu} \)koamilase at \( 60^\circ C \) for 48 hours. The fermentation stage is added urea at a ratio of 1:100 and saccaromicess cerevisiae yeast on the ratio of 1:50 from the weight of pineapple skin at \( 32^\circ C \) for 24, 48, 72, 96 and 120 hours. The satge of distillation for separating of ethanol and water is performed at \( 78^\circ C-80^\circ C \) for 3 hours.

From this experiments that have been done can be concluded, most of results obtained in 72 hours fermentation, where the process without using of enzymes to produce a yield 19% with 43,51% ethanol content, while the process of using enzymes produced a yield 21% with 49,23% ethanol content.

Key word: Bioethanol, Pineapple skin, Enzimation, Fermentation