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THE EFFECT OF GREEN BEAN TO INCREASE BLOOD HEMOGLOBIN LEVELS IN ADOLESCENTS

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ABSTRACT
The country of Indonesia, is very rich in natural resources and has the potential for local food, namely nuts. green beans , one type of legume that is widely cultivated and used by the people of Indonesia. Green beans contain Fe as much as 3-9.7 mg/100 g. The high Fe content in green beans plays an important role in increasing blood hemoglobin levels. This study aims to determine whether green beans can be used as an alternative to increase blood hemoglobin levels. The research method is an experiment using a Pre-Experimental Design research conducted in June 2021 with the subject of the Karang Taruna Gema Putra members as many as 25 respondents with the criteria of respondents who are not menstruating. Data were collected by examining hemoglobin levels using the POCT method. Hypothesis testing is done by Paired t-Test. In this study, there were differences in hemoglobin levels between the groups before and after giving green bean powder drink with the results in the pre-treatment group an average of 13.87 g/dl and the post-treatment group having an average hemoglobin level of 13.87 g/dl. an average of 15.42 g/dl from the data, a significant increase of 1.55 g/dl. In this study, it was found that there was an increase in hemoglobin levels after giving green bean powder drink at Karang Taruna Gema Putra.

Keywords: adolescent; blood; green beans; hemoglobin

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INTRODUCTION

Indonesia is a country that is rich in natural resources and has the potential for local food from legumes. Nuts are one of the foodstuffs that are easily found in Indonesia, especially in rural communities. One type of legume that is widely cultivated and utilized by the community is green beans. Mung bean is a typical tropical plant (Faridah and Verani, 2017). Green beans or in Latin called Vigna radiata are certainly not foreign to the community. Mung bean is a short plant with erect branches. It has greenish yellow flowers and some are pale yellow. These flowers will produce legumes containing 10 to 15 beans (Faridah and Verani, 2017). Green beans have various benefits for human life, including as food, for treatment (therapy), and as animal feed. The nutritional content of green beans is quite high. Green beans are good enough to be consumed to meet the nutritional and health needs of the body, because in addition to being rich in protein, they also contain other nutrients that are quite complete (Cahyono, 2010). Hemoglobin consists of the words "heme" and "globin", where heme is Fe and protoporphyrin, globin is a chain of amino acids (1 pair of chain and 1 pair of non). Hemoglobin is a globular protein that contains iron. It is made up of 4 polypeptide chains (amino acid chains), which consist of 2 alpha chains and 2 beta chains. Each chain is composed of 141-146 amino acids. The three-dimensional structure of each

polypeptide chain is made up of eight alternating helices with seven non-helical segments. Each chain contains a prosthetic group known as heme, which plays an important role in giving blood its red color

Based on previous research conducted by Umi Faridah and Verani Indraswari in 2017 with the title of giving green beans as an effort to increase hemoglobin levels in adolescent girls, it was found that the average hemoglobin level increased from 10.57 to 11.10 after giving green bean juice to the intervention group and Kartika Mariyona's research in 2019 proved that mung bean juice had an effect on increasing hemoglobin levels in anemic adolescent girls by giving 200 grams of green beans for 7 days. Therefore, researchers are interested in conducting experimental research on the effect of giving mung bean juice to increase hemoglobin levels in youth groups. In addition, researchers are also interested in choosing "NUMBUK" mung bean powder as an experimental material because in this millennial era there are so many people who want something in an easy and instant way, therefore researchers choose this product because the way to consume it is very easy and does not require a long time. for its manufacture.

METHOD

The method that will be used in this study is an experimental method using a Pre-Experimental Design research design with a One Group Pretest-Posttest design. This research was carried out in Dukuh Hamlet, Gemantar Village, Selogiri District, Wonogiri Regency. The tools and materials used in this study include Informed consent, measuring cup, Easy Touch GCHB Meter, retractable lancet, scale, water, sugar, “NUMBUK” mung bean powder, alcohol swab, dry cotton, lancet, Hb strip. The population of this study were women who did routine maintenance at a beauty clinic. The sampling technique used is Quota sampling with the minimum criteria of doing maintenance once a month and having done maintenance for at least 3 months. The population of this study were members of the Gema Putra Youth Organization. Sampling in this study with a sampling technique quaota sampling as many as 25 with criteria on female respondents are not menstruating. Respondents who met the requirements and agreed to the informed consent were taken capillary blood for examination of hemoglobin levels POCT method.

RESULTS

This research was conducted in Dukuh Hamlet, Gemantar, Selogiri, Wonogiri. This research was conducted from 7 June 2021 to 15 June 2021. The population of this study were members of the Gema Putra Youth Organization. Sampling in this study were 25 with criteria for female respondents who were not menstruating. Respondents who met the requirements and agreed to the informed consent were taken capillary blood for examination of hemoglobin levels POCT method. The following table shows the results of the examination of hemoglobin levels before and after treatment

Table 1.
Value of Hemoglobin Levels before and after treatment

Kode	Hemoglobin level before treatment (g/dl)	Hemoglobin level after treatment (g/dl)
KH 1	10,30	13,30
KH 2	13,90	15,90
KH 3	13,10	13,40
KH 4	15,90	16,10
KH 5	12,70	12,90
KH 6	13,60	13,70
KH 7	15,40	19,20
KH 8	14,30	15,20
KH 9	14,90	15,70
KH 10	11,70	12,10
KH 11	13,20	14,20
KH 12	12,20	13,80
KH 13	12,90	14,10
KH 14	14,50	15,10
KH 15	15,50	17,90
KH 16	15,80	16,50
KH 17	16,60	17,50
KH 18	12,60	14,60
KH 19	15,00	16,30
KH 20	12,90	12,90
KH 21	15,30	15,70
KH 22	11,20	15,80
KH 23	15,90	19,70
KH 24	16,30	17,80
KH 25	11,00	16,30

Source: Primary Data June 2021

Table 1. above is descriptive data on 25 respondents who have been examined for hemoglobin levels before and after being treated by consuming green bean powder drink "NUMBUK" which is given for 7 days.

Table 2.
Differences in Hemoglobin Levels Before and After Consumption of "NUMBUK" Mung Bean Powder

Hemoglobin levels	× ± SD (g/dl)	T	p
Before treatment	13,87 ± 1,78	-5.269	0,000
After treatment	15,42 ± 1,98		

Paired T-Test (Paired T-Test)
Source: Primary Data June 2021

Table 2 Above is the result of paired t-test of hemoglobin levels before and after consumption of green bean powder drink "NUMBUK" p value = 0.000 from these results it can be assumed that there is a significant difference in hemoglobin levels before and after consumption of green bean powder drink "NUMBUK" " This is reinforced by the results of the average value of hemoglobin levels before and after treatment which showed an increase of 1.55 ± 0.2 g/dl.

This research was conducted on June 7, 2021 until June 15, 2021. The population in this study were members of the Gema Putra Youth Organization in Hamlet Hamlet, Gemantar, Selogiri, Wonogiri with a target number of respondents as many as 25 people. The sample criteria in this study were female respondents who were not menstruating and there were no specific criteria for sampling for male respondents.

Menstruation can be a problem in this study. Menstruation is the release of the uterine wall (endometrium) accompanied by bleeding and occurs every month unless pregnant. The duration of menstruation ranges from 3-5 days, or with different variations. During menstruation, the blood that comes out will lose iron by 12.5-15 mg/month, or approximately equal to 0.4-0.5 mg/day. If the blood that comes out during menstruation is quite a lot, it means that the amount of iron lost from the body is also quite large (Luciana, 2019).

Respondents who meet the requirements are given treatment with green bean powder drink "NUMBUK" with a dose of 105 g for 7 days. The dose refers to a previous study conducted by Kartika Mariyona in 2019. The youth group participants who had been treated for 7 days were checked for hemoglobin levels again with a POCT device and the average result was 15.42 g/dl. The results had an average difference with the levels of hemoglobin before treatment was 13.87 g/dl. Hemoglobin levels obtained from before treatment and after treatment were analyzed by SPSS paired t-test and obtained p value = 0.000 (<0.05) which means that there is a significant difference in hemoglobin levels before and after treatment. Based on the description above, it can be stated that 105 g of green bean juice can increase hemoglobin levels of approximately 1.55 g/dl.

The results of this study are in accordance with previous research by Kartika Mariyona 2019. In Kartika Mariyona's research in 2019 with the title the effect of giving mung bean juice to increasing serum hemoglobin levels in anemic adolescent girls, she explained that giving 200 grams of green beans for 7 days can have an effect on the increase in hemoglobin levels in anemic adolescent girls where the average result of hemoglobin levels before treatment was 10.24 g/dl and after treatment was 14.05 g/dl.

The results of this study are also in accordance with previous research conducted by Umi Faridah and Verani Indraswari in 2017 with the title of giving green beans as an effort to increase hemoglobin levels in adolescent girls explaining that giving 2 cups of green beans in the morning and evening for 7 days can increase hemoglobin levels. where the results obtained an average hemoglobin level of 10.57 g/dl to 11.10 g/dl after administration of green bean juice.

This research is also in line with the research conducted by Silvi Zaimy, Ika Yulia Darma and Meldafia Idaman in 2021 with the title The Effect of Green Bean Extract on Haemoglobin Levels in Young Women in STIKES Syedza Saintika PADANG Girls Dormitory by giving green bean juice, the results obtained were hemoglobin levels. Before treatment was 10.87 g/dl and the hemoglobin level after treatment was 12.15 g/dl.

However, this study deviates from the research conducted by Fachriani Putri and Riza Iriani Nasution in 2018 with the title The Effectiveness of Green Bean Drinks on Increasing Hemoglobin Levels of Young Women at the Orphanage in Pekanbaru City which in this study explains that giving green bean drinks 2 times a day, morning and evening as much as 250 ml for 1 week. It was found that there was no effect of giving green bean drink to increase hemoglobin levels.

The increase in hemoglobin levels was due to the Fe content in the "NUMBUK" green bean powder of 9.782 mg/100g. This element of iron is the main component of the synthesis of hemoglobin. The iron contained in the green bean powder drink "NUMBUK" will be absorbed in the stomach, then reduced to ferrous form and then heme iron and non-heme iron are transported to the surface of the small intestine cells to be bound by transferrin receptors, in the intestinal mucosal cells. Iron can bind to apoferritin and form ferritin as a temporary store of iron in cells. In mucosal cells apoferritin and ferritin form iron. When the body becomes iron deficient, the iron consumed will be carried by blood transferrin into the bone marrow and used for the synthesis of hemoglobin which is part of red blood cells. In addition to the consumption of green bean powder drink "NUMBUK" the effect of food consumption on respondents can also affect the increase in hemoglobin levels (Damayanti, 2012). In this study, there were shortcomings where at the time of the study did not pay attention to factors that could affect hemoglobin levels in all respondents, therefore for further researchers it is expected to pay attention to factors that can affect hemoglobin levels to get maximum research results. However, this research also has advantages, namely by giving the "NUMBUK" mung bean powder drink, making it more practical and easy, besides that the Fe content in this drink can be accounted for because the "NUMBUK" green bean powder packaging shows the amount of Fe content in it.

CONCLUSION

Based on the research conducted, it was found that there was an increase in hemoglobin levels after giving the "NUMBUK" green bean powder drink at the Gema Putra Youth Organization.

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