



The Local Food Innovation of Aren Beras Kencur as a Healthy Drink

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Abstract. Aren or Enau (*Arenga pinnata* Merr) is one type of palm plant which grows well in tropical areas, especially in Indonesia. The main product of the palm plant is sap which is the result of tapping from male flowers which is used as palm sugar and natural sweeteners. Palm sugar has antioxidant activity and various other benefits. In increasing the nutritional value of palm sugar, in this research, the manufacture of Aren Beras Kencur products with various concentration ratios has been carried out. The best composition was obtained by analyzing the elements of micronutrients and macronutrients including water content, ash content, as well as antioxidant activity testing. Based on these various characterizations, this kencur rice palm product can be used as a health drink.

Keywords: local · product · aren · beras · kencur

1 Introduction

Indonesia is known as an agricultural country rich in spices. One of the spices used in health drinks is Kencur (*Kaempferia galanga* L.) which is an Indonesian plant that has medicinal properties. The use of kencur both in industry and households is not only used as medicine but also be used as food and drinks that are rich in health benefits [1]. In developing countries such as Indonesia, the use of herbal raw materials is now more often used because they have cheaper prices and are safer, more effective, and have low side effects compared to chemicals in medicinal preparations. Several techniques of processing kencur as traditional medicine or herbal medicine have been developed. However, it is necessary to innovate processed herbal beras kencur in order to obtain optimal nutritional value.

In this study, palm sugar was used as a natural sweetener in processed beras kencur. Palm sugar comes from the processing of palm tree sap (*Arenga pinnata* Mer) obtained from Pandeglang Regency, Banten Province. The advantages of palm sugar, besides being sweet and flavorful, are the relatively small sugar content so it is safe for consumption by all people. In addition, palm sugar has been shown to have antioxidant activity [2].

In this study, the best composition was determined for the combination of innovative local food products made from aren beras kencur. The best composition was obtained by determining the content of micronutrients and macronutrients, including water content,

ash content, sugar content, fat content, mineral content, as well as antioxidant activity testing. This product is expected to become a health drink for the local community.

2 Method

The tubers of kencur, ginger, and turmeric that will be used in making instant kencur are washed and peeled or scraped, then grated until getting the fine structure. While the rice is roasted and then ground until smooth (to become rice flour), the cinnamon and kapulaga are washed and then ground until smooth. The kencur tubers, ginger and turmeric that have been grated are then squeezed to extract the juice. Likewise, cinnamon and kapulaga that have been ground are added with a little water and then squeezed. The cinnamon and kapulaga water are mixed into the juice of kencur, ginger, and turmeric and then filtered again.

Into the juice of kencur, ginger, turmeric, cinnamon, and kapulaga the filtered results are added palm sugar (as much as half of the volume) and salt and then stirred until all the mixed palm sugar and salt can be dissolved completely. Once well mixed, the kencur juice is cooked in a frying pan over medium heat. In this cooking, it is necessary to pay attention so that the pan used must be in a really clean condition and free from all dirt, especially oil. The presence of residual cooking oil will cause the failure of the instant kencur-making process. During cooking, stirring must be carried out continuously to avoid clumping or scorching. Cooking continues until a thick and oily dough is formed.

If the dough is thick, then add half the remaining volume of palm sugar and rice flour with continuous stirring. Cooking and stirring continue until the dough thickens and forms a powder or powder. While still hot, the powder formed must be crushed/pulverized using a stirrer until it becomes a soft powder. Crushing is carried out in cold conditions, it will be difficult considering the powder has hardened. Then remove from the pan and cool.

The powder that has been crushed is then sifted to obtain a really soft instant kencur. For powder that has not passed the sieve, it can be crushed again. On the next step, powdered beras kencur is mixed with palm sugar with varied ratio of concentration, 2:1; 4:3; 1:1; 4:5; and 1:2.

The best composition was obtained by analyzing the elements of micronutrients and macronutrients. The antioxidant test using the Ferric Reducing Antioxidant Power method. To test the analysis of macro elements, the sugar content was tested using the High-Performance Liquid Chromatography method, water content was tested using the moisture analyzer method, while the ash content was teste using the heating method [3].

3 Discussion

In this study, the manufacture of local food innovation products of rice kencur palm with various concentrations was carried out to determine the best composition with optimal nutritional value. The process to get the best product quality is carried out from the first stage, namely the process of cooking a mixture of raw materials, including rice, kencur, turmeric, ginger, and sugar palm, until becoming a product of aren beras kencur which is ready to be packaged (Fig. 1). The cooking process is carried out at a temperature of



Fig. 1. Aren beras kencur product

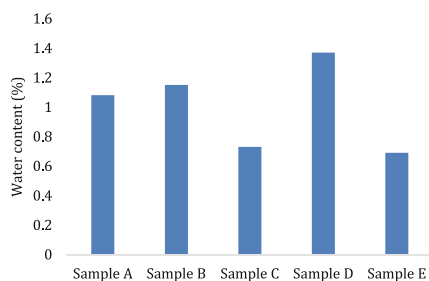


Fig. 2. Water contents in all varian products

100 °C with the aim that the caramelization process takes place perfectly which produces products with low water content.

Water content is one of the important parameters to determine the quality of a food product. Water contained in free form in foodstuffs can help the process of food spoilage. The water content in a material plays a role in chemical reactions, enzymatic changes or the growth of microorganisms. This happens generally at high water content and will also be influenced by environmental factors such as pH and temperature. The water content affects the stability, palatability and overall quality of the product [3] In palm sugar products, the water content of the ingredients is limited to a maximum of 3% (Indonesian National Standards Council 1995) [4]. In this study, all product variants have water content below 3% as shown in Fig. 2.

Another parameter that is also important in determining the quality of food products is the ash content. Ash content is related to the mineral content contained in a material. Minerals are in the form of organic and inorganic salts. The ash content is also related to the cleanliness of a processing process. The ash content according to the SNI standard for palm sugar is a maximum of 2% [3]. In this study ash content was obtained for all product variants, with the lowest level indicated by sample E (Fig. 3). So, Based on these two characterizations, the best composition was found in sample E.

To be used as a health drink, the antioxidant activity of sample E is evaluated using Ferric Reducing Antioxidant Power (FRAP) method. This method is chosen based on the ability of antioxidant compounds to reduce Fe^{3+} ions, which comes from the FRAP reagent which is a mixture of acetate buffer, 2,4,6-tripyridyl-s-triazine (TPTZ), and FeCl_3 . If the compound has an antioxidant activity there will be a reduction reaction of

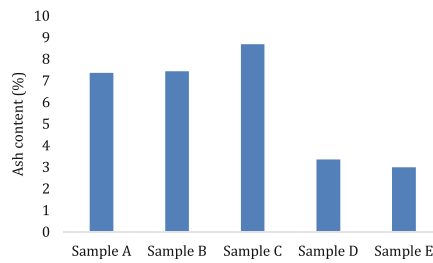


Fig. 3. Ash content in all varian products

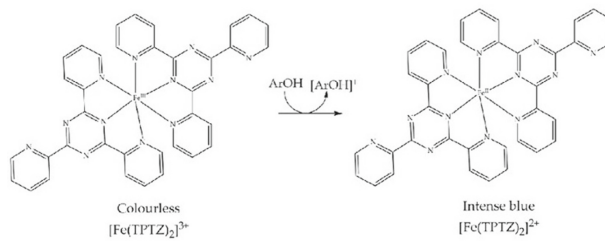


Fig. 4. Reaction mechanism on FRAP method (Sadeer, et al., 2020)

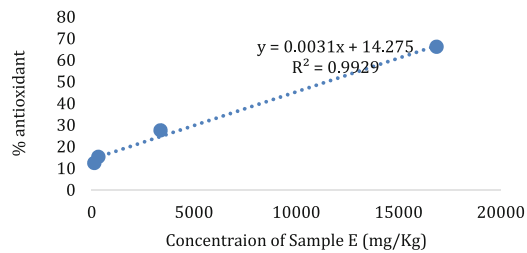


Fig. 5. Antioxidant activity in varied concentrations

Fe^{3+} to Fe^{2+} which then forms a blue complex with TPTZ, as shown in Fig. 4, which can be detected spectrophotometrically at a wavelength of 593 nm.

The antioxidant activity is evaluated by determining the effective concentration (IC₅₀) of the compound by plotting the antioxidant percentage against the concentration of the sample as shown in Fig. 5.

Based on the graph shown in Fig. 5, the IC₅₀ for the samples of kencur rice palm was 11,524.1 mg/Kg or 11.5 mg/g. A compound with a very strong antioxidant activity shows the IC₅₀ less than 50 mg/g (Dewi, et al., 2016). So it can be concluded that this kencur rice palm product has high antioxidant activity and can be used as a health drink.

4 Conclusion

In this study, the manufacture of local food innovation products of rice kencur palm with various concentrations has been carried out. For all the products produced, the best

composition was determined, which was found in sample D with a concentration ratio of aren:rice kencur 1:2. Sample E is a sample with the lowest water and ash contained and showed high antioxidant activity. Based on these various characterizations, this kencur rice palm product can be used as a health drink.

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