

Analysis of Nutrition Containers of Sendudok Fruit (*Melastomamalabathricum* L) as a Special Product in South

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Abstract. Sendudok is a plant that is familiar to people in Southern Tapanuli. This plant grows wild and is quite abundant. However, the lack of public understanding of the benefits of this fruit so that there is no optimal processing. The purpose of this study was to obtain information on the nutritional value of sendudok juice. The experimental method was conducted purposively without comparing with the same plant from other regions. The results showed that drinks from sendudok juice have nutritional benefits that are beneficial to health. That shows that this fruit has considerable potential to be developed into a typical product in South Tapanuli.

1. Introduction

Sendudok is a familiar fruit in the South Tapanuli community and around Indonesia [1]. Sendudok is a plant that grows wild in places with sufficient sunlight, such as on mountain slopes, shrubs, or less arid fields. At a young age, the leaves are thin, and are as white as wool. The leaves are facing three upright leaves, stems 0.25-0.5 cm long. Grapefruit is like wine, it just feels more fibrous, less watery, and tastes sweet.

The fruits of the crop have not been optimally utilized in the long term, while the population has very high nutritional value. In native plants, after the phytochemical test, there are several chemical compounds such as flavonoids, alkaloids, steroids, anthocyanins, and saponins found in the roots, stems, leaves, flowers, and fruits [2]. The high content of the people has a great opportunity for the development of Population into both the beverage and the food. Sendudok can also be used as natural coloring of food [2].

Reports on people can be used as food and beverages are not available at this time so more research is needed on product diversification. This study aims to socialize the benefits of the people to the southern Tapanuli community..

2. Materials and methods

The type of research used is experimental research with laboratory analysis. The method used is a purposive method without comparing with the same plant from other regions. In its implementation includes data, analysis and interpretation of data obtained from the results of laboratory analysis. This research was conducted in the laboratory of the Faculty of Agriculture, Andalas University. The number of samples in this study were two. The tools used in making samples are digital balance sheets, refiners (blenders), large basins, small bowls, knives, cutting boards, stoves.



2.1. *Implementation of Research*

The subjects in this study were Soursop juice, samples were obtained from Pargarutan Village, Angkola Timur District, South Tapanuli Regency. The making of Suduk Fruit juice is through the process of sorting, washing, crushing, filtering, diluting, adding sugar, packaging, and pasteurization. In the sorting process, the selected fruit is the fruit with full maturity (the fruit is dark purple) and not rotten. The resident fruit weighed as much as 1000 grams, then the fruit was washed with clean water and blended to get liquid / fruit extracts. Crushed fruit is filtered so that the product is free from pulp. After that, dilution is done with the addition of 500 ml of water. The juice obtained is then divided into two equal parts and the addition of sugar with a concentration of 500 gr and then pasteurized control. Minimum processing conditions for the pasteurization process of fruit juice in the temperature range of 65°C– 90°C for 15 minutes.

2.2. *Water Level Measurement*

The blended sample is weighed approximately 5 grams, then the weight of the container is weighed. Then the ingredients and containers are put into an oven at 100°C for 2 hours. Then chill in a desiccator and weigh, this treatment is repeated until a constant weight is reached (successive difference in weighing less than 0.2 mg).

2.3. *Measurement of Ash Contents*

A sample of approximately 5 grams is weighed in a cup porcelain which is known for its weight, then incandescent in the Furnace until it is obtained ashes, put the saucer and ashes in the desiccator and weighed the weight of the ash after it is cold. Determination of the percentage of ash based on the dry weight of the material.

2.4. *Vitamin C levels*

The resident washed thoroughly, then mashed, after that the solution was taken, then weighed as much as 5 g. After that the filtrate was put into 100 ml volumetric flask and then added distilled water until the boundary markings were then homogenized. Filtered using watman paper into a dry flask, the first 5 ml of filtrate is discarded and the next filtrate is collected. Pipette as much as 10 ml, diluted with distilled water into a 50 ml measuring flask to the mark line.

3. **Result and discussion**

3.1. *Antioxidants*

In addition to vitamin E, vitamin C is the most widely known type of antioxidant. Helps protect the body from infection, prevents cell damage [3], to help the production of collagen [4] which serves to attach bones to muscles are some of the benefits of vitamin C. Antioxidants are counteracting free radicals. If left unchecked, free radicals can cause damage to healthy body cells. Free radicals are suspected as a cause of various diseases such as cancer [5], heart disease, reduced vision ability, to Alzheimer's. Antioxidants as a neutralizing reactive nature of free radicals can prevent these diseases, but the effect will be greater if antioxidants are consumed in their natural form, not consumed in supplement form.

Table 1 Results of antioxidant content analysis on drinking sendudok

| No | Sample Code | Abs Sample | Blanko | 1- (Sample/Blanko) | % | Description | Average |
|----|-------------|------------|--------|-----------------------|----------|-------------|----------|
| 1 | Sample I | 0.168 | 0.935 | 0.820320856 | 82.03209 | 10000ppm | 65.66572 |
| 2 | Sample II | 0.398 | 0.875 | 0.492994 | 49.29936 | 10000ppm | |

Primary data sources

From the results of the research done on antioxidant content presented in table 1 above, it is seen that the highest value of sample 1 was 82.03209% with an average of 65.66572. Whereas sample two had a value of 49.29936%.

3.2. *Water content*

Water content is the amount of water contained in food [6]. Water content is a very important characteristic of food, because water can affect appearance, texture, and taste. Water content in food determines freshness and durability of these foodstuffs, high water content results in the ease of bacteria, mold and yeast to multiply so that changes will occur in food that can accelerate spoilage.

Water content must be known in determining the nutritional value of food, to meet the standard composition and regulations of food. Another interest is that water content is needed for determining the treatment of chemical compositions which are often expressed on a dry matt basis.

Table 2 Results of analysis of the content of water content of soursop juice drinks

| o | Code Sample | Weight of Cup | Weight Sample | Dry Weight | % Moisture Content | Ave rage |
|---|-------------|---------------|---------------|-------------|--------------------|--------------|
| | Sampl e I | 27.7829 | 3.2208 | 28.41 34 | 80.4241 | 88.263 45 |
| | Sampl e II | 55.0031 | 10.5536 | 56.41 44 | 96.1028 | |

Primary data sources

Based on the table above, it can be concluded that the highest water content value is in sample two, which is 96.1028%. This value is higher than the water content in sample one of 80.4241%. When compared to the content of sweet orange fruit which is worth 70-92%, the water content of the resident drink juice is higher that is 80-96% . The higher the concentration of added sugar, the higher the beverage content. According to [7], sugar has osmotic properties (absorbs water) so that the water content in jam decreases with increasing sugar concentration. Sugar is osmotic so that it can draw water from inside the material so that the water content of the material becomes low and is not available for use by microorganisms. The water content of food products is affected by the cooking process because the jam water content will decrease during the cooking process. The process that occurs is the heat generated by cooking into the material which then replaces the content of water that comes out into steam.

3.3. *Ash Levels*

Ash is an inorganic substance left over from burning an organic substance in food. Food consists of 96% inorganic material and water, while the rest is mineral elements. Determination of ash content can be used for various purposes, including determining whether a processing is good or not, knowing the type of material used, and determining the nutritional value parameters of a food ingredient [8]. Ash content at

temperatures that are too high indicates food has been polluted by various substances such as soil, sand, and others. Measurement of ash content is very important because by doing this analysis we will know the mineral content or nutritional value parameters that exist in a food. the higher the ash content of a food, the worse the quality of the food.

Table 3 Analysis results contents contribution rate of pollen ash

| No | SampleCode | Weight Cup | Weight Sample | Cup + Ash | %Rate | Average |
|----|------------|-------------|---------------|-------------|--------|---------|
| 1 | Sample I | 27.782 9 | 3.2208 | 27.788 4 | 0.1708 | 0.0949 |
| 2 | Sample II | 55.003 1 | 10.5536 | 55.005 1 | 0.0190 | |

Primary datasources

Based on table 3 it can be seen that the average value of the residual ash content of the two samples ranges from 0.0949%. Based on the results of the laboratory analysis of the ash content, it is obtained that the ash content of the sample is 0.1708 and the sample of two is 0.0190. If you look at the table above the pollen ash content is low. This shows that the value of the material or product is quite good.

3.4. Vitamin C

Vitamin C is a nutrient that acts as an antioxidant and is effective in dealing with free radicals that can damage cells or tissues, including protecting the lens from oxidative damage caused by radiation. Vitamin C has an important role on the human body, where if the human body lacks vitamin C, symptoms of this disease will occur such as canker sores, muscle aches, weight loss, lethargy, and part of it. Vitamin C also includes antioxidants in the body. Basically vitamin C in the body is able to function to protect some cells/molecules in the body such as protein, lipids, carbohydrates and nucleic acids besides vitamin C can maintain pregnancy, prevent diabetes [9].

Table 4 Results of content analysis of vitamin C

| No | SampleCode | Sample | Weight | Contamination Volume Ttrs | Rate% Vitamin CRate | Average |
|----|------------|---------|--------|------------------------------|------------------------|---------|
| 1 | Sample I | 11,1685 | 19.85 | 1.5640 | 1,48675 | |
| 2 | Sample II | 10,2432 | 16, 75 | 1,4095 | | |

Primary data sources 2019

The table above shows that the best vitamin C levels consumed after laboratory analysis were in sample one of 1.55640%, whereas in sample two was 1.4095%. With an average value of 1.48675. The addition of sand sugar has an effect on vitamin C. The results of [10] study showed that the highest content of vitamin C was found in 50 g of sugar. The higher the sugar content of the sand, the lower the vitamin C content. Vitamin C is the most vulnerable vitamin compared to other types of vitamins. Besides being very soluble in water, vitamin C is easily oxidized and the process is accelerated by heat, sunlight, alkali, enzymes, and other oxidizers. Therefore, the vitamin C content in the fruit does not close the risk of a decline when treated as a beverage as a result of the loss of vitamin C during the processing.

4. Conclusions

The results show that adding sugar to the beverages can increase nutritional value such as sugar, and water levels. Whereas in the non-sugar samples of vitamin C, ash levels, and antioxidants decreased. However, based on laboratory analysis, local fruit juice products have good nutritional value and can be used as a specialty in South Tapanuli.

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