

**A REVIEW ON THE VALORIZATION OF FRUIT PEELS
AND SEEDS FOR BIOETHANOL PRODUCTION**

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ABSTRACT

A REVIEW ON THE VALORIZATION OF FRUIT PEEL AND SEED FOR BIOETHANOL PRODUCTION

Fruit waste has become a big issue worldwide as it becomes one of the main sources of solid waste that have a bad impact toward the environment. This issue can be solved by processing the fruit waste into energy source such as bioethanol. Fruit wastes can be a sources of carbohydrates in the form of cellulose, hemicellulose and pectin, that can be use to produce the bioethanol. In this review, peels and seeds from different fruits are reviewed to evaluate the characteristics as feedstocks to produce the bioethanol. To produce bioethanol, the fruit peel and seed need to undergo pre-treatment, hydrolysis, fermentation and ethanol recovery. Physical pre-treatment is the most used method as it can provide more surface for hydrolysis process. Next, for hydrolysis of fruit peels, enzymatic hydrolysis is often used compared to fruit seeds that used acidic hydrolysis. *S. erevisiae* is the most used enzyme for fermentation process of fruit peel and seed. Based on literature, Matooke and pineapple peels have the highest bioethanol yield which are 90.19% and 197.6 g/L respectively. Durian peels has the lowest bioethanol yield which is 5.70 g/L. Jackfruit seeds obtained the highest bioethanol yield which is 57.94% while durian seed has the lowest bioethanol yield which is only 0.47%. Fruit peels is a better feedstock compare to fruit seeds as it have high content of starch which can produce more bioethanol.

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