Volume 12 No. 2 Desember 2021

JURNAL ILMU KESEHATAN

ISSN : 2087-1287

STIKES KARYA HUSADA KEDIRI

Jurnal Ilmu Kesehatan
Terbit sebanyak 2 (Dua) kali setahun pada Bulan Juni dan Desember
Berisi tulisan yang diangkat dari hasil penelitian di bidang kesehatan dan artikel kesehatan

Susunan Pengelola Jurnal ILKES STIKES Karya Husada Kediri

Alamat Redaksi : **STIKES Karya Husada Kediri**
Jln. Soekarno Hatta No.7, Kotak Pos 153, Telp. (0354) 399912
Pare- Kediri
Website : www.stikes-khkediri.ac.id
Email: stikes_lppmkh@yahoo.com

Kata Pengantar

Puji syukur kami panjatkan kehadirat Allah SWT karena atas limpahan Rahmat-Nya kepada kami sehingga kami mampu menyelesaikan “Jurnal Ilmu Kesehatan STIKES Karya Husada Kediri” Volume 12 Nomor 2 Desember 2021.

Penerbitan jurnal ini dilakukan dengan tujuan meningkatkan dan mewujudkan Tri Dharma Perguruan Tinggi, sebagai salah satu sarana penyampaian informasi di bidang kesehatan yang diakses oleh segenap lapisan masyarakat sebagai amanat mewujudkan cita-cita bangsa mencerdaskan kehidupan bangsa adalah tanggung jawab keluarga, masyarakat, dan pemerintah, sedangkan STIKES Karya Husada Kediri yang merupakan bagian dari komunitas terpanggil untuk ikut serta menangani dan merampungkan amanat ini, bersama keluarga dan pemerintah.

Di dalam penyelesaian Jurnal Ilmu Kesehatan ini, bimbingan serta dukungan dari banyak pihak telah sangat membantu, untuk itu kami ucapkan rasa hormat dan terima kasih pada semua pihak yang telah memberikan dukungan moril, spiritual, dan materiil dalam membantu penyelesaian Jurnal Ilmu Kesehatan STIKES Karya Husada Kediri.

Kami menyadari bahwa dalam Jurnla Ilmu Kesehatan ini masih jauh dari kesempurnaan, oleh karena itu kami mengharapkan kritik dan saran yang bersifat membangun. Semoga jurnal ini dapat bermanfaat bagi kita semua.

Pare, Desember 2021

Tim Redaksi

Daftar Isi

MORINGA LEAF EXTRACT (MORINGA OLEIFERA) AND HONEY IMPROVE THE LEVELS OF HEMOGLOBIN IN NORVEGICUS RATTUS THAT SUFFER ANEMIA

Ratna Hidayati1[1*], Efa Nur Aini 2[2], Devita Anugrah Anggraini [3]

[1]Program Studi Ners STIKES Karya Husada Kediri, ratnahidayati1971@gmail.com, 082143130079
[2]Program Studi Sarjana Keperawatan STIKES Karya Husada Kediri, aini.alfaba@yahoo.com, 085732230678
[3]Program Studi Sarjana Keperawatan STIKES Karya Husada Kediri, mulia@stikes-khkediri.ac.id, 085732230678

Abstraks

Anemia decreases concentration in learning, decreases physical ability, work productivity, and thinking ability in adolescents. The purpose of this study was to prove the difference in effectiveness of the administration of Moringa oleifera leaf and honey to hemoglobin levels in anemia. This study used the true experimental design with the post test only control group design method, in 21 rats selected through random sampling technique divided into 3, namely 7 moringa leaf extract groups, 7 honey groups, and 7 control groups. The variable measured in this study was the difference in hemoglobin levels after intervention. This study uses the independent statistical test T-test. The results of the study in all 100% treatment groups experienced a significant increase in hemoglobin levels with an average post test score for Moringa leaf extract 18.17 g / dl higher than honey supply with an average score of 17.57 g / dl. Based on the Independent T-test analysis, p-value = 0.016 was obtained so that there were differences in the effectiveness of Moringa leaf extract and honey on hemoglobin levels. While Moringa leaf extract was more effective than honey in the treatment of iron deficiency anemia. It was because Moringa leaves contain iron compounds, vitamin C, and folic acid which can increase hemoglobin levels. Meanwhile, honey contains Fe minerals and is rich in vitamins which can increase the number of erythrocytes/Hb levels

Keywords : *Moringa leaf extract, Honey, Hemoglobin, White Rat*

INTRODUCTION

The pattern of modern society tends to prefer instant and fast food that is considered effective and efficient so as to make life unhealthy. This condition risks becoming a predisposing factor for various health problems due to the lack of nutritional strength in the community, especially iron deficiency anemia. Decreasing iron intake makes hemoglobin levels decrease resulting in anemia. Iron is needed for the formation of hemoglobin which plays a role in the storage and transport of oxygen. Health problems due to nutrition in Indonesia besides that are lack of calories, protein, vitamin A and iodine [1]. Functional anemia is associated with a decrease in the number of red cell mass so that it cannot fulfill the function of erythrocytes to carry sufficient amounts of oxygen to peripheral tissues (decrease in oxygen carrying capacity). Anemia is often suffered by people, both children, adolescents, pregnant women and the elderly [2].

The anemia prevalence data obtained by two billion people in the world or more than 30% of the world population suffer from anemia, mainly

Alamat Korespondensi Penulis: (Arial 8 Bold, Left)
Ratna Hidayati Email :
ratnahidayati1971@gmail.com

Alamat: Jl. Soekarno Hatta No.07 Pare Kediri

due to iron deficiency. The WHO SEARO Regional Office states that 25-40% of young women and 41% of non-pregnant women suffer from mild to severe iron deficiency anemia in Southeast Asia (WHO, 2014). Based on the results of the Indonesian Health Demographic Survey (IDHS) in 2012, it can be concluded that the incidence of anemia in young women shows 75.9% [3].

The incidence of iron deficiency anemia in Indonesia is 57.1% in young women in Riskesdas, 2013, and in Riskesdas 2018 shows the coverage of blood tablet supplementation in girls is 76.2% and 80.9% for tablets [4, 5]. In East Java province, 50-60% of young women suffer from anemia or lack of red blood and the percentage of young women in East Java who get TTD (tablets add blood) for anemia sufferers is 13.7% [6].

Iron deficiency causes developmental disorders that reduce learning concentration, decrease physical ability, work productivity, and thinking ability. In adolescents iron deficiency is very significant because it can cause irritability, poor cognitive function, and decrease psychomotor development [7]. Anemia also causes decreased activity and learning achievement due to lack of concentration [8]. A young woman who is anemic due to iron deficiency is very dangerous if she marries and then becomes pregnant. During pregnancy there is a doubling in the need for iron, the concentration of hemoglobin in the blood cells decreases (anemia gravidarum) which is at risk of bleeding and death [9]. In patients with iron deficiency anemia in general the treatment often given is iron supplements, and is valued by consuming iron-rich foods [10]. Foods that contain lots of iron from animal foods such as meat, fish, while plant foods that contain lots of iron are dark green vegetables, nuts [11]. One of the plants and herbal ingredients that contain iron and can be used as an alternative to overcome the problem of iron deficiency anemia, namely Moringa leaves and honey [12].

Moringa leaf is an alternative and complementary therapy other than pharmacological therapy from herbal ingredients that can be used to overcome iron deficiency anemia which has the highest iron content of 5.49 mg/100 g compared to kangkung 3.2 mg/100 g, red spinach (2.64 mg/100 g), and spinach thorn 2.64 mg/100 g [13]. Other alternative ingredients which contain iron, one of which is honey. Honey contains water, glucose, fructose, sucrose, dextrin, ammonia acid, and fatty acids. Honey also contains important minerals such as iron, calcium, phosphorus, potassium, sodium, magnesium, and copper. Honey is used as a food and drug agent today. In addition some substances in honey that have strong antibiotic properties and help in healing dead tissue, wounds and the tendency of humans to return to nature are increasing with alternative treatments that are safe and do not cause side effects. This study aims to determine the differences in the effectiveness of Moringa leaf extract (moringa oleifera) and honey on hemoglobin levels in anemia (rattus norvegicus) white mice.

METHODS

The research design is True Experimental Design with experimental design post test only control group design. This study has received ethical approval from the Health Research Ethics Commission no. 22/EC/STIKES/KH/01/2019.

The sample in this study was white rats (Rattus Norvegicus) with anemia which were divided into 3 groups, 7 for the treatment group with Moringa leaf extract and 7 for the honey treatment group. And 7 for the control group that met the inclusion criteria. The sampling technique used in this study is simple random sampling. Data collection techniques carried out by observing the total hemoglobin levels in rats carried out including 1). Mouse weight data 2). Data on total hemoglobin levels in rats before and after induction induced by sodium (pre test) 3). Data on total hemoglobin content of rats after given Moringa leaf extract and honey 4). Changes in data in the data or differences in total hemoglobin levels in rats before and after treatment. Pathological treatment is through the administration of NaNO2 which has LD50 for oral mice or oral administration of mice weighing 250 mg / Kg [14].

RESULTS AND DISCUSSION

Table 1 Frequency Distribution of Try Animals Based on Changes in Hemoglobin Levels Before and After Provision of Sodium Nitrite in White Mice (Rattus Norvegicus)

Groups	N	Minimum	Maximum	Mean
Pretest $NaNo_2$	21	16,3 g/dl	18,4 g/dl	17,7 g/dl
Postest $NaNo_2$	21	8,6 g/dl	10,8 g/dl	9,72 g/dl

Source: prime data, 2020

All rats (100%) in the treatment group experienced a decrease in pretest hemoglobin level with a mean score change in decrease in difference of 17.7 g / dl with the upper limit of the highest hemoglobin level 18.4 g / dl, the lower limit of the lowest hemoglobin level 16.3 g / dl, and the mean score of the posttest result is 9.72 mg / dl with an upper limit of 10.8 mg / dl and a lower limit of 8.6 mg / dl.

Table 2. Results of Analysis of the Effect of Sodium Nitrite on Hemoglobin Levels of White Mice (Rattus Norvegicus) in Chemistry Laboratories STIKES Karya Husada Kediri

	N	Mean	Std
Pretest $NaNo_2$	7	17.7095	.54946
Postest $NaNo_2$	7	9.71901	.67795
Uji Paired Sample Test			P-Value = 0,000 (α=0,05)

Source: prime data, 2020

Table 2 shows that hemoglobin levels in white rats before administration of sodium nitrite have a mean score of 17.7 g / dl after sodium nitrite is given a decrease in hemoglobin levels with a mean score of 9.7 g / dl.

The results of the analysis using the Paired Samples Test test are known to be p- value = 0,000, it can be concluded that there is an effect of giving sodium nitrite to hemoglobin levels in white rats.

Table 3 Frequency Distribution of Try Animals Based on Changes in Hemoglobin Levels Before and After Giving Moringa Leaves Extract in Treatment Groups in Chemistry Laboratories STIKES Karya Husada Kediri

Groups	N	Minimum	Maximum	Mean
Pretest Moringa Leaf Extract	7	8,6 g/dl	10,50 g/dl	9,44 g/dl
Postest Moringa Leaf Extract	7	17,9 g/dl	18,6 g/dl	18,17 g/dl

Source: prime data, 2020

It is known that all rats (100%) in the treatment group given Moringa leaf extract changed, namely an increase in hemoglobin levels with a mean score change in difference of 9.44 g / dl with the upper limit of the highest hemoglobin level 10.50 g / dl, lower limit levels the lowest hemoglobin was

8.6 g / dl, and the mean score of posttest results was 18.17 mg / dl with an upper limit of 18.6 g / dl and a lower limit of 17.9 g / dl.

Table 4. Frequency Distribution of Try Animals Based on Changes in Hemoglobin Levels Before and After Giving Honey in the Treatment Group at the Chemistry Laboratory STIKES Karya Husada Kediri

Groups	N	Minimum	Maximum	Mean
Pretest Honey	7	9,10 g/dl	10,80 g/dl	9,79 g/dl
Postest Honey	7	16,9 g/dl	18,3 g/dl	17,57 g/dl

Source: prime data, 2020

It is known that all rats (100%) in the treatment group giving honey experienced a change that was an increase in hemoglobin levels with a mean score difference in change by the mean score pretest 9.79 g/dl with the upper limit of the highest hemoglobin level 10.80 g/dl, lower limit the lowest hemoglobin level is 9.10 g/dl, and the mean score of the posttest result is 17.57 g/dl with an upper limit of 16.9 g/dl and a lower limit of 18.30 g/dl.

Table 5. Frequency distributions of experimental animals based on changes in hemoglobin levels in the control group at the chemical laboratory STIKES Karya Husada Kediri

Groups	N	Minimum	Maximum	Mean
Pretest Control	7	8,70 g/dl	10,70 g/dl	9,93 g/dl
Postest Control	7	12,20 g/dl	13,10 g/dl	12,76 g/dl

Source: prime data, 2020

It is known that all rats (100%) in the control group experienced a change, namely an increase in hemoglobin levels but not significant with a mean score difference in difference as the mean score of pretest 9.93 g/dl with the upper limit of the highest hemoglobin level 10.70 g/dl, limit below the lowest hemoglobin level of 8.70 g/dl, and the mean score of the posttest result is 12.76 g/dl with an upper limit of 13.10 g/dl and a lower limit of 12.20 g/dl.

Table 6. Results of Analysis of the Differences in the Effectiveness of Giving Moringa and Honey Leaf Extracts on Hemoglobin Levels in White Mice in the Laboratory Kimia STIKES Karya Husada Kediri

	N	Mean	Std
Moringa Leaf Extract	7	18.1714	.28115
Honey	7	17.5714	.67795
Uji independent Sample Test			P-Value = 0,016 (α=0,05)

Source: prime data, 2020

Table 6 shows that hemoglobin levels in white rats with Moringa leaf extract have a mean score of 18.17 g / dl higher than the hemoglobin level in white rats by giving honey which has a mean score of 17.57 g / dl. The results of the analysis show that the value of 0.016 it can be concluded that there are differences in the effectiveness of the administration of Moringa leaf extract and honey to hemoglobin levels in anemic white rats.

Hemoglobin levels in white rats with Moringa leaf extract had a mean posttest score of 18.17 g/dl higher than hemoglobin levels in white rats with honey which had a mean score of posttest 17.57 g/dl on day 14. This is in accordance with the results of previous studies on the magnitude of the content in the compounds of each intervention due to the higher increase in hemoglobin levels in the intervention of Moringa leaf extract which contains Vitamin C (51.7 mg/100 grams of fresh Moringa leaves), Folic Acid (40 µ /100 grams of fresh Moringa leaves), and Iron (28.2 mg/100 grams of fresh Moringa leaves) which are higher than honey containing Iron (0.06-1.5 mg/100 gr honey, Folic Acid vitamin B9 2,25 gr/100 gr honey, Vitamin C 4 mg/100 gr honey, where the content has a role to increase hemoglobin levels in the blood.

Based on the explanation of the results of the above research it can be seen that Moringa leaf

extract (moringa oleifera) is more effectively used as an alternative cure for iron deficiency anemia than honey. This can be seen from the line diagram of each intervention. From the comparison of the high increase in hemoglobin content of Moringa leaf extract, 0.6 g/dl is higher than honey. Aside from being effective in healing iron deficiency anemia, Moringa leaf extract is also easier to reach than honey. As we know that the availability of Moringa leaf extract is more widely available in the community than honey which is relatively more expensive. This is because Moringa leaves are plants that are rich in iron, protein, and vitamin C [15]. High iron content is reported as a nutrient needed in the process of hematopoeisis in the spinal cord, protein and amino acids are hematopoietic growth factors, and the content of vitamin C in Moringa leaves helps absorb iron in the body [16, 17]. The leaves are rich in minerals, vitamins, and other important phytochemicals. Extracts from the leaves are not only useful for increasing hemoglobin levels, but are also used to treat malnutrition, increase breast milk in nursing mothers, potential antioxidants, anticancer agents, anti-inflammatory agents, antidiabetic and antimicrobial agents [18]. The content of micro nutrients as much as 7 times the vitamin C of oranges, 4 times of vitamin A carrots, 4 cups of calcium milk, 3 times potassium of bananas, and protein in 2 yogurt. Another benefit of bioactive compounds in Moringa is the nature of Moringa leaves which contain high antioxidant and antimicrobial properties [19]. The imbalance of eating patterns in consuming foods containing iron with needs in the body and disorders of iron absorption in the intestine due to inflammatory infections, neoplasms in gastric, duedonum and jejenum causes iron deficiency anemia. Lack of iron has an effect on the formation of hemoglobin, so that its concentration in red blood cells decreases. This will result in inadequate transport of oxygen throughout the body's tissues. Therefore, iron deficiency anemia requires substances that can form hemoglobin. Vitamin C functions to reduce ferric iron (Fe3 +) to ferro (Fe2 +) in the small intestine so that it is easily absorbed. Vitamin C also inhibits the formation of hemosiderin which is difficult to mobilize to free iron if needed by the body.

Inside the bone marrow iron is used to form hemoglobin. Bone marrow requires precursors such as iron, vitamin C, vitamin B12, cobalt and hormones for the formation of red blood cells and hemoglobin. Iron (Fe) and vitamin C are factors associated with the formation of red blood cells and hemoglobin in the blood. Honey contains vitamin C, vitamin A, iron (Fe), and vitamin B12 which functions as the formation of red blood cells and hemoglobin [20]. Honey contains many substances forming erythrocytes, for example mineral and rich in vitamins. In addition, Fe in honey can increase the amount of erythrocytes in human blood so that it can increase Hb levels [21]. Iron (Fe) is a very important micromineral in the body because it can function as a form of red blood cells. Iron content can synthesize heme formation which can spur Hemoglobin levels [22]. Vitamin C plays an important role in dissolving iron. Vitamin C forms soluble ascorbate iron complex and is easily absorbed by human organs [23]. Folic acid, also known as vitamin B9, is important for a variety of body functions ranging from nucleotide biosynthesis to DNA synthesis, DNA repair and DNA methylation and acts as a cofactor in biological reactions involving folate. The body needs it for the formation of new cells [24, 25]. The presence of folic acid is also important for the formation of new cells, so that it can affect Fe in

the blood and is expected to increase hemoglobin [22]. Moringa leaf extract (moringa oleifera) and honey effectively increase hemoglobin levels. But moringa leaf extract (moringa oleifera) is more effective than honey to increase hemoglobin levels in anemia white rats (rattus norvegicus). Moringa leaf extract (moringa oleifera) and honey effectively increase hemoglobin levels. But moringa leaf extract (moringa oleifera) is more effective than honey to increase hemoglobin levels in anemia white rats (rattus norvegicus).

CONCLUSIONS AND SUGGESTION

Moringa leaf extract and honey have been shown to increase erythrocyte or hemoglobin levels in anemic rats. On average, Moringa leaf extract was more effective at increasing hemoglobin levels than honey because Moringa leaves contain iron, vitamin C, and folic acid compounds, while honey contains Fe minerals and was rich in vitamins. Given the benefits of both, it is suggested both types of food / drink is consumed by pregnant women in order to avoid anemia.

REFERENCES

[1]. Kusumawardani, E. Waspada Penyakit Darah Mengintai Anda. *Hanggar Kreator*. Yogyakarta. 2010.

[2]. Freeman, A. M., & Morando, D. W. *Anemia, Screening*. *Stat Pearls.* 2018.

[3]. SDKI. Laporan Pendahuluan Survey Demografi dan Kesehatan Indonesia 2017. In *Survey Demografi dan Kesehatan Indonesia 2017*

[4]. Riskesdas. Hasil Riset Kesehatan Dasar (Riskesdas) 2013. *Badan Penelitian Dan Pengembangan Kesehatan Kementerian Kesehatan RI.Jakarta.* 2013

[5]. _____. Hasil Riset Kesehatan Dasar (Riskesdas) 2018. *Badan Penelitian Dan Pengembangan Kesehatan Kementerian Kesehatan RI.Jakarta.* 2018

[6]. Kemenkes RI. Pedoman dan Standar Etik Penelitian dan Pengembangan Kesehatan Nasional (PSEPPKN). *Ketua Komisi Etik Penelitian dan Pengembangan Kesehatan Nasional Jakarta*. 2017.

[7]. Devita Sihotang, S., & Febriany, N. Pengetahuan Dan Sikap Remaja Puteri Tentang Anemia Defisiensi Besi Di Sma Negeri 15 Medan. *Jurnal Keperawatan Holistik*. 2012. *1*(2), 40–45.

[8]. Indartanti, D., & Kartini, A. Hubungan Status Gizi Dengan Kejadian Anemia Pada Remaja Putri. *Journal of Nutrition College.* 2014. *3*(2), 310–316.

[9]. Qudsiah, S. C., Djarot, H. S., & Nurjanah, S. Jurnal Kebidanan. *Jurnal Kebidanan*, 2018.*2*(1), 127–134

[10]. A., K.. Iron deficiency and iron substitution in women of reproductive age.2011.

[11]. Tahir, M., Hikmah, N., & Rahmawati, R. Analisis Kandungan Vitamin C dan β-Karoten Dalam Daun Kelor (Moringa oleifra Lam.) Dengan Metode Spektrofotometri UV–VIS. *Jurnal Fitofarmaka Indonesia*, 2016. *3*(1), 135–140.

[12]. Bhalchandra, Waykar. Et All. Ameliorative Role Of Bee Honey And Royal Jelly Against Cisplatin Induced Alteration In Hematological Parameters In Male Wister Albino Rat. *International Journal Of Pharmacy And Pharmaceutical Sciences.* 2018.10 (4)

[13]. Sianturi, S. Et All.. Pengaruh Buah Terong Belanda (Solanum Betaceum Cav.) Terhadap Jumlah Eritrosit Dan Kadar

Hemoglobin Mencit Jantan (Mus Musculus L.) Anemia Strain Ddw Melalui Induksi Natrium Nitrit (Nano2). *Saintia Biologi*.2013. 1(2):49-54.

[14]. Nasution, S. B.. Analisa Kadar Besi (Fe) Pada Bayam Hijau Sesudah Perebusan Dengan Masa Simpan 1 Jam 3 Jam dan 5 Jam. *Jurnal Ilmiah Pannmed*, 2016. *11*(1), 1–3.

[15]. Miftahul Jannah, Djoko Trihadi Lukmono Subagyo, Taufiqurrachman Nasihun. The Effect of Moringa Oleifera. Lam Leaf Extract on Bcl2 and Bax Expression in Paracetamol-induced Renal Tubular Apoptosis in Rats. *Sains Medika Journal of Medicine and Health*. 2017. Vol 8, No 2

[16]. Busani, M., Patrick, J. M., Arnold, H., & Voster, M.. Nutritional characterization of Moringa (Moringa oleifera Lam.) leaves. *African Journal of Biotechnology*,2016. *10*(60), 12925–12933.

[17]. Razis, A. F. A., Ibrahim, M. D., & Kntayya, S. B.. Health benefits of Moringa oleifera. *Asian Pacific Journal of Cancer Prevention*. Asian Pacific Organization for Cancer Prevention.2014

[18]. Gopalakrishnan, L., Doriya, K., & Kumar, D. S.. Moringa oleifera: A review on nutritive importance and its medicinal application. *Food Science and Human Wellness*,2016. *5*(2), 49–56.

[19]. Aminah, S., Ramdhan, T., & Yanis, M.. Kandungan Nut risi dan Sifat Fungsional Tanam an Kelor (M oringa oleifera). *Buletin Pertanian Perkotaan*,2015. *5*(30), 35–44.

[20]. Wulandari, P. Honey to Prevent Iron Deficiency Anemia in Pregnancy. *J Majority*, 2015. *4*(3), 90–95.

[21]. Ristyaning, P., & L, I. M. A. S.. Madu sebagai Peningkat Kadar Hemoglobin pada Remaja Putri yang Mengalami Anemia Defisiensi Besi Honey to Increases Haemoglobin Concentration in Girls Who Experience Iron Deficiency Anemia. *Majority*, 2016.*5*(1), 49–53.

[22]. Islamiyah, Nur.. Pengaruh Madu Terhadap Kadar Hemoglobin Remaja Putri Kelas X Yang Mengalami Anemia Di Smkn 01 Mempawah Hilir. *Jurnal ProNers*.2017. Vol 3 no 1.

[23]. Verarica Silalahio, Evawany Aritonang, Taufik Ashar.. Potensi Pendidikan Gizi Dalam Meningkatkan Asupan Gizi Pada Remaja Putri Yang Anemia Di Kota Medan*. Jurnal Kesehatan Masyarakat (Kemas).* 2016. *11 (2)*

[24]. Susanti, Y., Briawan, D., & Martianto, D.. Suplementasi Besi Mingguan Meningkatkan Hemoglobin. *J. Gizi Pangan 11(1):27-34 SUPLEMENTASI*, 2026. *11*(1), 28.

[25]. Tangkilisan, H. A., & Rumbajan, D. Defisiensi Asam Folat. *Sari Pediatri*, 2017. *4*(1), 21.