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Training and Making Avocado Seed Flour as Snack Food in Dalu Sepuluh Village Tanjung Morawa Residence

Tiar Lince Bakara*, Rumida, Ginta Siahaan

Nutrition Department, Politeknik Kesehatan Medan

Abstract. Avocado seeds are usually disposed as waste. However, based on their benefits, the seeds can still be utilized by the community. Avocado seeds have a hypoglycemic effect, an anti-diabetic effect, through their ability to reduce blood glucose levels. The seeds also contain high enough starch (23%) that allowing the use of avocado seeds into flour. Then, the seed flour could be applied for making donuts, cookies and simulation chips. The aim of this Community Service was to provide knowledge to the women groups on the application of avocado seeds into avocado seed flour, that would be then being processed into snack foods such as cookies, donuts and simulated chips. The activity was carried out in Dalu Sepuluh-B Village, Tanjung Morawa Sub-district. The method used was by doing demonstration and training, so that women group good skills to make flour from avocado seed and their subsequent products. The results of community service activities are that participants of the cadre group and PKK mothers have known the health benefit of avocado seed flour and skilled in making its processed product, so that it can improve public health of the community.

Keywords: Avocado seed flour, Cookies, Donut, Simulation chips, Cadre group

Abstrak. *Biji Alpukat merupakan limbah yang dapat dimanfaatkan masyarakat sedangkan bijinya hanya dibuang sebagai limbah. Biji Alpukat memiliki efek hipoglikemik, efek antidiabetes melalui kemampuannya menurunkan kadar glukosa darah dan mengandung zat pati cukup tinggi sebesar 23%. Kandungan pati yang tinggi memungkinkan pemanfaatan biji alpukat menjadi tepung. Tepung biji alpukat yang dihasilkan akan diaplikasikan untuk pembuatan donat, cookies dan keripik simulasi. Tujuan Pengabdian Masyarakat adalah memberi pengetahuan kepada Kelompok Kader dan Ibu PKK dengan harapan mampu mengubah biji alpukat menjadi tepung biji alpukat dan diolah menjadi bahan makanan selingan seperti cookies, donat dan keripik simulasi. Penatalaksanaan Pengabdian Masyarakat dilakukan di Desa Dalu Sepuluh-B, Kecamatan Tanjung Morawa. Metode*

*Corresponding author at: Politeknik Kesehatan Medan Jalan Negara No. 1 Lubuk Pakam

E-mail address: *tiarlincebakara@gmail.com*

Journal Homepage: https://talenta.usu.ac.id/jst

Pengabdian Masyarakat yang digunakan adalah metode demonstrasi dan pelatihan agar ibu- ibu mampu dan terampil membuat tepung biji alpukat menjadi donat, cookies dan keripik simulasi. Hasil dari kegiatan pengabdian masyarakat bahwa peserta ibu-ibu kelompok kader dan ibu PKK telah mengetahui manfaat dari tepung biji alpukat dan sudah terampil membuat produk olahan dari tepung biji alpukat yang dapat diterapkan dimasyarakat sehingga dapat meningkatkan derajat kesehatan masyarakat.

***Kata Kunci**:Tepung biji Alpukat, Cookies, Donat, Kerupuk simulasi, Kelompok kader*

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1. Introduction

Avocado *(Perseaamericana mill*) has a wonderful taste, while also rich in nutrition benefits, such as high antioxidant level [1]. However, most people only utilize the pulp part of the fruit and dispose the seeds as waste.

Avocado seeds contain very high (23%) starch substances, so that the seedscan be utilized as an alternative source of starch. In addition, avocado seeds have a hypoglycemic effect, an antidiabetic effect through its ability to reduce glucose levels in blood [2]. Avocado seeds are rich of phenolic compounds that serves as an antioxidant[3][4].

According to previous research, avocado seeds also contain alkaloids, tannin, triterpene, and quinone. Avocado containstannin inside the pulps while the leaves contain polyphenols, quercetin, and perseit alcohol sugar. Moreover, the avocados can be used as moisturizer, as treatment for thrush, kidney stone, high blood pressure, neuralgia, gastralgia, swelling of the respiratory tract, irregular menstruation, and toothache [2].

Avocado seeds could be established as a new business, because the seedsnot only can be processed to become flour [5], starch [6], but they are also extracted to produce oil [7]. Starch and flour from avocado seeds have a high value, and could be consumed as one of the main ingredient or additives from a variety of foods, such as cookies [8], dodol [9], and simulated chips [10].

2. Method

Public service was held at Dalu Sepuluh Village on August 2019. The targets of this activity were mother's group called "PKK Cadres", and neighborhood family and surrounding citizens. Screening was done in advance to select the target 50 members, with some criteras such as:

a. Agree to follow specified activities.
b. Is in good health and not sick.

3.1 Equipments

Equipments used in cooking demonstration were: scales, basin containers, dry flour sieve, spoons, a blender, plastic containers, plates, napkin, a cabinet dryer, a gas stove, an oven, a frypan, a laptop, projector, knives, plastic, cake molds, noodle machines, and plastic jars.

3.2 Partners

This activity was conducted by lecturer team, and 6th semester Nutrition Department student with members consisting of nutritionists, public health staff, housewives, village secretary in Dalu Sepuluh. The expected outcome ofthis activity was to establish good cooperation with public health center's nutritionist within the working area of the village. Great support was expected from public health center to motivate"PKK Cadres" to actively participate in the planned activities.

3.3 Training Activity for Manufacturing Avocado Seeds Flour Products

The activity was conducted through 3 stages, which were:

1) Providing theory related to avocado seeds and its benefits for health.
2) Training for manufacturing avocado seeds flour.
3) Training for manufacturing products from avocado seeds flour.

   During training activity, participant was asked to directly practice the process of manufacturing products from avocado seed flour.

As for the activity itself is described as below:

a. Pre-training
   1) Prepare all executive staff and "PKK Cadres" group for screening, explaining the benefits and purpose of implemented activity in advance.
   2) After finding the target, the details of activities were explained. After this, all group members were requested to sign a willingness form to join this activity.
b. Training

   Public service was conducted in the form of training, counselling, and cooking demonstrations of various foods using avocado seeds. Presentation was held with topics on the benefits of avocado seeds with stage as below:

   1) Stage I: Joint counselling (all executive staff and women group member). The method used for presentation was public speaking using leaflet media.

The guide for detail instructionwas held in Dalu Sepuluh village hall for 120 minutes time.

Counselling materials include:

a) What is avocado seed flour.
b) Ingredients for producing avocado seed flour.
c) Benefits and use of processed avocado seed flour.
d) The difference between foods that utilize with or without avocado seed flour
e) Advantages in foods utilizing avocado seed flour.
f) Manufacturing procedure of avocado seed flour and processed food utilizing avocado seed flour.
g) Cookies making.
h) Doughnut making.
i) Simulated Chips making.

2) Stage II:
   a) Holding cooking demonstration and inviting all participants to join in the village hall, as a place of training activity or cooking demonstration. Training activity or cooking demonstration was held twice, adjusting according to the state or time condition of the participants.
   b) Every executive staff and PKK group member targeted was also trained about avocado seed flour processing.
   c) Skill evaluation

      The last activity gave executive staffs and PKK group member an opportunity to process cookies, doughnut, and Simulated Chips using avocado seeds flour.

The making process of avocado seeds flour was executed in the following way: Avocado seeds was cleansed and cut thin, then boiled and dried until avocado seed chips was obtained. The chips were then grinded and sieved to produce seed flour. The resulted avocado seed flour was utilized for making cookies, doughnut, and simulated chips products. The processing methodused for cookies, doughnut, and simulated chips is performed according to Septiadji [8], Hastuti [10], and Rastini [11] methods, respectively. Ingredients for making cookies is 150 g of wheat flour, 30 g of avocado seed flour, 25 g of corn starch, 75 g of chocolate chips, 100 gram of butter, 50 g of sugar, half teaspoon of salt, half teaspoon of vanilla essence, half teaspoon of baking powder, two egg yolks, and

half teaspoon of brown coloring. Ingredients for making doughnut is 90 g of wheat flour, 10 g of avocado seed flour, 1.5 g of instant yeast, 10 ml of water, 15 g of granulated sugar, 6 g of margarine, 5 g of milk powder, 10 g of yolk, and a g of salt.

3.4 Evaluation Draft

Evaluation was regularly done at the beginning, in the middle, or in the end of the activity. The achievement criteria for the activity are as below:

a. The skill on avocado seed processing improve after the training. Members were previously unaware about avocado seed benefits to and the possibility to produce other products (cookies, doughnut, and Simulated Chips) from the flour.
b. The extension program was continued in the form of brochure, cookies recipe, doughnut, and Simulated Chips.

After training, the participants were given a chance to make their own cookies, doughnut, and Simulated Chips according to the recipe given in advance. Post-test was conducted then was given afterward to see participants skill improvements after training.

3. Result and Discussion

3.1 Benefits of Avocado seeds

In the early stage of training activity, explanation was given about nutrient composition and benefits of avocado seed on health. Avocado seed is the seed part of avocado fruit, in which most people only utilize the pulp part of it. Thus, the other part such as the seeds hasn't been utilized to the maximum. Avocado seeds to this day have only been disposed as waste [2]. It was reported that avocado seed is useful for decreasing blood glucose level, treating thrush, kidney stone, high blood pressure, neuralgia, gastralgia, swelling of the respiratory tract, irregular menstruation, toothache, also can be used as moisturizer [2][3].

3.2 Avocado Seed Flour Manufacturing Training Activity

According to the observation, avocado seeds have the potential to be food ingredient by processing it first to avocado seeds flour. The rendemen was also high, in which about 5093 g of avocado seeds produced 23.27% (1185 g) of dry chips and 25.58% of flour.

3.3 Producing of cookies, doughnut, and simulated chips from avocado seed flour

Public service team is conducting training activity of manufacturing cookies, doughnut, and Simulated Chips products with the addition of avocado seed flour

(Figure 1). All participants were also actively participated in the bakery making process which ingredient was from avocado seed flour.

The composition of the cookies, doughnut, and simulated chips was analyzed, and the results are shown in Table 1. Carbohydrate was found as the major macronutrient in the avocado seed products. The total energy content in avocado seed products per pieces was ranging from 14.43 – 45.55 Kcal. If assumed that each serving of cookies and chips consists of 3 pieces while for doughnut 2 pieces, then the total energy obtained for cookies, simulated chips and doughnut was 136.65, 82.54, and 43.39 kcal respectively for each serving. The daily total energy requirement for normal adult humans is 2000 Kcal [12], so the consumption of cookies, simulated chips, and doughnut can meet 6,83%, 4.13%, and 2.17% daily total energy needs, respectively.

A B C

Figure 1. Products from avocado seed flour: cookies (A), donuts (B) and simulated chips (C)

Table 1. Nutrient contents of cookies, doughnuts, and Simulated Chips per pieces

Composition	Cookies	Doughnut	Simulated Chips
Carbohydrate (g)	5.87	7.44	3.01
Protein (g)	0.92	1.57	0.32
Fat (g)	2.90	0.73	0.13
Energy (Kcal)	45.55	41.27	14.43

3.4 Training evaluation and the making of avocado seed flour as snacks food material

According to pre-test and post-test which were conducted by public service team, it was found that 100% participants have gained information onthe benefits and potential of avocado seeds as food ingredient. In addition, all participants have skills on making avocado seed flour and the processed products like cookies, doughnut, and Simulated Chips.

4. Conclusion

The mothers group or "PKK Cadres" have learned the benefits of avocado seeds and its processed products as a supporting ingredient for making cookies, doughnut, and simulated chips.The "PKK Cadres" increase their skills on making processed product from avocado seed flour, and knowledge about the health benefit of avocado seed flour and its products.

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