ARTIKEL PENELITIAN

The Effect Of Administration Of Salam Leaf Extract (*Eugenia Polyantha*) On Hdl And Ldl Colesterol Levels In Prolanis Patients At Iman Clinic

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Abstract: Lipids are a component of micro-substance molecules in the body that function as structural components in cell membranes and can also be used as a source of energy for the body. Lipid levels in the blood can be measured by examining the total cholesterol, triglycerides, HDL, LDL and VLDL. This study analyzed the effect of bay leaf extract on HDL and LDL cholesterol levels in Prolanis patients at Iman clinic. Its an experimental pretest-posttest study using 38 elderly (>45 years) divided into the experimental and control group. The results showed that the average effect on HDL cholesterol levels was 40.37 mg/dL pretest and 40.11 mg/dL posttest, LDL cholesterol levels found an average value of 119.58 mg/dL pretest and posttest 130.63 mg/dL in the experimental group, whereas in the control group it was found that the effect of giving the extract on HDL and LDL cholesterol levels was not significant. The significance value based on the Wilcoxon statistical test was 0.461 for HDL cholesterol levels and 0.953 for LDL cholesterol levels. Conclusion: There is no effect of bay leaf extract (*Eugenia Polyantha*) on HDL and LDL cholesterol levels in prolanis patients at the Iman clinic.
Keywords: Lipid, Bay Leaf, HDL and LDL Cholesterol Levels

Pengaruh Pemberian Ekstrak Daun Salam (*Eugenia Polyantha*) Terhadap Kadar Kolesterol Hdl Dan Ldl Pasien Prolanis Di Klinik Iman

Abstrak: Lipid adalah suatu komponen molekul zat mikro yang ada di dalam tubuh, berfungsi sebagai komponen struktural dalam membran sel dan sebagai sumber energi bagi tubuh. Kadar lipid di darah dapat diukur dengan pemeriksaan profil lipid darah, terdiri dari kolesterol total, trigliserida, *High Density Lipoprotein* (HDL), *Low Density Lipoprotein* (LDL) dan *Very Low Density Lipoprotein* (VLDL). Penelitian ini menganalisa pengaruh ekstrak daun salam terhadap kadar kolesterol HDL dan LDL pasien Prolanis di klinik Iman. Penelitian ini menggunakan studi eksperimen dengan metode pretest dan postest. Sampel yang

digunakan sebanyak 38 orang lansia (>45 tahun) yang dibagi atas kelompok eksperimen dan kelompok kontrol. Hasil penelitian ini menunjukkan bahwa rata-rata pengaruh terhadap kadar kolesterol HDL *pretest* 40,37 mg/dL dan *posttest* 40,11 mg/dL, pada kadar kolesterol LDL dijumpai rata-rata nilai sebesar *pretest* 119,58 mg/dL dan *posttest* 130,63 mg/dL pada kelompok eksperimen, sedangkan pada kelompok kontrol dijumpai pengaruh pemeberian ekstrak terhdap kadar kolesterol HDL dan LDL yang tidak signifikan. Nilai signifikansi berdasarkan uji statistik *Wilcoxon* sebesar 0,461 pada kadar kolesterol HDL dan 0,953 pada kadar kolesterol LDL. Kesimpulan: Tidak terdapat pengaruh ekstrak daun salam (*Eugenia Polyantha*) terhadap kadar kolesterol HDL dan LDL pada pseien prolanis di klinik Iman.

Kata Kunci: Lipid, Daun Salam, Kadar Kolesterol HDL dan LDL

INTRODUCTION

Lipids are a component of micro-substance molecules in the body, lipids function as structural components in cell membranes and the results of lipid metabolism can also be used as a source of energy for the body. Lipid levels in the blood can be measured by examining blood lipid profiles, consisting of total cholesterol, triglycerides, High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL) and Very Low Density Lipoprotein (VLDL).

Hypercholesterolemia is an increase in total and LDL cholesterol levels as a result of not being compensated for by HDL. A condition of abnormal lipids in the blood characterized by decreased levels of HDL and increased levels of LDL, triglycerides and total cholesterol is called dyslipidemia. Dyslipidemia is one of the risk factors that will cause the accumulation or formation of plaque in the blood vessels (atherosclerosis) which leads to cardiovascular disease such as myocardial infarction, cerebral infarction, and the worst complications can result in death.[1,2]

Based on data from the World Health Organization (WHO) in 2019 cardiovascular disease is the number one cause of death in the world. It is estimated that the mortality rate is around 17.9 million people which represents 32% of deaths in the world.[3] Based on Basic Health Research (RISKESDAS) data for 2018, the prevalence of cardiovascular disease cases in Indonesia is 1.5%, with the highest cases in North Kalimantan Province

(2.2%) and the lowest in East Nusa Tenggara Province (0.7%) and then followed by Aceh (1.6%), West Sumatra (1.6%), DKI Jakarta (1.9%), West Java (1.6%), Central Java (1.6%), Kalimantan East (1.9%), North Sulawesi (1.8%), Central Sulawesi (1.9%), DIY (2%), and in North Sumatra province (1.33%) with prevalence in urban areas (1 .40%) and rural (1.25%).[4]

It is known that this prevalence increases with increasing age. In 2020 Coronary Heart Disease (CHD) is one of the cardiovascular diseases which is the biggest first cause of death, around 36% of all deaths.[4]

The incidence of dyslipidemia based on Pathobiological Determinants of Atherosclerosis in Youth (PDAY) in 2018, in Indonesia the prevalence of increasing total cholesterol, triglycerides, LDL and decreasing HDL regularly is 43%, 26% and 83%, and 23%.[5]

Cholesterol is defined as a fatty substance found in the blood which is produced in the liver with important functions for the body's needs. There are two types of cholesterol produced, namely HDL and LDL cholesterol. Excessive amounts of LDL cholesterol in the blood will settle on the walls of blood vessels and form clots which can lead to blockage of blood vessels. While HDL cholesterol has the function of cleaning blood vessels from excessive LDL cholesterol.[6]

There are several ways to treat HDL and LDL cholesterol in the blood, namely pharmacological and non-pharmacological.[7] Pharmacological treatment can be treated with cholesterol-lowering drugs, while non-pharmacological treatment can be done by consuming herbal medicines or natural ingredients such as plant extracts.[7]

One of the traditional plants that can be used is bay leaf (Eugenia polyantha). Based on the results of research on the Biological Activity and Phytochemical Analysis of Three Indonesian Medicinal Plants, Eugenia polyantha contains tannins, gallates, galocatechins, flavonoids, saponins, and essential oils (Sesquiterpenes).[8] Flavonoid compounds have properties as anti-

oxidants which can prevent lipid peroxidation.[9] On the other hand, alkoloid compounds in bay leaves can also inhibit the activity of the lipase pranaeas enzyme. Saponins can also help lower cholesterol levels and reduce fat accumulation in blood vessels.[10] Bay leaf extract and bay leaf decoction have been proven by previous research that bay leaf extract and bay leaf decoction can prevent the rate of decrease in HDL cholesterol levels.[11]

Based on the results of research in the Journal of Nutrition College, Volume 3, explained that the flavonoid content in bay leaf extract is higher than bay leaf decoction. This is because extraction can remove unwanted compounds so that more of the desired compounds or nutrients are obtained.[11] Based on the description above, researchers are interested in testing the effectiveness of bay leaves (Eugenia polyantha) on HDL- and LDL-cholesterol levels in prolanis patients at the iman clinic.

METHODS

This type of research is quantitative research, using an experimental design. The research design used was a non-equivalent control group design, i.e. a research conducted by examining the pre-test (01) in both groups, and followed by intervention (X) in the experimental group.

The flow of this study was the group used by the research group (experimental group), namely the pre-test (01) then continued with the treatment (x), namely by giving bay leaf extract after that, the HDL and LDL levels were checked again as post-test data. (02), the control group was given a placebo and HDL and LDL cholesterol levels were measured after and before being given the placebo (pre test-post test).

The sample in this study totaled 38 samples who were Prolanis patients at the Iman Clinic, Medan Labuhan District, Medan City in 2022, with age criteria > 45 years. The data collected in this study is primary data, namely data taken directly through a tool, namely a spectrophotometer which will be carried out in the laboratory with blood samples from the median cubital vein, on the anterior arm

(inside of the elbow fold) using a syringe. As well as the respondent's data recapitulation sheet which contains the name, age, gender and results of measurements of HDL and LDL cholesterol levels before and after administration of bay leaf extract.

Data processing was carried out using statistical tests, both univariate and bivariate. The test used to find out whether the distribution of data is normal or not, the researcher used Shapiro-Wilk because the data was <50, after the data normalization test was carried out with the Shapiro-Wilk test it was found that the data had an abnormal distribution, so the researcher conducted an analysis using the pared t test, using the Wilcoxon and Mann-withney alternative tests.

RESULTS

Table 1. Characteristics by Age of Respondents

Group	Age	n	(%)	P value
Experiment	50-65	9	47,4%	
	66-75	7	36,8%	
	>75	3	15,8%	
				0,397
Control	50-65	11	57,9%	
	66-75	7	36,8%	
	>75	1	5,3%	
Total		38	100%	

Based on table 1, it can be seen that based on age, the majority of respondents were included in the 50-65 category for the experimental group, namely 9 respondents (47.4%) and 11 respondents for the control group (57.9%). Furthermore, the age of 66-75 for the experimental group was 7 respondents (36.8%) and as many as 7 respondents for the control group (36.8%). And finally, age > 75 for the experimental group, namely 3 respondents (15.8%) and 1 respondent for the control group (5.3%). The total number of samples is 38 people. After the statistical test was carried out, the p value showed a value of 0.397 (p> 0.05), so it could be concluded that there was no age difference in the experimental group and the control group.

Table 2. Characteristics of Respondents Based on Gender

Group	Sex	n	(%)	P value
Experiment	L	6	31,6%	
	P	13	68,4%	

				0,724
Control	L	5	26,3%	
	P	14	73,7%	

Based on table 2 it can be seen that based on gender with a total of 38 respondents, the majority of respondents were included in the female category for the experimental group, namely 13 respondents (68.4%) and as many as 14 respondents for the control group (73.7%). And then in the male category for the experimental group, there were 6 respondents (31.6%) and as many as 5 respondents for the control group (26.3%). After the statistical test was carried out, the p value showed a value of 0.724 (p> 0.05), so it could be concluded that there was no difference in sex in the experimental group and the control group.

Table 3. Average Distribution of Respondents Based on HDL Cholesterol

Group	Control HDL	Experiment HDL
Pre-Test Mean ± SD	$41{,}21 \pm 3{,}69$	$40{,}37 \pm 3{,}83$
Post – Test	$42{,}42 \pm 4{,}29$	$40{,}11 \pm 2{,}53$
Mean ± SD		
p value	0,189	0,806

Based on table 3, the average HDL cholesterol results in prolanis patients were obtained, in the respondents with the pre-test control group, the average HDL cholesterol value was 41.21 mg/dL and the post-test control group was 42.42 mg/dL. The average HDL cholesterol in patients with the pre-test experimental group obtained a value of 40.37 mg/dL and the post-test experimental group 40.11 mg/dL. The P value based on this average obtained a p value > 0.05 in both groups, so it was concluded that there was no effect of bay leaf extract on increasing HDL cholesterol.

Table 4. Average Distribution of Respondents Based on LDL Cholesterol

Group	Control LDL	Experiment LDL
Pre-Test Mean ± SD	$138{,}79 \pm 30{,}76$	$119{,}58 \pm 34{,}39$
Post – Test Mean ± SD	$147{,}16 \pm 26{,}28$	$130{,}63 \pm 29{,}53$
p value	0,324	0,360

Based on table 4, the average LDL cholesterol results in prolanis patients, the respondents with the pre-test control group obtained an average LDL cholesterol value of 138.79 mg/dL and the post-test control group of 147.16 mg/dL. The average LDL cholesterol in patients with the pre-test experimental group obtained a value of 119.58 mg/dL and the post-test experimental group 130.63 mg/dL. The P value based on this average obtained a p value > 0.05 in both groups, so it was concluded that there was no effect of bay leaf extract on reducing LDL cholesterol.

DISCUSSION

Based on the research results of data collected at the faith clinic, there were more female respondents than male respondents. There were 27 female respondents, 14 in the control group and 13 in the experimental group, 11 male respondents, 6 in the experimental group and 5 in the control group. Increased cholesterol levels are more likely to be female, when the postmenopausal phase occurs, cholesterol levels will increase due to reduced estrogen, as many as 5-19% of women experience changes in increased cholesterol levels. tends to be higher than women of the same age, after reaching the age of 50 years and over in women experiencing a higher increase in cholesterol than men.[12]

Based on the results of the research on the characteristics of respondents based on age, the results were obtained at the age of 50-65 as many as the experimental group, namely as many as 9 respondents (47.4%) and as many as 11 respondents for the control group (57.9%), this shows that the older a person gets, the more changes in body composition will occur. which can increase total cholesterol in the blood. When total cholesterol levels increase, it will be followed by LDL levels which also increase and HDL will decrease. In general, with increasing age, physical activity decreases, lean body mass decreases, while fat tissue increases so that blood cholesterol increases.[13] Changes in body composition due to aging cause a decrease in lean mass and bone mass, while body fat mass increases. These changes are due to

the activity of several types of hormones that regulate metabolism so that it decreases with age (such as insulin, growth hormone and androgens). While others increase (such as prolactin).[14]

Based on the results of research conducted at the Iman Medan clinic, it was found that the average HDL cholesterol value in patients with the pre-test experimental group obtained a value of 40.37 mg/dL and the post-test experimental group 40.11 mg/dL with a value based on the average The average obtained p value > 0.05 in the experimental group, so it was concluded that there was no effect of bay leaf extract on increasing HDL cholesterol.

From the results of bivariate analysis, it has been explained about the effect of reducing LDL cholesterol and increasing HDL cholesterol in prolanis patients by administering bay leaf extract before and after administration is carried out in patients. Based on table 4.4, the average LDL cholesterol value in patients with the pre-test experimental group obtained a value

of 119.58 mg/dL and the post-test experimental group was 130.63 mg/dL. The P value based on this average obtained a p value > 0.05, it was concluded that the effect of bay leaves on LDL cholesterol levels had no significant value, which means there was no effect on LDL cholesterol levels. These results contradicted previous studies where In a previous study conducted on dyslipidemic patients, the results showed that LDL cholesterol levels decreased with a study sample of 30 people.[15]

With results that are contrary to previous studies, there are factors that can affect the non-change in LDL cholesterol levels such as non-compliance to consume bay leaf extract due to lack of education and not very good communication with patients during the course of this study. And the effect of the dose is also as influential as the research that has been done, where the greater the dose of bay leaf extract, the greater the decrease in total cholesterol and LDL cholesterol levels.[16] This can be connected with the research conducted wherein this study used a

minimum dose so that there is a possibility that this research has no effect of giving bay leaf extract on LDL cholesterol levels.

CONCLUSION

After conducting research on "The Effect of Bay Leaf Extract (*Eugenia Polyantha*) on HDL and LDL Cholesterol Levels in Prolanis Patients at the Faith Clinic". Can be concluded that :

1. There is no significant effect of bay leaf extract on increasing HDL cholesterol levels and decreasing LDL cholesterol levels.

2. The effect of bay leaf extract on increasing HDL cholesterol levels is more significant in males than females, even though the p value is > 0.05.

3. There was a post-test value in the control group which increased HDL and was more significant than the experimental group, even though the p value was > 0.05.

4. There were increased post-test values in the control and experimental LDL groups.

REFERENCES

1. Wirawati IA. Pemeriksaan Profil Lipid. *Pemeriksaan Profil Lipid*. Published online 2018:26.

2. Aswania GM, Yasmin AAADA. Dislipidemia sebagai prediktor kejadian kardiovaskular mayor pada pasien infark miokard akut. *J Med Udayana*. 2020;9(11):91-100. https://ocs.unud.ac.id/index.php/eum/article/view/71028

3. WHO. Cardiovascular Disease (CVDs). World Health Organization. 2019.

4. Kemenkes RI. Hasil Riset Kesehatan Dasar Tahun 2018. *Kementrian Kesehat RI*. 2018;53(9):1689-1699.

5. Stenly M, Afiah ASN, Sun DM. Gambaran profil lipid pada penderita penyakit jantung koroner di rumah sakit umum daerah Dr. H. Chasan Boesoirie Ternate. *Kieraha Med J*. 2019;1(1):54-59.

6. Rahman S. Ramadan Fasting and its Health Benefits: What's New? *Open Access Maced J Med Sci*. 2022;10(E):1329-1342. doi:10.3889/oamjms.2022.9508

7. Bull E, Morrell J, Yasmine E. Kolesterol Simple guide cholesterol / Eleanor Bull, Jonathan Morrell ; alih bahasa, Elizabeth Yasmine. Published online 2007:1-2.

8. Kusuma IW, Kuspradini H, Arung ET, et al. Biological Activity and Phytochemical Analysis of Three Indonesian Medicinal Plants, Murraya koenigii, Syzygium polyanthum and Zingiber purpurea. *JAMS J Acupunct Meridian Stud*. 2011;4(1):75-79. doi:10.1016/S2005-2901(11)60010-1

9. Rahman S, Pradido R. The anxiety symptoms among chronic kidney disease patients who undergo hemodialysis therapy. *Int J Public Heal Sci*.Agoes A, Name P. Tanaman Obat Indonesia Buku 1 Tentang Kami Pencarian. Published online 2022:1-2.

10. Muflikhatur R S, Rahayuningsih HM. Perbedaan Pengaruh Antara Ekstrak Dan Rebusan Daun Salam (Eugenia polyantha) Dalam Pencegahan Peningkatan Kadar Kolesterol Total Pada Tikus Sprague Dawley. *J Nutr Coll*. 2014;3(1):142-149. doi:10.14710/jnc.v3i1.4542

11. Rahman S, Pulungan AL, Bojang KS. The Impact of Blood Glucose Levels on Acid-Fast Bacteria Conversion in Tuberculosis Patients with Diabetes Mellitus. *MAGNA MEDICA Berk Ilm Kedokt dan Kesehat*. 2022;9(2):120. doi:10.26714/magnamed.9.2.2022.120-127

12. Arsana PM, Rosandi R, Manaf A, Budhiarta A, Hikmat Permana. Panduan Pengelolaan Dislipidemi di Indonesia 2015. *Pb Perkeni*. Published online 2015:4. doi:10.1002/bit.22430

13. Rahman S, Anas M Al. Treatment of Adult Intussusception with Non-operative Management: A case report Shahrul. *Bul Farmatera*. 2021;6:2013-2015.

14. Jim EL. Metabolisme Lipoprotein. *J Biomedik*.2014;5(3).doi:10.35790/jbm.5.3.2013.4335

15. Rahman S, Santika K. Causative Factors of Chronic Kidney

Disease in Patiens with Hemodialysis Therapy. KEMAS 18 (1) (2022) 114-121

16. Usharani P, Merugu PL, Nutalapati C. Evaluation of the effects of a standardized aqueous extract of Phyllanthus emblica fruits on endothelial dysfunction, oxidative stress, systemic inflammation and lipid profile in subjects with metabolic syndrome: a randomised, double blind, placebo controlled clinical study. *BMC Complement Altern Med.* 2019;19(1):97. Published 2019 May 6. doi:10.1186/s12906-019-2509-5