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## The Effect of Kalakai Tea (*Stenochlaena Palustris*) on Hemoglobin Levels in Anemic Adolescent Girls

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### ABSTRACT

**Background:** The prevalence of anemia increases every year, resulting in a greater impact on anemic young women such as the physical growth and mental health of adolescents. One way to deal with anemia is to use the plant leaves of kalakai which is made into tea. Kalakai leaf tea contains iron, vitamin C, vitamin A, and protein which functions to increase hemoglobin levels.

**Methods:** This type of quantitative research with quasi-experimental methods with purposive sampling, design pre and post test with control group. The analysis used to assess the variables was the paired t-test, while the independent t-test was used to assess the differences between the two groups.

**Result:** Giving kalakai leaf tea showed a significant difference in increasing hemoglobin in the intervention group compared to the control group. In the intervention and control groups there was a significant difference with a significant ( $p < 0.000$ )

**Conclusion:** Giving kalakai leaf tea and fe tablets increased hemoglobin levels in anemic young women compared to just giving fe tablets

**Keywords:** Kalakai, Anemia, Hemoglobin, Adolescent Girls

### INTRODUCTION

Adolescents are the next generation of the nation, but many problems are experienced by adolescents in Indonesia, namely iron deficiency or anemia, stunting, chronic energy deficiency (KEK), and obesity[1]. Anemia in adolescents is currently still very high, the prevalence of anemia in adolescents is between 40% up to 88%. Riskesdas results show the prevalence of anemia in young women in Indonesia in 2013 was 37.1%, and in 2018 there was a fairly high increase, reaching 48.9%[2]. Central Kalimantan Province the coverage of iron supplement tablets in young women is 12.58 % ranks second lowest after Papua Province, while the target that must be achieved is 25% [3].

Anemia is caused by a lack of red blood cell production, this occurs because the production of red blood cells will be disrupted if the food consumed contains less nutrients,

especially important nutrients. Young women often take care of their appearance, desire to stay slim or thin so they go on a diet and eat less which causes the body to lack essential nutrients such as iron[4].

The impact of anemia on young women is the chance of anemia during pregnancy. Therefore, the handling of cases of anemia in young women aged 10-19 years needs to be prioritized in order to break the cycle of anemia in pregnant women and the impact of giving birth to babies with low cognition due to anemic pregnant women[5]. Anemia does not only have a negative impact on the physical growth of adolescents, but it also has an impact on mental health as well as low levels of school attendance, learning, academic achievement and decreased work performance[6]. Most sufferers do not know and are not aware of it, and even still consider anemia as a minor problem.

The problem of anemia that occurs in adolescents needs to be addressed immediately. Pharmacological treatment of anemia by consuming Fe tablets. The Ministry of Health expanded the program's targets for young women by establishing a Program for the Prevention and Management of Iron Nutrition Anemia targeting junior high school and high school children where school children are prepared for the quality of their nutritional status from an early age by giving Fe tablets[4].

Overcoming anemia using non-pharmacological methods by consuming foods that contain iron and vitamin C. Nutritional needs obtained from daily food intake have an important role in preventing anemia[7]. Kalakai leaves contain iron, vitamin C, vitamin A, and protein needed by the body, especially in the formation of red blood cells which can be used as a supplement for young women who are anemic. Absorption Iron is greatly influenced by the presence of vitamin C in the body of adolescents[8].

One of the foods or plants that contain high iron is kalakai, kalakai can be used as a companion to iron supplements in an effort to prevent and treat anemia in young women[9]. Kalakai is a typical plant of wetlands in Kalimantan and a favorite food of the Dayak people of Central Kalimantan. The Dayak Kenyah tribe uses this plant empirically for the treatment of anemia, fever reliever, and skin diseases[10]. So far, there has been development in the community about the functional role of kalakai in anemia because of the Fe it contains. The content of kalakai secondary metabolites from the results of measurements of leaf and stem samples was for the highest Fe content in the leaves[9].

Research on the use of kalakai has been studied before by administering kalakai extract to hemoglobin levels in white rats with the result being able to increase hemoglobin levels

which have decreased where the iron content contained in kalakai has the potential to overcome anemia[11].

**METHOD**

This type of research was a quasi-experimental research or Quasy Experiment with a pretest posttest with control group design which was used to determine the effect of giving kalakai leaf tea (*Stenochlaena palustris*) on hemoglobin levels in anemic young women. The sampling technique used in this research is purposive sampling method, namely the technique of determining the sample with certain considerations or criteria. Sampling was carried out by identifying all characteristics of the population and sorting out the characteristics of the population with anemia. Then the researcher selected the sample according to the sample size, inclusion and exclusion criteria.

**Intervention**

The intervention group of anemic teenage girls was given kalakai leaf tea (*Stenochlaena palustris*) and Fe tablets while the control group was given Fe tablets.

**Ethical Clearence**

This research has been registered with the Health Research Ethics Commission of the Poltekkes Kemenkes Semarang with Ethical Clearence number No.032/EA/KEPK/2022.

**RESULT**

In this study the data normality test was carried out using the Kolmogorov-Smirnov. The following table shows the normality test results for hemoglobin levels:

**Table 1: Normality Test of Hemoglobin Level Data Before and After Treatment in the Control and Intervention Groups.**

| Variable   | Group        | Before Treatment (n=34) p-value* | After Treatment (n=34) p-value* |
|------------|--------------|----------------------------------|---------------------------------|
| Hemoglobin | Control      | 0.186                            | 0.200                           |
|            | Intervention | 0.133                            | 0.200                           |

*\*Kolmogorov smirnov*

The results showed that all data on hemoglobin levels before and after treatment in the control and intervention groups showed normal distribution (p-value > 0.05).

**Table 2: Differences in Hemoglobin Levels Before and After Treatment in the Control and Intervention Groups**

| Variable   | Group        | Before Treatment |          | After Treatment |           | p-value* |
|------------|--------------|------------------|----------|-----------------|-----------|----------|
|            |              | Mean±SD          | Min-Max  | Mean±SD         | Min-Max   |          |
| Hemoglobin | Control      | 10.70±0.76       | 9.3-11.8 | 12.27±1.077     | 10.2-14.7 | 0.000    |
|            | Intervention | 10.72±0.67       | 9.3-11.9 | 12.83±1.052     | 10.6-15.2 | 0.000    |

*\*Paired T-Test*

Hemoglobin levels showed that there was a significant difference between hemoglobin levels after treatment which was higher than before being given treatment in the control group with an average value of 10.70 g/dL and after treatment an average of 12.27 g/dL, p-value 0.000. It can be concluded that giving 60 mg Fe tablets once a day can increase hemoglobin levels in the control group.

Hemoglobin levels showed significant differences in the paired group where the hemoglobin value after treatment was higher than the hemoglobin value before being given treatment in the intervention group with an average of 10.72 g/dL and after

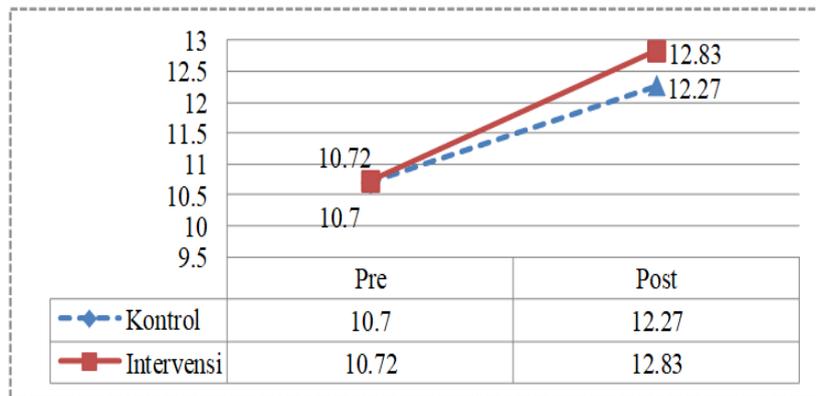
treatment an average of 12.83 g/dL with a p-value of 0.000. It can be concluded that kalakai leaf tea 2 g once a day and Fe tablets can increase hemoglobin levels in the intervention group.

**Table 3: Differences in Hemoglobin in the Control Group and the Intervention Group**

| Variable   | Group         |               | p-value* |
|------------|---------------|---------------|----------|
|            | Control       | Intervention  |          |
| Hemoglobin | 12.27 ± 1.077 | 12.83 ± 1.052 | 0.034    |
| Persentase | 14.67%        | 19.69%        |          |
| Mean Delta | 1,57          | 2.11          |          |

\*Independent T-Test

Independent T-Test test on hemoglobin levels between the control group and the intervention group showed a significant difference in value p value 0.034 which means there was a significant difference in the control group and the intervention group. The percentage increase in hemoglobin levels in the intervention group was higher with a value of 19.69% compared to the control group with a value of 14.67%. The average result of hemoglobin in the control group was 12.27 g/dL and in the intervention group 12.83 g/dL, the intervention group was higher with a difference in increase of 2.11 compared to the control group with a difference of 1.57. It can be concluded that giving kalakai leaf tea showed a difference significant increase in hemoglobin in the intervention group compared to the control group.



**DISCUSSION**

Interventional administration of 2 g of kalakai leaf tea once a day can reduce anemia by increasing hemoglobin levels higher than the control group. This is due to the content in kalakai leaf tea, namely iron, vitamin C, vitamin A and protein needed by the body, especially in the formation of red blood cells which can be used as a supplement for anemic teenage girls.

The results of the influence test on paired variable data using the Paired t-test statistical test on the hemoglobin level variable showed that the p-value in the experimental group and the control group increased in body weight in anemic adolescent girls with a p-value of 0.000 (p-value<0.05) meaning that the provision of kalakai leaf tea and fe tablets had an effect before and after giving the treatment.

The success of giving kalakai leaf tea and fe tablets can also be seen based on the results of statistical tests using the Independent t-test on the effectiveness of the delta value (Δ) pre-post test significantly different, it can be seen that the p-value is 0.034 (p-value<0.05) meaning that giving tea Kalakai leaves and fe tablets increased hemoglobin levels in anemic young women compared to just giving fe tablets.

An increase in hemoglobin levels can occur because the content of kalakai leaves has compounds that can help increase iron in the blood. Kalakai leaves contain iron, vitamin C, vitamin A, and protein needed by the body,

especially in the formation of red blood cells which can be used as a supplement for anemic young women.

The results of the content test conducted by researchers at the integrated laboratory of Palangka Raya University, the Fe content in kalakai leaves is 655.60 mg/100 g and vitamin C is 165.74 mg/100 g. Kalakai leaf tea has a high iron content as a very important micromineral element in the body. Based on the results of the content test conducted by researchers, kalakai leaf tea has an iron or Fe content of 230.31 mg/100g or 4.6 mg/2g. vitamin C content of 98.85 mg/100 g or 1.98 mg/2g.

Kalakai leaf tea is a food product in the form of a powder which dissolves easily in water and is ready for consumption, making it an appropriate alternative to provide a healthy and practical drink. One of the ways to use kalakai is to process the leaves of kalakai into tea. Kalakai tea can be used as a companion to iron supplements in an effort to prevent and treat anemia in young women[9]. Kalakai leaf tea has the advantage of being more economical and more durable in storage than fresh leaves.

The results of this study are in line with previous research which stated that the effect of kalakai extract (*Stenochlaena Palustris*) on hemoglobin levels in white rats was different after treatment with a significant value of 0.001, there was an effect of extract of kalakai (*Stenochlaena palustris*) on hemoglobin levels in white rats (*rattus norvegicus*)[11]. Another study stated that administration of kalakai syrup increased hemoglobin levels in adolescents with a significant

value of 0,000, that the hemoglobin level of adolescents who experienced anemia after administration of kalakai syrup was higher than the hemoglobin level before administration of kalakai syrup.

## CONCLUSION

Kalakai leaf tea can increase hemoglobin levels in anemic young women. Young women should consume foods or drinks that are rich in iron and vitamin C, one of which is from the kalakai jyang plant which is made into tea which has the effect of increasing hemoglobin levels.

## REFERENCES

1. Novita H, Nurlina N, Tasikmalaya PK, Barat. The Obedience Factors Of Teenage Girls To Consume Iron Tablet At Smk Negeri 1 Kedawung, Cirebon. *Midwif J*. 2021;11:23-33. Available from: <http://repo.poltekkestasikmalaya.ac.id/186/>
2. Satriani. Analysis of determinants of anemia in young girls (15-18). Years in Tamalate District, Jeneponto regency [thesis]. p. 1-179; 2018.
3. Mawaddah S, Noorjanah M. The effectiveness of giving Fe tablets and Ambon banana juice with Fe tablets on hemoglobin levels. *Journal Health Forum*. 2020; 10(1):36-42.
4. Rista Andaruni NQ, Nurbaety B. The effectiveness of administering iron (Fe) tablets, vitamin C and guava fruit juice on increased hemoglobin (Hb) levels in young girls at the Muhammadiyah university of Mataram. *Midwifery J J midwifery UM Mataram*. 2018;3(2):104.
5. Amir N, Djokosujono K. Factors associated with consumption of blood supplement tablets (TTD) in young women in Indonesia: literature review. *J Med Health*. 2019;15(2):119.
6. Chalise B, Aryal KK, Mehta RK, Dhimal M, Sapkota F, Mehata S, et al. Prevalence and correlates of anemia among adolescents in Nepal: findings from a nationally representative cross-sectional survey. *PLOS ONE*. 2018;13(12):e0208878. doi: [10.1371/journal.pone.0208878](https://doi.org/10.1371/journal.pone.0208878), PMID [30551124](https://pubmed.ncbi.nlm.nih.gov/30551124/).
7. Sari P, Azizah DI, Gumilang L, Tina R, Judistiani D. Intake of iron, folic acid, and vitamin C in young women in the Jatinangor region. Vol. 4(4); 2019.
8. Rusdi PHN, Oenzil F, Chundrayetti E. Effect of giving red guava juice (*Psidium guajava*.L) on serum hemoglobin and ferritin levels of anemia patients in young girls. *J Health Andalas*. 2018;7(1):74.
9. Mawaddah S. Increased Hb levels in anemia incidence by giving Kalakai syrup. *Media Inf*. 2019;15(1):27-33.
10. Chabib L, Muhtadi WK, Rizki MI, Rahman RA, Suhendri MR, Hidayat A. Potential medicinal plants to improve the immune system from Borneo Island and the prospect to be developed as nanomedicine. *MATEC Web Conf*. 2018;154:1-7. doi: [10.1051/mateconf/201815404006](https://doi.org/10.1051/mateconf/201815404006).
11. Country CK, Murjani BA. The effect of Kelakai extract (*Stenochlaena palustris*) on hemoglobin levels in white mice (*Rattus norvegicus*). *Borneo J Pharmascientech*. 2017;01(01):10-7.