Spinning Based Source Of Iron Biscuit As Additional Food For Pregnant Women In Pulo Pakkat Village, Pulo Pakkat Puskesmas Working Area, 2021

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A R T I C L E I N F O	ABSTRACT
Keywords: Biscuits, Spinach, Iron	The World Health Organization (WHO) in 2012 states that around 42% of the incidence of anemia in pregnant women in the world, it is estimated that as many as 48% are in Asia, 57% in Africa, 25% in Europe and 24% in America. The purpose of this study was to make a biscuit product that is rich in iron sources based on local food in the form of spinach which is used as a supplementary food for pregnant women with 15 respondents for organoleptic testing and the Friedman Test test was carried out to see differences in preferences for the parameters measured. The descriptive results of the organoleptic test on color showed that most respondents stated that the most preferred color, texture, and taste was biscuit formula F2 (75%), while aroma showed most respondents stated that the most preferred aroma was biscuit in formula 1 (50%). In the Friedman Test with a significant level of = 0.05, there was no significant difference in the results of the color and aroma test and there was a significant difference in the results of the texture and taste test of the second formula. mg/100gr) has the highest iron content compared to F1 biscuits (17.1 mg/100gr. The results of the Paired T test statistic is known to have a t-value of -14.636 with a P-value of 0.000 <0.005, meaning that spinach biscuits are effective in increasing Hb levels in anemic pregnant women.
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1. Introduction

Pregnancy is the growth and development of the intrauterine fetus starting from conception and ending until the onset of labor (Widiarti, 2021). Pregnancy is a very necessary process for every woman in order to avoid problems until it is time for a woman to take care of her womb as much as possible. One way is by consuming iron which can be obtained from Fe tablets. According to WHO in 2012 it was stated that around 42% of the incidence of anemia in pregnant women in the world and an estimated 48% were in Asia, 57% in Africa, 25% in Europe and 24% in America. Based on the magnitude of the problem, anemia is the second leading cause of disability in the world and is one of the most serious health problems in society (Angraini, 2017).

The World Health Organization (WHO) reports that the prevalence of deficiency in pregnant women is around 37-75% and increases with increasing gestational age. Where 40% of maternal deaths in developing countries are related to anemia in pregnancy and most anemia in pregnancy is caused by iron deficiency and acute bleeding, and it is not uncommon for the two to interact with each other. (Damanik S,2019). The results of the 2018 Riskesdas showed an increase in the incidence of pregnant women suffering from anemia with a percentage of 49%. The lower the age of pregnant women, the higher the risk of suffering from anemia where as many as 85% of pregnant women with

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anemia are aged 15-24 years. One of the nutritional problems experienced by pregnant women is anemia. This is because the low intake of iron in pregnant women during pregnancy causes low Hb levels in pregnant women. So that anemia occurs (Ulfa. 2013).

The anemia rate of pregnancy in Indonesia is quite high, around 67% of all pregnant women with variations depending on each region. About 10-15% are classified as severe anemia which of course will affect the growth and development of the fetus in the womb. (Hariati, et al, 2019). Anemia causes low physical ability because the body's cells do not get enough oxygen supply. In pregnant women, anemia increases the frequency of complications in pregnancy and childbirth. The risk of maternal death, the rate of prematurity, low birth weight, and perinatal mortality increases (Pujiastutik, 2019). Lack of macronutrients such as energy and protein, as well as deficiencies of micronutrients such as iron will cause nutritional anemia, where these nutrients, especially iron, are one of the nutritional elements as a component of the formation of hemoglobin and red blood cells (Tarigan, 2021). Problems that often occur in pregnant women are not aware of the increased nutritional needs during pregnancy and incorrect nutritional behavior resulting in an imbalance between consumption and needs (Utomo, et al, 2015).

The purpose of this study was to make a biscuit product that is rich in iron sources based on local food in the form of spinach which is used as an additional food for pregnant women using 15 respondents for organoleptic tests and the Friedman Test was carried out to see differences in preferences for the parameters measured. The results of the descriptive organoleptic test on color showed that most of the respondents stated that the most preferred color, texture, and taste were biscuits in formula F2 (75%), while the assessment of the aroma aspect showed that most of the respondents stated that the most preferred aroma was biscuit in formula 1 (50%). In the Friedman Test with a significant level of = 0.05, the results obtained that there was no significant difference in the results of the color and aroma test and there was a significant difference in the results of the texture and taste tests on the two formulas. Based on the results of the proximate test of iron levels, it can be seen that the F2 biscuit (21.1 mg/100gr) had the highest iron content compared to the F1 biscuit (17.1 mg/100gr. The results of the statistical paired T test showed that the t value was -14,636 with a P value of 0.000 <0.005, meaning that spinach biscuit was effective in increasing Hb levels of pregnant women who are anemic In this study, researchers hope that further research should be carried out with more formulas to see the effectiveness of the product in meeting the nutritional needs of pregnant women and can measure the longevity of biscuit products with the addition of this spinach.

2. Methods
1. Research Type and Design

   In this study, the method and research design used was an experiment with spinach substitution treatment. The product is made with 2 repetitions. The treatment given was the addition of spinach (F1) 50% (F2) 75%.
2. Research Place and Time

   This research was conducted in Pulo Pakkat Village, Pulo Pakkat Health Center Working area. The research was carried out in June 2021
3. Population and Sample

   The subjects of this study were spinach as a substitute for biscuit products, and 15 pregnant women who were anemic as respondents in the test of the effectiveness of spinach biscuits on increasing Hb levels.
4. Method Of Collecting Data

   The type of data collected in this study is in the form of primary data, namely organoleptic test and level of preference. This primary data is collected by observation using the five senses. In this study, organoleptic tests were carried out on the resulting biscuits including color, aroma, texture, taste and overall acceptance. In addition, data on iron levels in biscuit products was also obtained. The organoleptic test aims to determine the organoleptic quality and acceptance of the most preferred biscuits.
5. Data Analisys Technique

After the data was collected, the data obtained were processed and analyzed using univariate analysis by presenting the results of the assessment in the form of a frequency distribution with the help of the SPSS program.

3.   Results And Discussion

3.1   Results

The results of the respondent's acceptance of spinach biscuits were carried out on 15 pregnant women respondents to assess the overall aspects including color, taste, aroma, and texture which were assessed using a rating category scale, namely Strongly Like, Like, Somewhat Like, Dislike and Very Dislike. The results of the acceptance test of the addition of spinach leaves biscuits are as follows:

TABLE 1
ORGANOLEPTIC TEST RESULTS ON BISCUITS WITH THE ADDITION OF SPINACH FROM THE COLOR ASPECT

Category	Spinach Biscuit				Pvalue
	F1 (50 %)		F2 (75%)		
	n	%	n	%	
Really Like	3	20,0	6	40,0	
Like	6	40,0	5	33,3	
Rather Like	5	33,3	3	20,0	
Do Not Like	1	6,7	1	6,7	
Total	15	100	15	100	0,248
Mean	3,73		4,07		
Median	4,00		4,00		
Modus	4		5		

From the table above, it is known that the respondent's assessment for the biscuit color aspect, the addition of spinach leaves as much as 50% indicates that the majority of respondents like as many as 6 respondents (40%) while with the addition of 75% spinach leaves the majority of respondents really like as much as 40% and like as much as 33.3%. . The average respondent's assessment of the color aspect of the biscuit with the addition of spinach leaves was 50%, namely 3.73 which indicated that it was in the moderately liked range, then on the biscuit assessment the addition of spinach leaves with a percentage of 75% was 4.07 which indicated it was in the like range. Based on the calculation of the average value of the color aspect shown in the table above, formula 2 with the addition of spinach leaves of 75% is the most preferred with the highest average value of 4.07 which is in the Like range. The results of the organoleptic test for color showed that most of the respondents stated that the most preferred color was biscuit in the F2 formula (75%). In the Friedman Test, the results were p (0.248) > (0.05), which means that there is no significant difference in the results of the color test of the two formulas.

TABLE 2
ORGANOLEPTIC TEST RESULTS ON BISCUITS WITH ADDITION OF SPINACH FROM THE AROMATIC ASPECT

Category	Spinach Bicuit				PValue
	F1 (50 %)		F2 (75%)		
	n	%	n	%	
Really Like	2	13,3	2	13,3	
Like	9	60,0	2	13,3	
Rather Like	4	26,7	8	53,4	
Do Not Like	0	0,0	3	20,0	
Total	15	100	15	100	0,109
Mean	3,87		3,20		
Median	4,00		3,00		
Modus	4		3		

From the table above, it is known that the respondents' assessment of the aroma biscuit aspect with the addition of spinach leaves as much as 50% indicates that the majority of respondents like as many as 9 respondents (60%) while with the addition of 75% spinach leaves, the majority of respondents rather like as many as 8 respondents (53.4%). The average respondent's assessment of the aroma aspect of the biscuit with the addition of spinach leaves was 50%, which was 3.87 which indicated it was in the moderately like range, then on the biscuit assessment the addition of spinach

leaves with a percentage of 75% was 3.20 which indicated it remained in the moderately like range. Based on the calculation of the average value of the aroma aspect shown in the table above, formula 1 with the addition of 50% spinach leaves is the most preferred with the highest average value of 3.87 although it is still in the rating range somewhat like. The results of the organoleptic test on aroma showed that most of the respondents stated that the most preferred aroma was biscuit in formula 1 (50%). In the Friedman Test, the results were p (0.109) > (0.05), which means that there is no significant difference in the results of the aroma test of the two formulas.

TABLE 3
ORGANOLEPTIC TEST RESULTS ON BISCUITS WITH ADDITION OF SPINACH FROM TEXTURE ASPECTS

Category	Spinach Biscuit				PValue
	F1 (50 %)		F2 (75%)		
	n	%	n	%	
Really Like	3	20,0	9	60,0	
Like	7	46,7	6	40,0	
Rather Like	5	33,3	0	0,0	
Do Not Like	15	100	15	100	
Mean	3,87		4,60		0,033
Median	4,00		5,00		
Modus	4		5		

From the table above, it is known that the respondents' assessment of the biscuit texture aspect with the addition of spinach leaves as much as 50% indicates that the majority of respondents like as many as 7 respondents (46.7%) while with the addition of 75% spinach leaves the majority of respondents really like as many as 9 respondents (60%). The average respondent's assessment of the texture aspect of the biscuit with the addition of spinach leaves was 50%, which was 3.87 which indicated that it was in the moderately liked range, then on the biscuit assessment the addition of spinach leaves with a percentage of 75% was 4.60 which indicated it was in the like range. Based on the calculation of the average value of the texture aspect shown in the table above, formula 2 with the addition of spinach leaves of 75% is the most preferred with the highest average value of 4.60 which is in the Like range. The results of the organoleptic test on texture showed that most of the respondents stated that the most preferred texture was biscuit in formula F2 (75%). In the Friedman Test, the results were p (0.03) < (0.05), which means that there is a significant difference in the results of the texture test of the two formulas.

TABLE 4
ORGANOLEPTIC TEST RESULTS ON BISCUITS WITH THE ADDITION OF SPINACH FROM THE ASPECT OF TASTE

Kategori	Biskuit Bayam				PValue
	F1 (50 %)		F2 (75%)		
	n	%	n	%	
Sangat Suka	4	26,7	11	73,3	
Suka	8	53,3	2	13,3	
Agak Suka	3	20,0	2	13,3	
Jumlah	15	100	15	100	
Mean	4,07		4,60		0,020
Median	4,00		5,00		
Modus	4		5		

From the table above, it is known that the respondent's assessment for the biscuit taste aspect of adding spinach leaves as much as 50% indicates that the majority of respondents like as many as 8 respondents (53.3%) while with the addition of 75% spinach leaves the majority of respondents really like as many as 11 respondents (73.3%). The average respondent's assessment of the biscuit taste aspect with the addition of spinach leaves was as much as 50%, namely 4.07 which indicated that it was in the range of likes, then on the assessment of biscuits the addition of spinach leaves with a percentage of 75% was 4.60 which indicated that it was in the range of likes. Based on the calculation of the average value of the taste aspect shown in the table above, formula 2 with the addition of spinach leaves of 75% is the most preferred with the highest average value of 4.60 which is in the Like range. The results of the organoleptic test on taste showed that most of the respondents stated that the most preferred taste was biscuit in formula 2 (75%). In the Friedman Test, the results

were p (0.02) < (0.05), which means that there is a significant difference in the results of the color test of the two formulas.

1. Test the Iron Content in Spinach Biscuits

Ests for iron levels in the two biscuit formulas were carried out at the Food Laboratory of STPK Matauli. Testing of iron content was carried out by atomic absorption spectrophotometry (AAS).

TABLE 5
RESULTS OF ANALYSIS OF PROXIMATE COMPOSITION OF SPINACH BISCUITS PER 100 GRAMS

Komposisi	Kuantitas F1	Kuantitas F2
Zat Besi	17,1	21,1
Vitamin A	408	537,8
Calsium	159,9	208,9

The results of the iron content test of the two spinach biscuit formulas were F1 17.1 mg/100gr, F2 21.1 mg/100gr. Based on these results, it was seen that F2 biscuits had the highest iron content compared to F1 biscuits.

2. HB Levels Before and After Giving Spinach Biscuits

TABLE 6
DISTRIBUTION OF RESPONDENTS BASED ON HB LEVELS BEFORE BEING GIVEN SPINACH BISCUITS

No	HB levels before giving spinach biscuits
1	10
2	10,3
3	9,7
4	9,3
5	10,1
6	10,2
7	9,9
8	10
9	10,3
10	9,7
11	10
12	10,5
13	10
14	9,7
15	8,9

Based on the results of the study in table 6 the average HB level of anemic pregnant women before being given spinach biscuits was 10.00 g/dl.

TABLE 7
DISTRIBUTION OF RESPONDENTS BASED ON HB LEVELS AFTER BEING GIVEN SPINACH BISCUITS

No	HB levels after giving spinach biscuits
1	11,5
2	10,9
3	11
4	11
5	11,8
6	11,6
7	11
8	11
9	11
10	10,8
11	11
12	11,8
13	11
14	10,3
15	10,2

		Mean	N	Std. Deviation
Pair 1	Hb Before	9,9550	15	,43222
	Hb After	11,0700	15	,46803

Paired Samples Correlations			
			N
Pair 1	Hb Before & Hb After		15

Based on table 7 above, it is known that the average HB level of anemic pregnant women after being given spinach biscuits is 11.00 g/dl.

3.2 Discussion

The main research was carried out in two stages, the first stage was testing the organoleptic properties and the second stage was testing the iron content. Organoleptic testing on 2 balances involved 15 respondents who were pregnant women. Organoleptic testing was carried out at the Pulo Pakkat Health Center Work Area. Product Description The biscuits produced are biscuits made from wheat flour and green spinach leaves. The manufacturing process refers to the process of making biscuits in general, which starts from mixing ingredients, molding, and baking. The characteristics of the biscuits produced are crunchy texture, neutral aroma (no pungent aroma), white-brown color, and a savory taste. These biscuits can be consumed immediately after baking or can be stored in a tightly closed container so that quality is maintained (Tunjungsari, et al, 2019).

Color Organoleptic Test Results Most of the respondents liked the color of the biscuits F2 (40%) and there was 1 respondent who did not like the color of the spinach biscuits. The color obtained in the formula is brownish white. The F2 biscuit has a balance of wheat flour with green spinach leaves, which is 25%:75%. Color is one of the most important and decisive factors in the acceptance or rejection of a product, because color is the first impression that appears first. The color of the biscuits is caused by the Maillard reaction during the baking process. The Maillard reaction is a non-enzymatic reaction that occurs due to a reaction between reducing sugars and free amine groups from amino acids or proteins. Regarding biscuits that use wheat flour substitution, it shows that the higher the addition of wheat flour, the darker color will be (Mahardini, et al, 2007).

The results of the organoleptic test on taste showed that most of the respondents stated that the most preferred taste was biscuit in formula 2 (75%). In the Friedman Test, the results were p (0.02) < (0.05), which means that there is a significant difference in the results of the color test of the two formulas. The taste of biscuits is influenced by the ingredients for making biscuits, such as sugar, milk, margarine, and flour used. In the assessment of food ingredients, the characteristic that determines whether a product is accepted or not is its sensory properties. The senses used in assessing sensory properties are the senses of sight, touch, smell and taste (Suryono, et al, 2018). Taste is one part of organoleptic originating from the sense of taste, where the end of the unity of interaction between the properties of aroma, taste, and texture is the overall value of the food. Taste is a quality parameter that is sensed through the taste buds on the human tongue. Green vegetables such as spinach generally contain phytochemicals that are beneficial to health. However, the phytochemical content can cause a bitter taste when consumed, if not processed properly (Syafitri, et al, 2019).

The results of the organoleptic test on texture showed that most of the respondents stated that the most preferred texture was biscuit in formula F2 (75%). In the Friedman Test, the results were p (0.03) < (0.05), which means that there is a significant difference in the results of the texture test of the two formulas. The texture obtained in the formula is crunchy. The two formulas have different balances. Biscuits are a type of pastry made from hard dough in the shape of a flat, when broken, the pieces have a dense texture, can be high or low in fat. Good biscuits must meet the specified quality requirements. In general, the ingredients for making biscuits are usually made from wheat flour and contain little of other nutrients such as phosphorus, calcium and iron (Hamidah N, et al, 2017).

The test results for iron levels in green spinach leaves are 27.8 mg/100gr, and the test results for iron levels in wheat flour are 3.78 mg/100gr. From these results it can be seen that green spinach leaves have a higher iron content than wheat flour. This means that green spinach leaves provide more iron in spinach biscuits. Based on the results of Muchtar's 2017 research on the effect of adding spinach as a natural source of iron in making stick crackers, the higher the concentration of added spinach, the higher the iron content. In addition, research on the addition of sorghum in the manufacture of egg rolls stated that there was an addition of iron to egg rolls using an 80% balance of sorghum flour (Eka, 2018).

Based on the results of the study, it was found that the average Hb level of anemic pregnant women before being given spinach biscuits was 9.955 and after being given spinach biscuits for 14 consecutive days the average Hb of anemic pregnant women became 11.070 with the meaning that there was an increase in the Hb levels of anemic pregnant women with the average increase in Hb levels is 1.115. The results of the statistical paired T test showed that the t value was -14.636 with a P-value of 0.000 <0.005, meaning that spinach biscuits were effective in increasing the Hb levels of anemic pregnant women in Pulo Pakkat village in 2021.

Red spinach is one of the alternative plants in meeting the iron needs of adolescents who have anemia, also mentions that red spinach contains carotenoids and flavonoids which are active substances with antioxidant properties. (Dewi, S, et al, 2020). In line with the theory, spinach is known as a vegetable source of iron, in addition to containing vitamin A, vitamin C, and calcium. Spinach is famous for being a vegetable source of iron, in addition to containing Vitamin A, Vitamin C, and calcium. Purnawaijayanti also mentioned that spinach contains carotenoids and flavonoids which are active substances with antioxidant properties (Suwita, et al, 2012).

4. Conclusion

The descriptive results of the organoleptic test on color showed that most of the respondents stated that the most preferred color, texture, and taste were biscuits in the F2 formula (75%), while the assessment of the aroma aspect showed that most of the respondents stated that the most preferred aroma was biscuits in the formula. 1 (50%). In the Friedman Test with a significant level of = 0.05, the results obtained that there was no significant difference in the results of the color and aroma test and there was a significant difference in the results of the texture and taste tests on the two formulas. Based on the results of the proximate test of iron levels, it can be seen that F2 biscuit (21.1 mg/100gr) had the highest iron content compared to F1 biscuit (17.1 mg/100gr.

References

Alim, A., Imran Thamrin, A., & Harianti. (2019). Kejadian Anemia pada Ibu Hamil (Studi Analitik di Puskesmas Pertiwi Kota Makassar Provinsi Sulawesi Selatan). *Jurnal Ilmiah Kesehatan*, *1*(1), 8–17.

Anggraini, D. D. (2017). Pengaruh Umur Ibu Hamil Dan Dukungan Keluarga Terhadap Kepatuhan Mengkonsumsi Tablet Besi (Fe) Dan Anemia Pada Ibu Hamil Di Puskesmas Kota Wilayah Selatan Kota Kediri. *Jurnal Ilmu Kesehatan MAKIA*, *4*(1), 19–28. https://doi.org/10.37413/jmakia.v4i1.28

Damanik, S. (2019). Faktor-Faktor Yang Mempengaruhi Terjadinya Anemia Pada Ibu Hamil Trimester Ii. *Jurnal Ilmiah Ilmu Kesehatan: Wawasan Kesehatan*, *5*(2), 232–239. https://doi.org/10.33485/jiik-wk.v5i2.133

Gizi, J., Kesehatan, P., Malang, K., Spinach, R., & Jawa, D. (2012). Pemanfaatan Bayam Merah (Blitum Rubrum) Untuk Meningkatkan Kadar Zat Besi Dan Serat Pada Mie Kering. *Agromix*, *3*(1), 18–34. https://doi.org/10.35891/agx.v3i1.745

Hamidah, N., Fransisca, M., & Asrifah, I. (2017). *Pengaruh Subtitusi Tepung Labu Kuning, Tepung Ikan Lele Dumbo Terhadap Nilai Gizi, Mutu Organoleptik Biskuit*. *3*(2), 1–9.

Kemenkes RI. (2018). Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehatan RI*, *53*(9), 1689–1699.

Mahirdini, S., & Afifah, D. N. (2016). Pengaruh substitusi tepung terigu dengan tepung porang (amorphophallus oncopphyllus) terhadap kadar protein, serat pangan, lemak, dan tingkat penerimaan biskuit. *Jurnal Gizi Indonesia (The Indonesian Journal of Nutrition)*, *5*(1), 42–49. https://doi.org/10.14710/jgi.5.1.42-49

Newman, D. P. (2016). *Universitas negeri semarang 2016*.

Pujiastutik, Y. E., Refina, R. C., Firdausi, A., Winarno, P., & Yuliana, E. T. (2020). Efikasi Fortifikasi sebagai Determinan Anemia Kehamilan dengan Biskuit Sweet Potato (Ipomoea Batatas L.). *Jurnal Wiyata*, *7*(1), 69–77.

Rahayu Widiarti, I., & Yulviana, R. (2022). Pendampingan Senam Hamil pada Ibu Hami Trimester III untuk Mengurangi Nyeri Punggung di PMB Rosita, S.Tr, Keb Tahun 2021. *Jurnal Kebidanan Terkini (Current*

Midwifery Journal), *1*(2), 153–160. https://doi.org/10.25311/jkt/vol1.iss2.463

Sartika, S., Dewi, S., Panjaitan, M. N., & Ramadhini, D. (2021). l PENGARUH REBUSAN BAYAM MERAH TERHADAP PENINGKATAN KADAR PADANGSIDIMPUAN SELATAN KOTA PADANGSIDIMPUAN TAHUN 2020 Jurnal Kesehatan Ilmiah Indonesia Indonesian Health Scientific Journal. *Jurnal Kesehatan Ilmiah Indonesia Indonesian Health Scientific Journa*, *6*(1), 80–86.

Suryono, C., Ningrum, L., & Dewi, T. R. (2018). Uji Kesukaan dan Organoleptik Terhadap 5 Kemasan Dan Produk Kepulauan Seribu Secara Deskriptif. *Jurnal Pariwisata*, *5*(2), 95–106. https://doi.org/10.31311/par.v5i2.3526

Syafitri, S., Priawantiputri, W., & Dewi, M. (2019). Produk biskuit sumber zat besi berbasis bayam dan tepung sorgum sebagai makanan tambahan ibu hamil. *J. RIset Kesehatan Poltekkes Depkes Bandung*, *11*(2), 13–21. https://juriskes.com/index.php/jrk/article/view/676

Tarigan, N., Sitompul, L., & Zahra, S. (2021). Asupan Energi, Protein, Zat Besi, Asam Folat Dan Status Anemia Ibu Hamil Di Wilayah Kerja Puskesmas Petumbukan. *Wahana Inovasi*, *10*(1), 117–126.

Tunjungsari, P., Fathonah, I. S., & Kes, M. (2019). *Abstrak Biskuit merupakan produk makanan kering yang dibuat dengan cara memanggang adonan yang terdiri dari bahan dasar terigu dengan atau tanpa substitusinya , minyak atau lemak , dengan atau tanpa penambahan bahan makanan lain dan bahan tambahan pangan .*

Ulfa, A. (2017). Hubungan Antara Anemia pada Ibu Hamil d Persalinan Preterm di RSUP M. Djamil. *Hubungan Antara Anemia Pada Ibu Hamil d an Kejadian Persalinan Preterm Di RSUP M. Djamil Padang T Ahun 2013 Persalinan Preterm Di RSUP M. Djamil Aulia*, *6*(3), 559–563. http://jurnal.fk.unand.ac.id

Widji Utomo, A. P., Nurdiati, D. S., & Padmawati, R. S. (2016). Rendahnya asupan zat besi dan kepatuhan mengonsumsi tablet besi berhubungan dengan kejadian anemia pada ibu hamil di Wilayah Kerja Puskesmas I Kembaran, Banyumas. *Jurnal Gizi Dan Dietetik Indonesia (Indonesian Journal of Nutrition and Dietetics)*, *3*(1), 41. https://doi.org/10.21927/ijnd.2015.3(1).41-50