

THESIS

INNOVATION OF SNACK BARS WITH SUBSTITUTION OF SOY FLOUR AND MORINGA LEAF FLOUR AS A SNACK FOR ADOLESCENTS WITH ANEMIA (Analysis of Protein Content, Dietary Fiber, Iron, and Organoleptic Test)



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(Analysis of Protein Content, Dietary Fiber, Iron, and Organoleptic Test)

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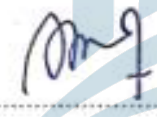
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ABSTRACT

INNOVATION OF SNACK BARS WITH SUBSTITUTION OF SOY FLOUR AND MORINGA LEAF FLOUR AS SNACKS FOR ADOLESCENTS WITH ANEMIA (Analysis of Protein Content, Dietary Fiber, Iron, and Organoleptic Test)

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Anemia due to iron deficiency occurs as a result of insufficient iron intake, which leads to a decrease in hemoglobin concentration in the blood. Soy flour has a high protein content, while moringa leaf flour is rich in iron and fiber, making them suitable as raw materials for snack bars. This study analyzed the differences in substituting soy flour and moringa leaf flour in snack bar formulations concerning protein content, dietary fiber, iron levels, and organoleptic tests for adolescents with anemia. This study used a true experimental design with a Completely Randomized Design (CRD). There were four treatments and one control, with three repetitions of the analysis. The formulations used different ratios of soy flour to moringa leaf flour: F1 (100%:0%), F2 (98.5%:1.5%), F3 (97%:3%), F4 (95.5%:4.5%), F5 (94%:6%). The analytical methods included the Kjeldahl method for protein content, the gravimetric method for dietary fiber, spectrophotometry for iron content, and organoleptic testing for acceptability. The data analysis for protein, dietary fiber, and iron content was conducted using one-way ANOVA followed by Duncan's post hoc test. In contrast, organoleptic analysis used the Kruskal-Wallis test, followed by the Mann-Whitney post hoc test, with a significance level of $p < 0.005$. The results indicated a significant difference among snack bar formulations with the substitution of soy flour and moringa leaf flour regarding protein content, dietary fiber, iron levels, and organoleptic test results for adolescents with anemia ($p = 0.000$). In conclusion, there were significant differences in protein content, dietary fiber, iron levels, and organoleptic properties of snack bars with soy flour and moringa leaf flour substitution as a snack for adolescents with anemia.

Keywords: Anemia, adolescent girls, dietary fiber, protein, iron

ABSTRAK

INOVASI SNACK BAR DENGAN SUBSTITUSI TEPUNG KEDELAI DAN TEPUNG DAUN KELOR SEBAGAI *SNACK* PADA REMAJA ANEMIA (Analisi Kadar Protein, Serat Pangan, Zat Besi, dan Uji Organoleptik)

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Anemia defisiensi zat besi terjadi akibat kekurangan asupan zat besi, sehingga konsentrasi hemoglobin dalam darah berkurang. Asupan makanan yang mengandung protein, dan zat besi dapat mensintesis hemoglobin. Tepung kedelai memiliki kandungan protein tinggi dan tepung daun kelor memiliki kandungan zat besi dan serat yang tinggi, yang dapat dijadikan bahan baku *snack bar*. Penelitian ini bertujuan untuk menganalisis perbedaan substitusi tepung kedelai dan tepung daun kelor dalam formulasi *snack bar* terhadap kadar protein, serat pangan, zat besi, dan uji organoleptik pada remaja anemia. Jenis penelitian ini menggunakan *true experimental* dengan desain Rancangan Acak Lengkap (RAL). Terdapat 4 perlakuan dan 1 kontrol, dengan 3 pengulangan analisis. Formulasi ini menggunakan perbandingan tepung kedelai dengan tepung daun kelor. F1 (100%:0%), F2 (98,5%:1,5%), F3 (97%:3%), F4 (95,5%:4,5%), F5 (94%:6%). Metode analisis kadar protein menggunakan *kjeldahl*, serat pangan menggunakan *gravimetri*, zat besi menggunakan *spektrofotometri*, dan daya terima menggunakan uji organoleptik. Analisis data uji kadar protein, serat pangan, zat besi menggunakan metode *one way ANOVA* dilanjut dengan *post hoc duncan*, dan uji organoleptik menggunakan *kruskal-wallis* dilanjut dengan *post hoc mann-whitney* dengan nilai *p-value* $p < 0,005$. Hasil penelitian ini, terdapat perbedaan nyata antar formulasi *snack bar* substitusi tepung kedelai dan tepung daun kelor terhadap kadar protein, serat pangan, zat besi, dan uji organoleptik sebagai *snack* pada remaja anemia ($p = 0,000$). Kesimpulan dari penelitian ini, terdapat perbedaan pada kadar protein, serat pangan, zat besi, dan uji organoleptik pada *snack bar* substitusi tepung kedelai dan tepung daun kelor sebagai *snack* pada remaja anemia.

Kata kunci: Anemia, protein, remaja putri, serat pangan, zat besi

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Ponorogo, January 19th 2025



Author



TABLES OF CONTENTS

VALIDITY SHEET	ii
ABSTRACT	iii
ABSTRAK	iv
ACKNOWLEDGEMENT	v
TABLES OF CONTENTS	vii
LIST OF TABLE	ix
LIST OF FIGURE	x
LIST OF ATTACHMENT	xi
AUTHENTICITY STATEMENT	xii
CHAPTER I	1
1.1 Research Background	1
1.2 Research Problems	4
1.3 Research Objectives	4
1.4 Research Benefits	5
1.5 Authenticity Research	5
CHAPTER II	8
2.1 Basic Theory	8
2.2 Halal Product Analysis	24
2.3 Theoretical Framework	25
2.4 Conceptual Framework	25
2.5 Hypothesis	26
CHAPTER III	27
3.1 Research Design	27
3.2 Research Period and Location	28
3.3 Population and Sample	28
3.4 Research Materials	28
3.5 Research Variables	29
3.6 Variable Operational Definition	29

3.7 Ethical Clearance.....	30
3.8 Research Procedure	30
3.9 Data Analysis.....	34
3.10 Halal Product Analysis.....	34
3.11 Research Flowchart	35
3.12 Research Schedule.....	36
CHAPTER IV	37
4.1 Results	37
4.2 Discussion.....	43
CHAPTER V	51
5.1 Conclusions	51
5.2 Recommendations	51
REFERENCES.....	52
ATTACHMENT.....	56



LIST OF TABLE

Table 1. Authenticity Research	5
Table 2. Recommended Dietary Allowance for Adolescent Girls.....	9
Table 3. Classification of Anemia Based on Morphology and Etiology	10
Table 4. Snack Bar Quality Standards	12
Table 5. Soybean Content Per 100 g.....	11
Table 6. Soy Flour Content Per 100 g.....	14
Table 7. Nutritional Content of Moringa Leaves in 100 g.....	16
Table 8. Nutritional Content of Moringa Leaf Flour in 100 g	17
Table 9. Variable Operational Definition	29
Table 10. Snack Bar Formulation	30
Table 11. Hedonic Scale Parameters.....	34
Table 12. Research Schedule	36
Table 13. The Results of the Analysis of Protein Content, Dietary Fiber, and Iron Levels in Snack Bars with Soy Flour and Moringa Leaf Flour Substitution ..	37
Table 14. Nutritional Content of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution Per Serving (50 g)	38
Table 15. Results of the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution	39
Table 16. Results of the Post Hoc Mann-Whitney Test for Taste in the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution ...	39
Table 17. Results of the Post Hoc Mann-Whitney Test for Color in the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution ...	40
Table 18. Results of the Post Hoc Mann-Whitney Test for Aroma in the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution	41
Table 19. Results of the Post Hoc Mann-Whitney Test for Texture in the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution ...	41
Table 20. Results of the Post Hoc Mann-Whitney Test for Overall in the Organoleptic Test of Snack Bars with Soy Flour and Moringa Leaf Flour Substitution ...	42
Table 21. Halal Product Analysis.....	42

LIST OF FIGURE

Figure 1. Snack Bar.....	11
Figure 2. Soybean.....	13
Figure 3. Soy Flour	14
Figure 4. Moringa Leaves	15
Figure 5. Moringa Leaf Flour.....	17
Figure 6. Theoretical Framework	25
Figure 7. Conceptual Framework.....	25
Figure 8. Eksperimen Design	27
Figure 9. Research Flowchart	35



LIST OF ATTACHMENT

Attachment 1. Ethical Clearance.....	56
Attachment 2 Data Analysis Protein Content, Dietary Fiber and Iron.	57
Attachment 3. Data Organoleptic Test	58
Attachment 4. Data Analysis Results.....	63
Attachment 5. Analysis Halal Product.....	73
Attachment 6. Informed Consent.....	74
Attachment 7. Organoleptic Test	75
Attachment 8. Research Documentation.....	76



AUTHENTICITY STATEMENT

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Anemia (Analysis of Protein Content, Dietary Fiber, Iron, and
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I sincerely declare that the research contained in this thesis is my own work and does not belong to anyone. This thesis has never been published before, except for some parts with original references.

If in the future it is found that this work is plagiarism, I am ready to be given administrative and academic sanctions.

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