

**INNOVATION OF THE UTILIZATION OF SALE BANANA (PISANG SALE) MADE FROM AWAK BANANA (*Musa paradisiaca* cv. Awak) AND KEPOK BANANA (*Musa acuminata balbisiana* Colla) INTO SKIN MOISTURIZER***INOVASI PEMANFAATAN PISANG SALE YANG TERBUAT DARI PISANG AWAK (*Musa paradisiaca* cv. Awak) DAN PISANG KEPOK (*Musa acuminata balbisiana* Colla) MENJADI PELEMBAB KULIT***Wahyu Lestari^{1,2*}, Rita Meutia³, Mulia Saputra³**¹Department of Dermatology and Venereology, Universitas Syiah Kuala, Banda Aceh, Indonesia²Department of Dermatology and Venereology, dr. Zainoel Abidin Hospital, Banda Aceh, Indonesia³Economic and Business Faculty, Universitas Syiah Kuala, Banda Aceh, Indonesia

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Abstract

Banana is one of the common fruits in Indonesia that can be processed into other products, such as Sale Banana which is one of the typical souvenirs from Aceh. The purpose of this community service activity (PkM) is to increase the income of business owners and Sale Banana traders. The community service location is dedicated to small and medium enterprises in Alue Naga Village, Banda Aceh. Through this PkM activities, Sale Banana is used to create a new product that is a moisturizing product for the skin. Two types of bananas are used in this PkM, namely Awak banana and Kepok banana. The extracts of the two bananas are used as the main ingredient of the moisturizer. The antioxidant activity of the two banana extracts was tested using the DPPH method. Based on the results of community service, skin moisturizers have an IC₅₀ antioxidant activity of 10.52 (Kepok banana) and 14.00 (Awak banana). It could be concluded that both Sale Kepok Banana extract and Awak Banana extract have a strong antioxidant activity and could be used as a good moisturizer.

Keywords: Awak banana; sale banana; Kepok banana; moisturizers**Abstrak**

Pisang adalah salah satu buah yang umum di Indonesia yang bisa diolah menjadi produk lain, seperti pisang sale yang merupakan salah satu oleh-oleh khas dari Aceh. Tujuan kegiatan pengabdian kepada masyarakat (PkM) ini adalah untuk meningkatkan pendapatan pemilik usaha dan pedagang pisang sale. Lokasi pengabdian masyarakat didedikasikan untuk usaha kecil menengah di Gampong Alue Naga, Banda Aceh. Melalui pendampingan PkM, pisang sale diinovasikan menjadi produk pelembab untuk kulit. Dua jenis pisang yang digunakan dalam kegiatan PkM ini, yaitu pisang awak dan pisang kepok. Ekstrak kedua pisang tersebut digunakan sebagai bahan utama pelembab. Aktivitas antioksidan dari kedua ekstrak pisang tersebut diuji melalui metode DPPH. Berdasarkan hasil kegiatan PkM, pelembab kulit yang dihasilkan memiliki aktivitas antioksidan IC₅₀ sebesar 10,52 (pisang kepok) dan 14,00 (pisang awak). Kesimpulannya, bahwa ekstrak sale pisang kepok dan ekstrak sale pisang awak memiliki aktivitas antioksidan yang kuat dan dapat digunakan sebagai pelembab yang baik.

Kata kunci: pisang awak; pisang sale; pisang kepok; pelembab kulit

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Introduction

Aceh is a province in Indonesia, located on the northwest tip of Sumatera Island. Aceh is known to have abundant natural resources, including oil and natural gasses. Aceh is also renowned for its culinary, called as "Typical Aceh Souvenir". One kind of Aceh's typical souvenir is Red Golden Sale Banana (Chairuni 2021).

Pisang Sale (Sale Banana) is a processed food made from dried ripen Awak Banana (*Musa paradisiaca* cv. Awak). This banana is known for its sweetness and tastiness, and could be preserved by drying or smoking method. Red Golden Sale Banana is processed without any additional preservative substance, thus it can only be stored for one week. Other than Awak Banana, other kind of bananas that could be processed into sale banana are Jackfruit Banana (*Musa Paradisiaca Formatypicaatu*), Rhino Horn Banana (*Musa acuminata×balbisiana*) and Cotton Banana (*Musa paradisiaca* L.). However, in this surveyed community service location, they only used Awak Banana as the basic ingredients of Sale banana (Putri et al. 2015).

The first step in making Red Golden Sale Banana is to dry the banana, in order to make it can be stored for a week. After the drying process, the banana are then smoked for approximately two complete days. Red Golden Banana can be eaten directly after the smoking process, or can also be coated with flour and then fried to be eaten. Additional flavor such Strawberry or Blueberry flavor can be added to Red Golden Banana, making it more delicious and attractive for the consumers (Chairuni 2021).

Some important factors determined the quality of the banana, including the color, taste, scent, firmness, and storage duration. These characteristics are affected by the processing method, the way it has been packed, and the way it stored. Until date, there are many Sale Banana that has been made in poor quality, especially the ones which were been made in rainy season thus making the dried process ineffective (Ma et al. 2022).

There are two kind of Sale Banana, including wet Sale Banana and dried Sale Banana. Wet sale banana is dried and smoked without being fried, while dried sale banana is pounded using a traditional tool after smoked, coated with flour dough and then fried. Tasty sale banana should have crunchy texture with a bit taste of sour sensation, which comes from the ripe banana. (Chairuni 2021).

For the processing aspect, production is closely related to with the process of making the product, whether it is the capacity of the product, number of employees needed, product variation, and any other things included in the production activities. Some challenge in production activity are the effort to increase the production capacity, and

how to make some modification to turning the Sale Banana into a delicious, nutritious, and high quality banana (Wahyuni et al. 2022).

The popularity of a new variant product depends on marketing strategy that runs by a group of leading people. This strategy aiming to promote or sell the product, establish new marketing policies such as production, pricing, distribution, and promotion strategy. Some problem in management aspect faced by partner are the effort to improved the skills of the group members or the employees toward self-development, especially innovation and creativity associated with production of Awak Banana into Pisang Sale Red Golden, improved the ability of the business owner to calculate the cost of production to determine the right selling price, as well as increasing the capacity and market opportunity that could be potential to expand the commerce (Mubarok et al. 2015).

Kepok Banana is one kind of banana that has beneficial effect for the healthiness (Singh et al. 2016). Previous research projects stated that Kepok Banana has the ability to help repairment the skin structure and improve the revitalization of the epidermis (Ulfa et al. 2020). Bananas in general also have an antioxidant property (Jami'ah et al. 2018). Currently, interest in natural antioxidant has increased due to its effect on skin and wellness. It is also safe and applicable in the skincare formulation. Therefore, in this community service, Sale Banana from Awak Banana and Kepok Banana were also used as skin moisturizers, then the antioxidant content was compared in both kind of Banana. The aim of this activity was to increase the income of the business owner and the merchant from the banana sale.

Methods

This community services involve Red Golden Sale Banana producer in Alue Naga, Banda Aceh. The preparation phase contains determination of location and discussion with the owner. We have meet the agreement from all parties involved to cooperate in this PkM activity. In producing Red Golden Sale Banana, the business owner has prepared a thorough plan for the optimization of the business. This Red Golden Sale Banana business owner approaches his employees either by teaching directly and giving them instruction about the making of a good sale banana product or with discussion about how to make a good sale banana product with the aim that the production of sale banana is nutritious and healthy, rich in proteins without the artificial sweetener and preservative that could put the health at a stake.

This method is highly effective and efficient for the employees to understand better in the production of the sale banana because the business owner explains the steps of the making process of the sale banana in details. The

development in the human resources sector is conducted through the increasing of the cooperation between groups, as well as creating the reliable performances as preferred. In regard of this guidance, the work performance could be carried out as expected and could produce sale banana in the best quality ever. Type of banana that mainly used to produce Sale Banana is Awak banana. **Figure 1** shows the condition of the typical sale banana's factory from Aceh.

The processing procedure of Sale Banana into a skin care product were be conducted through training and counseling. For that matter, a laboratory media is needed to create a product which is beneficial for the skin. We use 2 different kinds of bananas to make moisturizers. The first one is Awak banana, and the second one is Kepok Banana.



Figure 1. The factory's place of sale banana product in Alue Naga

Result and Discussion

Survey Result

In producing process of Red Golden Sale Banana, the business owner divides his employees into three groups. The group was divided due to several stages of the process in the making of sale banana product. After the peeled is done, the bananas are placed in a black pail. The second group is working in the drying process. The bananas are being dried out by the sun for about 5 days, while the third group is working in the smoking process. The peeled bananas are brought to the cooking stove in a particular room. There are 16 total of stoves in that room. Every stove is made from concrete, with 1,5 meters in height and every stove is adjacent one to another. The size area of one stove is about 2 x 1,5 meters. The pedestal of the cooking place is made from bamboo that has been cut into small pieces. It is through those hollow space of the bamboos where the heat comes to dry the sale banana. That process takes 2 x 24 hours. However, the fire must never go out. A hundred stalks of bananas are hung neatly in the yard of the factory. Those bananas were come from all over region of Aceh,

as the main raw material of Red Golden Sale Banana. However, the overripe bananas cannot be used for the Sale Banana anymore, because the quality of that banana was considered less good.

This community service focuses on improving the income of the owner and the merchant of sale banana product, especially through a diverse innovation in order for the sale banana could be produced with a high nutritional value as well as being favored by the community. There are many things that have been conveyed by the business owner, including any shortages and weaknesses while running this business. In addition to that, there are any other innovation that the business owner wants to do. Therefore, assistance from community service is really helpful for the business owner in order to develop his business. All assistances that have provided, including the innovation, have the purpose for the small and medium entrepreneur. In this case the sale banana business owner was expected to expand the business so that he could increase the income and hired more employees. One of the innovation of the product was using sale banana not only for meal, but also can be skin moisturizer product (**Figure 2** and **Figure 3**).

Antioxidant Activity Analysis Result

The antioxidant activity of both sale banana (from Kepok Banana and Awak Banana) were tested using the DPPH method. DPPH (2,2-diphenyl-1-picrylhydrazyl) is a nitrogen radical compound, which will pick up hydrogen atom that exists in a compound, such as phenol. At the same time, DPPH is also a stable radical compound due to the presence of an overall electron resonance in the molecule. This method was chosen because the method is suitable for testing an antioxidant activity in vitro as well as the simple and fast method (Jadid et al. 2017; Setiawan et al. 2018). The measurement of DPPH method is using a spectrophotometer with a wavelength of 517 nm. The result of antioxidant test of Kepok banana shown in **Table 1**.

Table 1 reveals the result of antioxidant activity test of sale Kepok Banana. The analysis is stated by IC₅₀ as an indicator of the sale Kepok Banana's ability to inhibit 50% of the free oxidation process, the positive control in this test is vitamin C.

The test result shows that sale Kepok Banana's extract has the antioxidant activity with an IC₅₀ value of 10.52 µg/ml. The result of antioxidant test of sale banana (Awak Banana) shown in **Table 2**.

Table 2 reveals the result of antioxidant activity test of sale banana (Awak Banana). The analysis is stated by IC₅₀ as an indicator of the Awak Banana's ability to inhibit 50% of the free oxidation process, the positive control in this test is vitamin C (ascorbid acid). The test result shows

that Awak Banana's extract act as antioxidant with an IC50 value of 14.00 µg/ml.

Data showed that there was a difference of the result of the antioxidant's activity between sale Kepok Banana and Awak Banana **Table 3**. Kepok Banana shows 10.52 µg/ml of IC50 value, while Awak Banana shows 14.00 µg/ml of IC50 value. Vitamin C as the control sample has 2.25 µg/ml of IC50 value. Vitamin C was used as the sample control because its ability to catch the free radical electron. It happens due to the fact that vitamin C has a free hydroxyl group that could act as a free radical scavenger (Wibawa et al. 2020).

The principle of IC50 value is the greater the antioxidant activity of an extract, the number of values will be smaller and vice versa. It is found that the IC50 value of sale Kepok Banana (10.52 µg/ml) extract is smaller than sale Awak Banana's (14.00 µg/ml). Meanwhile the IC50 value of Vitamin C is 2.25 µg/ml. However, it is stated that the antioxidant activity could be classified as very strong if the IC50 value is less than 50 µg/ml, strong if the IC50 value is between 50 to 100 µg/ml, moderate if the IC50 value is between 101 to 150 µg/ml, and weak if the IC50 value is more than 150 µg/ml (Purnamasari et al. 2019).

Table 1. Antioxidant test of sale Kepok banana

No	Control (EtOH, Abs)	Concentration (ppm)	Absorbance		% Inhibition		IC50	
			Vitamin C	Kepok Banana Gel	Vitamin C	Kepok Banana Gel	Vitamin C	Kepok Banana Gel
1	0.128	2	0.065	0.091	49.22	28.91		
2		4	0.059	0.089	53.91	30.47		
3		6	0.055	0.082	57.03	35.94	2.25	10.52
4		8	0.051	0.073	60.16	42.97		
5		10	0.045	0.064	64.84	50.00		

Table 2. Antioxidant test of sale Awak banana

No	Control (EtOH, Abs)	Concentration (ppm)	Absorbance		% Inhibition		IC50	
			Vitamin C	Awak Banana Gel	Vitamin C	Awak Banana Gel	Vitamin C	Awak Banana Gel
1	0.128	2	0.065	0.092	49.22	28.13		
2		4	0.059	0.091	53.91	28.91		
3		6	0.055	0.085	57.03	33.59	2.25	14.00
4		8	0.051	0.079	60.16	38.28		
5		10	0.045	0.073	64.84	42.97		

Table 3. Linear regression equation and the IC50 value of sale Kepok's banana extract, Awak banana's extract and vitamin C

Sample	Linear Regression Equation	IC50 Value
Sale Kepok Banana's Extract	$y = 2.344x + 21.25$	10.52
Sale Awak Banana's Extract	$y = 1.9531x + 22.656$	14.00
Vitamin C (Control)	$y = 1.875x + 45.781$	2.25

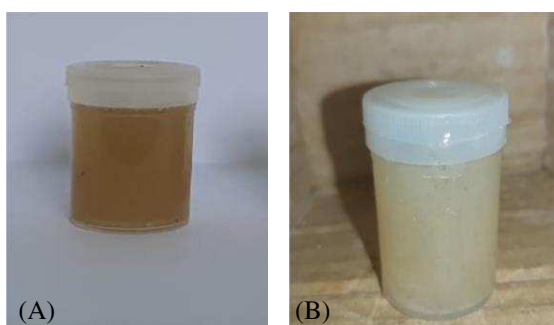


Figure 2. (A) Sale Awak Banana Moisturizer and (B) Sale Kepok Banana Moisturizer



Figure 3. The Making of Sale Banana's Moisturizer from Sale Banana

Conclusion

It could be concluded that both Sale Kepok Banana extract and Awak Banana extract have a strong antioxidant activity and could be used as a good moisturizer. In addition, it was found that the low-sugar banana Sale Kepok variant can be consumed by people with diabetes mellitus and the development of new innovations for banana sale became a moisturizer for the skin that could increase income for banana sale entrepreneurs.

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