ABSTRACT

Indonesia, as a country rich in natural resources, has great potential in the development of bioenergy, especially bioethanol which can be used as an alternative fuel. Abundant dragon fruit production often leads to a decrease in selling prices, causing many farmers to throw away their crops. Therefore, this study was conducted to explore the potential of utilizing dragon fruit and papaya which contain high carbohydrates and sugars as raw materials for bioethanol. This study aims to utilize agricultural waste from dragon fruit (*Hylocereus Costaricensis*) and papaya (*Carica Papaya L.*) as raw materials for bioethanol production. The methods used in this study include hydrolysis, fermentation, and distillation. Variations in the composition of a mixture of dragon fruit and papaya and the concentration of yeast (*saccharomyces cerevisiae*) were studied to determine the effect on the levels and yield of ethanol produced by using a mixture of ingredients consisting of three treatment levels of 65%:35%, 35%:65%, 50%:50% with the highest results in the RA2 variation. A mixture of 65% dragon fruit and 35% papaya produced an ethanol content of 30.75% and a yield of 18.99%. The results of this study are expected to contribute to the development of bioenergy technology and increase the economic value of agricultural waste.

Keywords: bioethanol, dragon fruit, papaya, agricultural waste, fermentation.