

Analysis Of Iron (Fe) In Papaya Fruit (Carica Papaya L.)

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ARTICLE INFO

Keywords:

Fe;

Hawaiian Papaya

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ABSTRACT

Papaya fruit contains several nutrients in it. One of the Hawaiian types that has nutritional content to increase a person's Hb level is iron. The purpose of this study was to determine and analyze iron levels in Hawaiian papayas. The method used in this study was to use an Atomic Absorption Spectrophotometer (AAS) which was carried out at the Sucofindo Surabaya laboratory in September 2022-January 2023. The results of this study indicated that there is an iron content in the Hawaiian papaya fruit. The results of the analysis of iron levels in this fruit which was carried out at 10-20 grams were 5.1. In conclusion, the existence of Hawaiian papaya fruit can help people to meet their daily iron needs, so that they can increase Hb

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1. INTRODUCTION

Papaya is a type of fruit that is easily available and inexpensive. This type of fruit is often found and is in great demand by many people. Apart from its delicious taste, the benefits of papaya are also very much needed by the body. [1] Almost all parts of the papaya fruit can be utilized, such as papaya leaves which can be cooked and made into vegetables, papaya fruit stems and roots which are used for treatment and the fruit which is rich in several nutrients that are good for the human body. [2]. One of the nutrients in papaya fruit is the presence of Fe or iron which can increase hemoglobin levels in human blood. As it is well known that papaya fruit has a high vitamin C content, but this type of fruit also has some nutritional content, especially in preventing anemia. [2]

Anemia is a disease characterized by abnormal or less than normal levels of hemoglobin in the blood. Anemia can happen to anyone, and is most common in young women. This will interfere with the activities of teenagers every day. The government program has announced the provision of Fe tablets to adolescents to prevent and treat anemia in adolescents. Several studies have stated that most young women do not consume Fe tablets due to side effects after taking the Fe tablets. So that with this problem, it can be overcome by consuming papaya fruit to replace the need for iron in increasing Hb levels in adolescents. [3]

The papaya fruit used in this study was a Hawaiian type of papaya. Hawaiian papaya fruit contains vitamin C and iron which can be utilized by people with anemia or prevent a deficiency in Hb levels, especially in adolescents. Ripe papaya fruit has a higher iron content when compared to young papaya fruit. Ripe papaya fruit can be used as an option for consumption by people with anemia. [3]

Papaya fruit can be consumed by anyone, because there are no side effects after eating it. So it is safe to consume every day, especially teenagers who have or suffer from anemia. Several studies also state that almost some people like this fruit, especially ripe papaya. [4]

Based on the description of the background above, the researcher is interested in conducting research on "analysis of the Fe content in papaya (Carica papaya l.)" because seeing from the function of the content is very closely related to health, especially to prevent and overcome anemia, especially in young women for readiness later pregnancy.

2. METHOD

The type of research used is qualitative and quantitative research with a laboratory

experimental approach. Qualitative research aims to determine the presence of iron or Fe content in papaya fruit while quantitative research aims to determine the value of vitamin C levels in the same fruit. The place and time of the research was carried out at the Sucofindo Laboratory in Surabaya from September 2022 – January 2023. The tools used included glass funnels, beakers, test pipettes, measuring flasks, filter paper, watch glasses, and an Atomic Absorption Spectrophotometer (AAS). The materials used are Aquadest, papaya fruit samples, iron tablets (multivitamin). The next step is to carry out sample preparation, qualitative analysis and quantitative analysis.

Sample preparation

The sample used for the Fe analysis test was ripe Hawaiian papaya. Next, the samples were peeled and washed clean. After that, the samples were cut into small pieces and weighed 100 grams and then dried by drying in the sun covered with black cloth. After the samples were dry, they were refined using a blender. The papaya fruit sample powder was dissolved and filtered, weighed as much as 10 grams. The filtrate from the sample was put into a 100 ml volumetric flask. Then the sample was added with distilled water as a solvent up to the boundary mark and homogenized.

Qualitative Analysis of Iron (Fe) Content

The prepared test sample was dripped as much as 5 drops which were put into a test tube. Next, put 3 drops of potassium thiocyanide solution (KSCN) into the same tube. The value of the color change results in the sample. The red color change in the sample solution indicates that there is iron (Fe) content in the sample.

Quantitative Analysis of Iron (Fe) Content

This analysis aims to determine or analyze the levels of iron (Fe) in papaya fruit using an atomic absorption spectrophotometer (AAS).

Measurement of iron (Fe) standard solution levels

Enter each Fe standard solution that has been made with a concentration of 0 ppm, 5 ppm, 10 ppm, 20 ppm, 50 ppm by injecting it into the SSA. Then measure the absorption at a wavelength of 283.3 nm. Then the measurement results are recorded and then a calibration curve is made to get the linear equation.

Measurement of iron (fe) content of the sample

The prepared papaya fruit test sample was inserted by injecting it into the SSA. Measure the absorption at a wavelength of 283.3 nm and record the measurement results for later analysis.

3. RESULTS AND DISCUSSION

The results of the iron (Fe) analysis test on papaya fruit that have been measured by absorption using atomic absorption spectroscopy (SSA) shown in the table below.

Table 1. Results of the analysis of iron (Fe) levels in papaya fruit

Sampel	Unit	Result
Pepaya hawaii	PPM	5,1

In Table 1. Shows the results of the analysis of iron levels in ripe Hawaiian papaya fruit of 5.1 at 10 gr. This figure is a fairly large number for the iron levels found in ripe Hawaiian papayas.

Quantitative analysis

The results of quantitative analysis on ripe Hawaiian papaya fruit showed the presence of iron (Fe) levels. This shows that this type of fruit not only contains the nutritional content of vitamin C, but also contains iron (fe) in it. This type of fruit can be utilized by consumers or the general public primarily to prevent or even to treat anemia, especially in young women who are very at risk of

developing the disease.

Qualitative analysis

Qualitative analysis showed that the results of iron levels in ripe Hawaiian papaya fruit that had been analyzed using the SSA tool on 10-20 gram samples were 5.1. Hawaiian papaya fruit contains more iron than the California papaya, which is as much as 1.7 per 100 grams. Hawaiian papaya fruit is rarely in demand and liked by the public because it tastes less sweet and has a small shape. [5] Comparison of consumers' interest or preference for Hawaiian papaya when compared to the interest in consuming other types of papaya, then there is a very significant difference. People prefer California papayas more than Hawaiian papayas. Even though in the category of taste and consumers' interest in Hawaiian fruit is low when compared to the California type of papaya, the Hawaiian type of papaya has a high iron content compared to the California type of papaya. The taste of fruit is often people's choice, but when consuming fruit it is necessary to know the nutritional content and nutritional levels of the fruit consumed.

This type of papaya originating from Mexico has not been studied much before. This is the interest of researchers to conduct research primarily on iron levels which are very closely related to anemia. one of the diseases that often occurs in young women and pregnant women has a very bad impact on them if prevention and even treatment are not carried out. [6] Papaya is one of the fruits that can be consumed by people with anemia or the general public to prevent anemia because it is proven by the analysis tests carried out, this fruit has a fairly high iron content.

This one papaya fruit that can grow in tropical areas can be planted by people in their respective homes. Hawaiian papaya fruit is not difficult to grow, making it easier for consumers to plant it and consume it every day. [7]

The need for iron in a person must be fulfilled properly. With this papaya fruit, one can meet the need for sufficient iron every day, so that it will increase hemoglobin levels in the blood. This can prevent anemia. the importance of information that Hawaiian papaya has a high enough iron content compared to California papaya types for the wider community, so that it is not only concerned with taste but the choice of fruit to be consumed is more concerned with the nutritional content in it. [8]

4. CONCLUSION

In this study it can be concluded that ripe Hawaiian papaya fruit has an iron content of 5.1 in 10-20 gr. This type of papaya fruit can be used by the community, especially in the prevention and control of anemia because the iron content can increase Hb levels in the blood. People should be able to take advantage of Hawaiian papaya fruit for consumption every day because this fruit can meet the needs of iron every day.

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