

Effect of Red Betel Leaves on Lowering Blood Sugar Levels: Literature Review

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ABSTRACT

Diabetes Mellitus has a high prevalence value so it is called one of the deadly diseases in the world. To reduce the high prevalence rate, one of the non-pharmacological therapies is applied, namely by decoction of red betel leaves. The purpose of writing this scientific article is to learn more about the therapeutic use of red betel leaf decoction therapy to lower blood sugar levels in people with Diabetes Mellitus based on the *literature review*. The method used in this study is a literature review search of 10 articles on the effect of betel leaves on blood sugar reduction. The sample collection technique in this study is by accessing journals through *Google Scholar*. The subjects in this literature study are all articles that meet the inclusion criteria. The results of *this literature review* show the effect of red betel leaves on the reduction of blood sugar levels measured by the PICO analysis method.

Keywords: Betel Leaf; Diabetes Mellitus; Blood Sugar Levels

INTRODUCTION

Diabetes Mellitus is a chronic condition that occurs when the pancreas cannot produce enough insulin or the body cannot use insulin effectively. According to the International Diabetes Federation (IDF, 2015), the global prevalence rate of DM sufferers was 8.3% of the world's population in 2014 and increased to 387 million cases in 2014 (Retnaningtyas, 2015). Seventh, a total of DM patients. 8.5 million patients to China, India and the United States, Brazil, Russia and Mexico. The incidence of DM increased from 1.1% in 2007 to 2.1% in 2013 with a population of 250 million people according to the 2014 Basic Health Survey (RISKESDAS)

Type II diabetes is a condition in which the body does not produce enough insulin, which leads to high blood sugar levels. This inability leads to an increase in blood sugar, known as hyperglycemia.

Ediati Sasmita (2017) reported that herbal ingredients contain a lot of flavonoids that are antioxidants, one of which is red betel leaf (*Piper crocatum*). Betel leaves can be used as medicine by eating the leaves or extracting them first. The antioxidant compounds contained in betel leaf extract are able to neutralize excess free radicals in the β pancreatic cells by donating electrons

or breaking the chain reaction and stabilizing free radicals.

Red betel leaves are herbal plants that grow on fences or trees. Chemicals found in beetroot include alkaloids, flavonoids, saponins, tannins and essential oils. Alkaloid compounds and flavonoids have a hypoglycemic effect or lower blood sugar (Eliza Arman, Harmawati, 2020). The antioxidant content in beet leaves (*Piper crocatum*) has been proven to reduce blood sugar levels, but there is no certainty about the exact concentration of beet leaves to lower blood sugar levels. Until now, the use of betel leaves in medicine is only based on empirical evidence and user experience (Eliza Arman, Harmawati, 2020)

METHOD

The design of this study uses a literature study based on a literature review and 10 nursing journals that have been reviewed. The literature study method is a series of activities related to the method of collecting library data, reading and taking notes, and drawing the study flow if necessary. The research design of this case study was used to study the problem of blood sugar levels in diabetics by giving red betel leaf decoction.

RESULTS

Table 1.1 Database Results

Yes	Author	Year	Volume	Title	Method	Results	Link
1.	Devi Listiana, Effendi, Bela Indriati	2018	Vol. 7, No. 2	Effectiveness of Red Betel Leaf Brewing Water Against Decrease in Blood Sugar Levels in Diabetes Mellitus Patients in the Working Area of the Saling	Q: The population of this study is all Diabetes Mellitus patients at the Saling Health Center, Lawang Regency in July-August 2018 totaling 16 people, sampling was carried out by accidental sampling. (Devi Listiana, n.d.) I: In red betel leaves there are tannins in which there are flavonoids and alkaloids which are active	Based on the results of the Wilcoxon Sign Rank test, the value of $Z = -3.517$ with $p = 0.000 < 0.05$ is significant. So the two variables have different medians, there is a difference in the GDS levels of Diabetes Mellitus patients before and after the administration of red betel leaf boiled water. In conclusion, red betel leaf decoction is significantly effective in	Google Scholar http://jurnal.umb.ac.id/index.php/keperawatan/article/view/418

				Health Center 2018	compounds that have hypoglycemic activity, these compounds can help the regeneration of pancreatic cells in producing insulin.	reducing blood sugar levels in patients with diabetes mellitus.	
					C: No Comparison, By way of 6 red betel leaves boiled with 300 ml of water for 15 minutes, until 100 ml remains then drunk 2 times a day after meals		
2.	Nita Yunianti Ratnasari, Rimbaini Budi Nurhana	2019	Vol. 8, No. 2	Giving Red Betel Leaf Decoction Effectively Lowers Blood Sugar Levels in Diabetes Mellitus	Q: This research was conducted from March to May 2020 in Wonogiri. The researcher took 2 subjects or respondents, with the criteria of men and women with age criteria over 40 years old who suffered from DM, because the case study approach chosen in this case study is a descriptive approach with the Case Study strategy. (Ratnasari et al., 2019)	The results obtained are in accordance with the predetermined outcome criteria where red betel decoction leaves are proven to overcome the ineffectiveness of peripheral tissues.	Google Scholar https://jurnal.akpe.orgshwng.ac.id/index.php/kep/article/view/46
					I: The data validity test method used by the researcher is to take new data (here and now) using appropriate assessment instruments so as to produce data with high validity if it has carried out action procedures in accordance with the Standard Operating Procedure (SOP). The researcher used nurses, clients, clients' families, and documentation sources as sources of information.		
					C: There is no comparison, nursing measures have been taken from the Nursing Outcomes Classification (NOC) (2013) intervention, which is to encourage patients to give red betel leaf decoction, that the administration of red betel leaf decoction can help stabilize insulin deficiency so that it can		

					increase peripheral tissue perfusion		
3.	Fermata Sari, Ajeng Ayu Intan Karunia	2020	Vol. 9, No. 1	Efforts to Lower Blood Glucose Levels with Red Betel Leaf Stew in Diabetic Mellitus Patients	Q: Literature review studies that use literature sources in the form of books, scientific articles, especially published ones. By searching through Google Scholar, Researchgate, and Microsoft Academy databases from 2016-2020. (Fermata Sari et al., 2020) I: This study is focused on the results of research from 5 articles that found that efforts to reduce blood glucose levels with red betel leaf decoction in patients with Diabetes Mellitus. C: Nita Yuniarti Ratnasari, et al (2019) stated the results of the study obtained after patients were given red betel leaf decoction for approximately 15 minutes at a set time of 3x24 hours.	The results of the research obtained are that the administration of red betel leaf decoction if done regularly, properly and correctly can reduce blood glucose levels in patients with Diabetes Mellitus.	Google Scholar https://ojs.akperkesdam2sri.wijaya.ac.id/index.php/akper/article/view/188
4.	Sri Mindayani, Wardhan Susanti, Neli Agustini, Jawa Tina	2019	Vol.4, No. 2	Effectiveness of Red Betel Leaf Stew (Piper Crocatum) Against Lowering Blood Sugar Levels in Diabetics Mellitus	Q: This research was conducted in the working area of the Padang Pasir Health Center. With a sample of 10 people. (Mindayani et al., 2020) I: The research was carried out from April to August 2019. The sampling technique was carried out by purposive sampling of 10 research subjects. C: There is no comparison. The preparation of red betel leaf decoction as many as 3 pieces is taken which is quite old and not too young, washed clean, then cut into small pieces on a cutting board. Boiled together with 600 milliliters of water until the volume becomes 150 milliliters. Red betel leaf	Based on this study, it was found that the effect of red betel nut boiled water on the post prandial blood glucose of normal people looked inconsistent. In 3 treatments, the effect of boiled water on blood glucose was seen on the second day, while the first and third days there was no effect.	Google Scholar https://ojs2.kesdammedan.ac.id/index.php/jurhesti/article/view/145

					decoction water is drunk 3 times/day each 50 milliliters according to it. Based on the calculations above, the researchers used 2 different doses, namely 100 milliliters and 125 milliliters for three times a day.		
5.	Dindi Paizer, Dwi Apriani, Ria Dila Syahfitri	2022	Vol. 9, No. 1	Effect of Red Betel Leaf Extract (Piper Crocatum) on Decreased Blood Sugar Levels	<p>P: This research consists of articles or research results published online between 2015-2020. The article used must have keywords used by the researcher, namely Red Bethel Leaf Decoction Water, Diabetes Mellitus, Blood Sugar Levels or have at least two keywords that have been determined by the researcher. (Paizer et al., n.d.)</p> <p>I: According to Hermawati (2017), the compounds found in red betel leaves (Piper Crocatum) have hypoglycemic activity or a decrease in blood glucose, red betel leaves (Piper Crocatum) can be combined with other herbs or used alone</p> <p>C: Boil 3 red betel leaves with 3 glasses of water to half a glass, after cooling the boiled water is drunk 3 times a day before meals, each drink half a glass</p>	Based on the results of the research conducted by Dindi et al, it was found that the administration of red betel leaf extract can reduce blood glucose levels in patients with Diabetes Mellitus, with a dose of 0.078 gr/20 gr of body weight is an effective dose range	Google Scholar https://ojs.ukb.ac.id/index.php/Ik/article/download/495/344
6.	Sigh, my dear, my voice	2019	Vol. 12, No. 2	Red betel leaf decoction has an effect on the decrease Blood Glucose in People with Type II Diabetes Mellitus	<p>Q: The frequency of research respondents based on the maximum age is 51-60 years old, namely there are 10 people (55.6%), then the age > 60 years there are 5 people (27.8%), the age between 41-50 years there are 2 people (11.1%), the distribution of the least age < 40 years is only 1 person (5.9%). (Scott, n.d.)</p> <p>I: Red betel leaves contain tannins, alkaloids, and</p>	Based on the results of this study, it was found that there was an effect of giving red betel leaf decoction on reducing blood sugar in patients with type II DM in Batupuro Village, Sampang, Madura (sig. = 0.000)	Google Scholar https://jurnal.usahidsolo.ac.id/index.php/IJKI/article/view/369

					polyphenols that have activity to lower blood sugar levels		
					C: no comparison with other journals		
7.	Herviza wulandari, Rindy Arabella, Ningrum Sri Sukma Ayu	2022	Vol.13, No. 1	Effectiveness of Red Betel Leaf Stew Water on Reducing Blood Sugar Levels in Patients with Diabetes Mellitus	Q: The population in this study is elderly people who have a history of Diabetes Mellitus at the H. Syahrudin Clinic in January-February 2021 which amounted to 20 people with the number of samples in this study being the entire sample. Data analysis with chi square test. (Herviza wulandari, n.d.) I: The pre-experiment design with the sampling technique is a total sampling with a total of 20 samples, using a questionnaire filled out directly by the respondents. Data analysis with chi square test	The results of the chi square test were obtained = 0.044<0.05 which means significant. So the two variables have different medians, there is a difference in the GDS levels of Diabetes Mellitus patients before and after the administration of red betel leaf boiling water	Google Scholar https://www.e-jurnal.angerahbitan.ac.id/index.php/ck/article/view/153
					C: no comparison		
8.	Yesi Septina Wati, Ririn Muthia Zukhra, Ika Permana sari	2020	Vol. 9, No. 2	Consumption of Red Betel Leaf Stew is Effective in Changing Blood Sugar Levels in People with Diabetes Mellitus	Q: The study sample is all Diabetes Mellitus patients in Rw-26 Rejosari Village, Tenayan Raya District, Pekanbaru City, namely 30 people. (Yesi Septina Wati, n.d.) I: The research method used is Nonrandomized pretest-posttest with control group, namely this study uses two experimental and control groups.	The results obtained were that there was an effect of red betel leaf decoction on changes in blood sugar levels with a value of 0.001 (p<0.005). Red betel leaves can be used as one of the non-pharmacological therapies in the treatment of diabetes mellitus.	Google Scholar https://jurnal.ikta.ac.id/kebidanan/article/view/729
					C: The way to make it is by boiling 3 red betel leaves with 3 cups of water until it becomes 1 1/2 cups of water. After cooling, the boiled water is drunk three times a day before meals, 1 drink 1/2 glass		
9.	Siska Sakti Angraini	2020	Vol. 11, No. 2	Effect of Red Betel Leaves on Blood Sugar	Q: The sample in this study is Type II DM patients who routinely conduct monthly routine	Based on the statistical test, a p value = 0.003 (<0.05) was obtained, so it can be concluded that	Google Scholar https://jurnal.syed

Ibrahim, Siti Aisyah Nur	Levels in People with Type II Diabetes Mellitus	examinations in 2019 using the purposive sampling technique with a sample number of 16 people divided into 8 intervention groups and 8 control groups. Data collection was done using observation sheets and glucose tests to measure blood sugar levels. (Sakti Angraini et al., n.d.)	there is an effect of red betel leaves on blood sugar levels in patients with type II diabetes mellitus	zasaintik a.ac.id/in dex.php/ medika/a rticle/vie w/775		
10.	Anita Syarifah, Shinta Dewi Kasih Brata, Muham mad Irwan	2023 Vol. 5, No. 3	The Effectiveness of Kersen Leaf and Red Betel Leaf Decoction on Lowering Blood Sugar Levels in Type II Dm Patients in the Working Area of the Simpang Tiga Health Center, Pekanbaru City	P: The sample was determined by the purposive sampling method of 30 respondents with 15 intervention groups of kersen leaf decoction and 15 intervention groups of red betel leaf decoction intervention I: This study used a quasy-experimental design with a pre-post-test group design. Data collection was carried out using observation sheets. The analysis was carried out by univariate analysis and bivariate analysis using the Mann-Whitney T test. (ANITA SYARIFAH et al., 2023) C: no comparison with other journals	The results of the statistical test obtained in this study were with a p value of 0.001 (Pvalue < 0.005), so it can be concluded that there is a difference in the effectiveness of giving red betel leaf decoction and kersen leaf decoction to changes in blood sugar levels in patients with Type II Diabetes Mellitus.	Google Scholar https://ju rnal.ensik lopediaku .org/ojs- 2.4.8- 3/index.p hp/ensikl opedia/ar ticle/vie w/1644

DISCUSSION

Based on the results of the PICO analysis from 10 homogeneous journals on red betel leaves on the reduction of blood sugar levels, it is proven that all journals have the same results, namely the influence of red betel leaves on the reduction of blood sugar levels.

The results of this study are the same as those conducted by Siska, et al. (2020) on the effect of red betel leaves on blood sugar levels in patients with type II diabetes mellitus, where blood sugar levels were obtained when carried out on days 1 to 7 after the administration of red betel leaf decoction and after 6 days in the intervention group and blood sugar levels were also measured in the control group.

From the results of the study, it was found that the effect of red betel leaves can have an effect with a feeding that lasts several days, it cannot be obtained with just one administration.

CONCLUSION

Based on the results of this analysis, it can be concluded: Research results of red betel leaves have an effect on lowering blood sugar levels, Red betel leaves can be used as one of the non-pharmacological therapies in the treatment of diabetes mellitus. The results of this study show that the red betel leaves used cannot have an effect if only given in one administration

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