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THE EFFECT OF TEKIS (FERN TEA) CONSUMPTION ON HAEMOGLOBIN LEVELS AMONG ANAEMIC ADOLESCENT GIRLS AT SMA NEGERI 2 KISARAN

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Abstrak

Indonesia terus menghadapi masalah gizi yang menghambat perkembangan sumber daya manusia berkualitas. Kekurangan gizi menurunkan daya tahan tubuh terhadap penyakit infeksi dan menurunkan produktivitas kerja. Salah satu penyebab utama masalah gizi adalah kekurangan zat besi (Fe), yang masih menjadi isu gizi global yang luas. Bayi, remaja, dan perempuan usia reproduksi kerap mengalami anemia defisiensi besi yang berdampak pada perubahan perilaku, pertumbuhan dan perkembangan, serta fungsi motorik, sehingga menurunkan kemampuan belajar dan prestasi akademik. Tujuan: Terapi nonfarmakologis dapat menjadi alternatif pengobatan, salah satunya melalui pemanfaatan tanaman tradisional seperti sayuran paku yang kaya nutrisi. Salah satu manfaat kandungan nutrisinya adalah kemampuan meningkatkan kadar hemoglobin. Oleh karena itu, untuk menjaga kualitas produk dan memperpanjang masa simpan paku, dikembangkan produk baru bernama TEKIS (teh paku) yang lebih praktis dikonsumsi dan tidak menimbulkan efek samping. Metode: Penelitian ini mengembangkan produk berupa TEKIS (teh paku) untuk menjaga kualitas dan memperpanjang masa simpan paku sebagai alternatif praktis dan aman untuk meningkatkan kadar hemoglobin. Desain penelitian menggunakan kuasi-eksperimental dengan pendekatan satu kelompok pra-uji dan pasca-uji. Teknik pengambilan sampel adalah purposive sampling, dengan populasi terdiri dari 30 remaja putri anemia berusia 16–19 tahun dari kelas X–XII. Hasil: Analisis statistik menunjukkan nilai p = 0,000 < 0,05, yang mengindikasikan bahwa TEKIS (teh paku) efektif meningkatkan kadar hemoglobin pada remaja putri anemia.
Kata Kunci: *Teh; Pakis; Haemoglobin; Remaja_Putri; Anemia*.

Abstract

Indonesia continues to face nutritional problems that hinder the development of high-quality human resources. Nutritional deficiencies reduce the body's resistance to infectious diseases and lower work productivity. One major cause of nutritional problems is iron (Fe) deficiency, which remains a widespread global nutritional issue. Infants, adolescents, and women of reproductive age often experience iron deficiency anaemia, which affects behavioural changes, growth and development, and motor functions, leading to decreased learning ability and academic performance. Objective: Non-pharmacological therapy can serve as an alternative treatment, one of which involves the use of traditional plants such as fern vegetables that are rich in nutrients. One of the benefits of their nutritional content is the ability to increase haemoglobin levels. Therefore, to maintain product quality and extend the shelf life of ferns, a new product called TEKIS (fern tea) was developed, which is more practical to consume and has no side effects. Method: This study developed a product in the form of TEKIS (fern tea) to maintain its quality and prolong the shelf life of ferns as a practical and safe alternative to increase haemoglobin levels. The research employed a quasi-experimental design using a one-group pre-test and post-test approach. The sampling technique used was purposive sampling, with a population consisting of 30 anaemic adolescent girls aged 16–19 years from grades X–XII. Results: Statistical analysis showed a p-value = 0.000 < 0.05, indicating that TEKIS (fern tea) effectively increased haemoglobin levels among anaemic adolescent girls.

***Keywords*:** *Tea; Fern; Hemoglobin; Adolescent girls; Anemia.*

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INTRODUCTION

Indonesia continues to face nutritional problems that threaten the development of high-quality human resources.(1) Nutritional deficiencies decrease the body's resistance to infections and lower work productivity.(2) One of the most common global nutritional issues is iron (Fe) deficiency. Infants, adolescents, and women of reproductive age are particularly susceptible to iron deficiency anaemia, which interferes with behavioural development, growth, motor functions, and cognitive performance.(3)

Iron deficiency anaemia occurs when the body lacks sufficient iron to sustain haemoglobin production and other essential iron compounds. Causes of iron deficiency include inadequate dietary intake, insufficient iron absorption, rapid growth periods, and blood loss. The prevalence of anaemia among females is higher than in males due to monthly menstrual cycles. Anaemia symptoms include fatigue, weakness, lethargy, and dizziness—often summarised as the "5L" symptoms (lesu, lemah, letih, lesu, lunglai)—resulting from decreased oxygen levels in the blood.(4)

The prevalence of anaemia in females is higher than in males because women experience menstruation every month.(5) The symptoms of anaemia include fatigue, weakness, exhaustion, lethargy, and light-headedness (commonly referred to as the "5Ls"), which occur due to decreased oxygen levels in the blood.(6) Anaemia also causes fatigue, inhibits growth and development, increases susceptibility to infections that weaken the immune system, reduces immune and bodily functions, increases vulnerability to toxicity, and leads to cognitive impairment.(7)

Adolescents who experience anaemia may face disruptions in learning activities, decreased academic performance, delayed motor and mental development, reduced physical fitness, and failure to achieve their optimal height.(8)

The long-term effects of anaemia in adolescence can have a significant impact during pregnancy and childbirth. Anaemia during these periods increases the risk of maternal morbidity and mortality, miscarriage, stillbirth, low birth weight (LBW), and preterm birth, as well as negatively affecting the infant's iron status.(9) Anaemia is diagnosed when haemoglobin levels fall below the normal range according to age and sex. Adolescent girls or women of reproductive age are classified as anaemic when their haemoglobin level is below 12 g/dL.(10).

Therefore, alternative approaches are needed to prevent anaemia among adolescent girls, one of which is through the use of herbal remedies. Iron (Fe) tablet supplementation often causes side effects such as nausea, constipation, and dark-coloured stools.(11) Hence, a non-pharmacological therapy that is easily accessible is required, such as the use of traditional plants like fern vegetables, which are rich in nutrients and provide various health benefits.(12)

One of the nutritional benefits of ferns is their ability to increase haemoglobin levels. Therefore, to maintain the quality and extend the shelf life of the fern plant itself,(13) TEKIS (fern tea) was developed as a more practical form for consumption that does not cause side effects..

METHODS

This study employed a quasi-experimental design using a one-group pre-test and post-test approach, in which only one intervention group (fern tea administration) was used. Haemoglobin levels were measured before and after the intervention over a period of seven days.

The sampling technique used in this study was purposive sampling, based on inclusion criteria of participants who experienced mild to moderate anaemia, were willing to participate as research subjects, and had no history of allergies or diseases. The exclusion criteria included participants with severe anaemia, a history of certain medical conditions, those undergoing medical treatment, or currently consuming iron (Fe) tablets(14).

The study was conducted at SMA Negeri 2 Kisaran, involving a population of 30 adolescent girls aged 16–19 years from grades X to XII who were diagnosed with anaemia.

RESULTS AND DISCUSSION

1. Results

Characteristics of Respondents

Table 1. Frequency Distribution of Respondents' Age at SMA Negeri 2 Kisaran

No	Age (Years)	Frequency	Percentage (%)
1.	16 Years Old	15	50
2.	17 Years Old	15	50
Total		**30**	**100**

Based on Table 1, the characteristics of respondents show that 50% were aged 16 years and 50% were aged 17 years.

Incidence of Anaemia Among Adolescents at SMA Negeri 2 Kisaran

The data on the prevalence of anaemia among adolescents at SMA Negeri 2 Kisaran before the intervention (consumption of TEKIS or fern tea) from 30 respondents are shown in the table below:

Table 2. Frequency Distribution of Anaemia Among Adolescents at SMA Negeri 2 Kisaran

No	Anaemia Classification	F	(%)	Mean Hb (Pre)	Mean Hb (Post)
1. 2.	Mild Anaemia (Hb 10,0-11,9)	30 0	100 0	10,8	12,3

Moderate Anaemia (Hb 8,0-9,9)		
Total	**30**	**100**

Based on Table 2, it can be explained that out of 30 respondents, all adolescent girls experienced mild anaemia before the intervention (consumption of TEKIS), with an average haemoglobin level of 10.8 g/dL. After the intervention (consumption of TEKIS), the average haemoglobin level among the adolescent girls increased to 12.3 g/dL.

Table 3. The Effect of TEKIS (Fern Tea) Consumption on Increasing Haemoglobin Levels Among Anaemic Adolescent Girls

No	Haemoglobin Level	N	Mean	p-value
1.	Pre Intervensi	30	10,8	0,000
2.	Post Intervensi	30	12,3	

Based on the results of the paired sample t-test, a significant p-value of 0.000 < α (0.05) was obtained, indicating a difference in haemoglobin levels before and after the intervention. These results demonstrate that the consumption of TEKIS (fern tea) is proven to be effective in increasing haemoglobin levels among anaemic adolescent girls.

2. Discussion

The results of this study show that TEKIS (fern tea) can increase haemoglobin levels in anaemic adolescent girls, as indicated by the statistical test results with a p-value = 0.000 < 0.05. This effect occurs because fern tea contains high levels of iron, vitamin A, and vitamin C, which facilitate better iron absorption in the body

CONCLUSION

Efforts to prevent anaemia in adolescent girls generally include consuming nutritious foods and iron supplements. However, iron tablets often cause side effects such as nausea and constipation, making adolescents reluctant to take them. Therefore, TEKIS (fern tea) serves as an alternative solution for preventing anaemia, offering nutritional benefits with minimal side effects.

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