IRON IN COOKIES WITH BEEF FLOUR SUBSTITUTE

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ABSTRACT

Anemia is a health problem that is often found in developing countries, include in Indonesia. One of the causes of anemia is iron deficiency. Young women are at high risk of anemia, the prevalence of anemia among young women is> 20%. One effort that can be do to overcome anemia in addition to giving blood-added tablets (TTD) is to use millet flour to be high iron cookies. The iron content of millet flour is 8.8%.This reasearch aims to determine the iron content in cookies with millet flour substitution. This type of research is experimental research with a post test group design research design. The samples analyzed were 2 types namely samples without substitution of 0% (control) millet flour and samples with 50% millet flour substitution. Data analysis using T test. Then presented in the form of tables and narratives.The results showed that the iron content of cookies without substitute for millet flour in the sample 0% was 2.966 mg / 100 while in the sample of cookies 50% increased to 4.616 mg / 100. There was an increase of 1,650 mg / 100. It is recommended to carry out the research, saving power and see whether there is an increase in hemoglobin levels in patients with anemia.

Keywords: Cookies, iron levels and millet flour

INTRODUCTION

Indonesia has various types of food which are sources of carbohydrates, including rice, corn, sweet potatoes, cassava, potatoes, sago, sorghum, millet and so on. Utilization of local food commodities other than rice has not been carried out optimally, therefore it is necessary to make efforts to diversify food by utilizing local food such as rice into products that have high business opportunities and competitiveness, among food commodities that have the potential to be developed in Indonesia including millet (Suherman et al, 2009).

One of the foods of the cereal group which is rich in iron content is millet. The iron content per 100 g of pearl millet millet seeds is 7.80% (Yanuwar. W, 2009) and in the 2017 Indonesian Food Composition Table (TKPI) it is stated that the iron content of millet is 5.3 mg%. Various studies reveal the nutritional content of millet is better than corn and rice. The nutritional content it contains includes 84.5% carbohydrates, 10.7% protein, 3.3% fat, 1.4% fiber, Ca 37 mg, Fe 6.2 mg, vitamin C 2.5 mg, vitamin B1 0, 48 mg and vitamin B2 0.14 mg (Alamendah, 2015).

When compared based on place of residence it was found that anemia in rural areas was higher than in urban areas. According to the age group who suffer from anemia, they are 12-59 months old (28.1%), 5-14 years old (26.4%), 15-24 years old (18.4%), 25-34 years old (16.9%), age 35-44 years (18.3%), age 45-54 years (20.1%), age 55-64 (25.0%), age 65-74 years (34.2%) %) and age> 75 years (46.0%). This shows that nutritional anemia in adolescents is still a nutritional problem in Indonesia because the percentage is> 20% (Balitbangkes, 2013). Prevention of anemia through improvement of food / nutrition is a number of conditions that need to be considered, one of which is the selection of potential foods to overcome iron deficiency as a cause of anemia (Setiadi et al, 2015).

Based on the high nutrient content of millet and has many benefits and the people's interest in snacks continues to increase, for that researchers are interested in conducting research on high-iron cookies with substitute for millet flour. Jawawut flour is expected to be used as raw material for various processed food products in the future. This will be very helpful to reduce our level of dependence on wheat flour, the more days the price increases.

METHOD

This research was an experimental study using a post test group design. This

research was conducted at the Food Technology Laboratory of the Makassar Health Polytechnic Department of Nutrition. Iron Analysis is carried out at the Hasanuddin University Laboratory in January-May 2019.

The material used in this study is millet. The research equipment used was an oven (cabinet dryer), scales, mixers, spoons, basins, spatulas, pans, plates and filters.

TYPES AND METHODS OF DATA

The type of data obtained in this study is primary data based on laboratory tests to compare the iron content data in the original cookies with substitute cookies for millet flour.

Data collection was carried out in two stages, namely the first stage of making millet flour and then making cookies with substitution of millet flour. Then the second stage is analyzing the iron content in cookies with substitution of millet flour.

Determination of iron levels in original cookies and millet cookies was first carried out at the Animal Food Chemistry Laboratory of the Faculty of Animal Husbandry, Hasanuddin University from the results of the analysis of the iron content of the original cookies compared to cookies with millet flour substitution and then analyzed using the SPSS computer program T. Test. The data that has been analyzed is presented in table form and accompanied by explanations in the form of narratives.

RESULTS

1. Making cookies with substitute for millet flour

The process of making millet flour begins with washing, soaking and drying at 60 ℃ for 12 hours. After that it is smoothed using a blender. Sifting is done in 80 mesh sizes. Net weight of 855 grams of millet produces 806 grams of flour of millet flour.

Making cookies first is margarine, egg yolk, baking soda, refined sugar, and salt is shaken until blended and put in sweetened condensed milk. Wheat flour, cornstarch and millet flour are mixed together, then put slowly into the mixture that was made earlier so that it is evenly mixed. Take 1 tablespoon of dough that is ready to be printed / formed into a baking sheet and then bake using an oven with a temperature of 105 ℃ for 30 minutes.

Cookies without the addition of 0% millet flour produce 75 pieces of cookies and cookies add 50% millet flour as much as 75 pieces. The difference from the aspect of color is not much different from the concentration of 0% and 50%, namely with cream color. The taste aspect with a concentration of 0% is the same as cookies in general while the concentration of 50% feels more savory than 0%.

Table 1. Levels of Iron (Fe) Cookies with an Enriched Flour Substitution

Treated	Iron (Fe) (mg / 100)	*p*
Without substitution of millet flour (0%)	2,966	0,000
Substitution of millet flour (50%)	4,616	

Table 1 shows that the level of iron (Fe) cookies with substitution of millet flour with a concentration of 50%, which is 4,616 mg / 100 increased by 1,650 mg / 100 from a concentration of 0%.

DISCUSSION

From the results of research Nur Yani (2017) found that cookies with a substitute for millet flour with a concentration of 50% were the most preferred. Cookies are practical food because they can be eaten at any time and with good packaging, cookies have a relatively long shelf life. Cookies can be seen as a good medium as one type of food that can meet special human needs. Various types of cookies have been developed to produce cookies that are not only tasty but also healthy (Ghozali, T. 2013).

The addition of millet flour is expected to increase iron (Fe) levels in cookies. Analysis of iron content analysis using the Atomic Absorption Spectrophotometry (AAS) method at the Animal Husbandry Chemistry Laboratory, Faculty of Animal Husbandry, Hasanuddin University. Iron (Fe) is one of the minerals contained in millet (Ramli, 2007).

Based on the T test shows a P value of <0.005 (0,000), which means that there are significant differences, namely the concentration of 0% with 50%. This shows that the addition of millet flour tends to increase iron (Fe) levels in cookies. This result is in accordance with the opinion (Alamendah, 2015) which states that the nutrient content of millet is better than corn and rice. Nutritional content includes 84.5% Carbohydrate, 10.7% Protein, 3.3% Fat, 1.4% Fiber, Ca 37 mg, Fe 6.2 mg, Vitamin C 2.5 mg, Vitamin B1 0.48 mg and Vitamin B2 0.14 mg. The level of iron (Fe) in cookies with 50% millet flour substitution is 4,616 mg / 100 higher than without the addition of 0% millet flour (control) which is 2,966 mg / 100. There was an increase of 1,650 mg / 100. This shows that the iron (Fe) content in cookies products with substitute for millet flour is very good so that these cookies can be consumed to meet iron needs for young women.

Research results of Mairita, et al. (2018) which states that there is an increase in nutritional needs in adolescence. Nutritional needs that increase rapidly in adolescence are dominated by the need for energy, protein, calcium, iron and zinc. According to the AKG (2013) iron needs / people / day for ages (13-15 years) are 26 mg and age (16-18 years) is 26 mg. Eating cookies with a substitute of 100 g of millet flour / day can contribute 6.34% of the need for iron in the group of young women.

The needs of young women to consume more iron than other groups because iron (Fe) is useful in the process of regenerating iron (Fe) that has been wasted with menstrual blood and also to support the process of growth and sexual maturation. The nutritional status of young women is the key to the success of their survival and children born in the future because health, nutrition and mental conditions affect the state of pregnancy (Suryani et al., 2015).

CONCLUSION

The level of iron (Fe) in cookies without substitute for millet flour with a concentration of 0% (control) is 2.966 mg / 100 and iron (Fe) levels in cookies with substitution of 50% millet flour, which is 4,616 mg / 100. The results of the statistical analysis show that there are differences between 0% cookies and 50% cookies.

SUGGESTION

It should be developed to prevent anemia in young women. It is recommended to carry out further research, namely saving power and seeing whether there is an increase in hemoglobin levels in patients with anemia.

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