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Analysis Of Currency Vitamin C In Papaya Fruit (Carica Papaya L.)

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ABSTRACT

Hawaiian papaya fruit has nutritional content that can nourish the human body. One of the nutrients contained in this fruit is vitamin C. The benefit of vitamin C is to help the absorption of iron, thus avoiding anemia. The purpose of the study was to determine and analyze the levels of vitamin C in Hawaiian papaya fruit. The method used in the study was to use qualitative and quantitative analysis tests with UV-Vis spectrophotometric devices conducted at the Sucofindo Laboratory in Surabaya in September 2022-January 2023. The results of the qualitative analysis test state that Hawaiian papaya fruit has vitamin C content, while the results of the quantitative analysis test state that the level of vitamin C content in papaya is 726 mg/100 g. The conclusion of this study is that Hawaiian papaya fruit can be consumed by the community because the level of vitamin C content in this fruit can meet nutritional needs in the body, especially can increase hemoglobin levels in the blood.

1. INTRODUCTION

One fruit that is very popular with the people of Indonesia is papaya (Carica Papaya L.). This fruit is very easy to obtain and can even be grown by yourself in your yard. This fruit is not difficult to grow even in the tropics. Papaya fruit has many types, one of which is Hawaiian papaya fruit. The taste of this fruit is not too sweet, but it has very good benefits for the body. In addition, the nutritional content contained in Hawaiian papaya fruit can make the body healthy by providing the nutritional needs needed by the body. The nutritional content in this fruit is calories, carbohydrates, protein, fat, fiber, vitamin A, vitamin B, vitamin C, vitamin E, vitamin K, and folic acid. [1]

The content of vitamin c contained in Hawaiian papaya fruit can help and as an antioxidant protection of plasma lipids needed by the body so that a person does not get sick easily. [2] However, vitamin c also has a function to increase hemoglobin levels in the blood, thus avoiding anemia, especially in adolescent girls and pregnant women who are at risk of developing the disease.

The vitamin C requirement recommended by the AKG in adolescents, both boys and girls, is 60mg / day. While the need for vitamin C in pregnant women is 100 mg. This need is made based on the average needs of a person to prevent several diseases, one of which is anemia. [3] Papaya fruit can be used as a solution to meet the needs of vitamin C in a person's body. Although in reality, Hawaiian papaya fruit is rarely in demand by the public because it tastes less sweet when compared to California papaya fruit.

Each type of papaya fruit has a different taste and color that influences a person to consume from several types of papaya fruit. This also affects the vitamin C content contained in the fruit. Fruit consumption is not only selected from the taste and shape, but it is also important to know the amount of vitamin C content in papaya fruit. This is because humans cannot produce vitamin C in their own bodies, because they do not have the enzyme gulonolactone oxidase where this enzyme has an important role or function in the process of synthesizing vitamin C precursors. [4] Therefore, vitamin C intake is needed to help meet daily needs that can be obtained from fruits, especially Hawaiian papaya.

The Hawaiian papaya fruit sampled in this study is a ripe fruit because usually people tend to prefer ripe papaya fruit compared to unripe ones. This also affects the level of vitamin C

content in this type of fruit. In addition, papaya fruit is safe for consumption by people of all ages, because it has no side effects when consuming it.

Based on the background description above, researchers are interested in conducting research on "analysis of vitamin C content in Hawaiian papaya fruit (Carica Papaya L.) because this research can help provide information for the community about vitamin C content and this is closely related to health, especially in preventing anemia for young women and pregnant women.

2. METHOD

The type of research used is quantitative and qualitative research with a laboratory experimental approach. Qualitative research in this study aims to determine the presence of vitamin C content in Hawaiian papaya fruit, while quantitative research aims to determine the level of vitamin C content contained in the same fruit. The laboratory used in this research is Sucofindo Laboratory Surabaya and was conducted in September 2022-January 2023. The tools used are beaker, blender, watch glass, horn spoon, rotator, rotator tube, measuring cup, measuring flask, dropper pipette, volume pipette, cuvette, spectrophotometer, analytical balance, thermometer, basin and hotplate. The materials used in the study were Hawaiian papaya fruit, distilled water, iodine, K1 and ascorbic acid.

Sample preparation

The samples used in this study were Hawaiian papaya fruits obtained in Situbondo Regency. Previously, the samples were peeled and washed thoroughly. Then cut into small pieces and weighed 100 mg. the sample that has been weighed is mashed using a blander. The solution in the sample was taken and filtered, then weighed as much as 5 grams. After that, the filtrate of the solution was taken as much as 100 ml and put into a measuring flask. Furthermore, the sample was added with distilled water as a solvent until the limit mark and homogenized.

Qualitative analysis

This analysis aims to determine the presence of vitamin C content in Hawaiian papaya fruit. This test is done by using a sample of 1 ml then put into a test tube and added 10% iodine solution 3-5 drops. Furthermore, examine the color of the results. If the color of the iodine solution dripped on the sample fades within 3 minutes, it shows that the sample contains vitamin C content.

Quantitative analysis

This analysis aims to determine the level of vitamin C content in Hawaiian papaya fruit. This analysis test uses a UV-Vis spectrophotometer where this tool can help to measure the concentration of the sample quantitatively. The analysis of this tool is based on the interaction of matter with the method. The steps to analyze vitamin c levels in Hawaiian papaya fruit are as follows.

Preparation of standard solution

Prepare ascorbic acid that has been carefully weighed by 100. We are a large-scale manufacturer specializing in producing various mining machines including different types of sand and gravel equipment, milling equipment, mineral processing equipment and building materials equipment.

Determination of maximum wavelength

Prepare a master solution of 100 ppm as much as 5 ml and then put it into a 50 ml volumetric flask and add distilled water until the limit mark (concentration of 10 ppm). The maximum absorbance of the solution was measured with a wavelength of 266 nm using an aquadest blank.

Preparation of calibration curve

Prepare 100 ppm mother solution as much as 3 ml, 4 ml, 5 ml, 6 ml and 7 ml and each solution is put into a different 50 ml volumetric flask. The next step is to add distilled water to each measuring flask until the limit mark and obtain concentrations of 6, 8, 10, 12 and 14 ppm. Then, measured the absorption of each solution with the maximum wavelength that has been obtained previously.

Determination of sample content

Prepare a 10 ml sample and put it into a 100 ml volumetric flask with a concentration of 10 ppm, and add distilled water until the limit mark. Next, the solution was shaken until homogeneous and measured the absorption at the maximum wavelength that had been obtained previously. This step

can be repeated repeatedly with the aim of increasing the accuracy of the research results and reducing the level of error or error in analyzing vitamin C content.

3. RESULTS AND DISCUSSION

The results of the vitamin C content analysis test on Papaya fruit (Carica Papaya L.) using two analysis tests, namely, qualitative and quantitative analysis.

Qualitative analysis results

The results of qualitative analysis using Hawaiian papaya fruit samples with iodine, showed that there was vitamin C content in the fruit. This is evidenced by the color change in the sample mixture with fading iodine which was studied for 3 minutes. With this test, it can be utilized by consumers for consumption so that their vitamin C needs can be met. This is corroborated by research conducted by Cresna, et al in 2014 which said that papaya fruit contains vitamin C which is needed by the body. [5] Vitamin C is one of the vitamins that can dissolve in water, and is not stored but excreted by the body's exhaust system. So that humans need vitamin C intake every day. [6]

Quantitative analysis results

The results of quantitative analysis tests that have been carried out using a UV-Vis spectrophotometer are shown in the table below.

Table 1. Results of analysis of vitamin C content in Hawaiian papaya fruit

Sampel	Unit	Hasil
Pepaya hawaii	PPM	726

In table 1. Shows the results that the level of vitamin C contained in ripe Hawaiian papaya fruit carried out on a sample weighing 10 grams has a level of 726 grams. Several types of papaya fruit that grow in Indonesia have different vitamin C levels. Research on the analysis of vitamin C levels in papaya fruit was also conducted by several previous researchers. Some research results suggest that Arum Bogor papaya fruit has a vitamin C content of 123.8 mg/100 g. Different research conducted on Bangkok papaya fruit has a vitamin C content of 85.2 mg/100 g. [7] Different things are also done on California papaya fruit has a vitamin C content of 106.6 mg/100 gr. When compared to Hawaiian papaya fruit, there is a significant difference in the amount of vitamin C content. This may be due to differences in papaya fruit varieties, places or locations where these types of fruit grow so that they have different chemical compositions. [8],[9] The need for vitamin C that must be fulfilled in a person, especially in adolescents is 60 mg / day, while in pregnant women it is 100 gr / day. By consuming this friut, the vitamin C needed by the body will be fulfilled. Hawaiian papaya fruit is one type of fruit that is less attractive to the public because the taste is not too sweet and the shape is not attractive. This makes consumers not really like this fruit. However, when looking at the level of vitamin C content in Hawaiian papaya fruit, it can increase people's interest in consuming the fruit. [1], [10]

Hawaiian papaya fruit has a very high level of vitamin C content when compared to other types of papaya fruit. Vitamin C is needed by the body and has several benefits, including to help the absorption of iron so as to avoid anemia. [10] One of the diseases that has a bad effect or impact on the sufferer, especially for adolescents and pregnant women. Therefore, it is necessary for people to consume this fruit. However, the problem that occurs is about the lack of public interest in the consumption of this fruit.

The lack of interest in consuming this fruit can be given a solution in order to increase interest in consuming it. Some information that needs to be shared with the community so that they want to consume this fruit. Information that can be provided is about the benefits of Hawaiian papaya fruit, the price is relatively cheap and easy to obtain. In addition, this fruit can be used as processed food that can be consumed when bored of consuming papaya fruit directly. [7], [10]

Papaya fruit has not been widely studied before. This may be due to the lack of public interest in consuming this fruit. People prefer California papaya fruit because of its sweet taste. [8] So that this becomes a benchmark for researchers to conduct research on this fruit, in order to provide information about the content levels, especially vitamin C. [9] With this research, it can provide information about papaya fruit which has very high vitamin C levels when compared to other papaya fruits. [9], [10]

4. CONCLUSION

The conclusion of this study is that ripe Hawaiian papaya fruit contains vitamin C and has a level of vitamin C content of 726 mg/100 g. This type of papaya fruit can be used by the community to meet vitamin C needs and as a prevention and control of anemia because vitamin C content can help the absorption of iron which can increase hemoglobin levels in the blood.

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