BASIC AND APPLIED NURSING RESEARCH JOURNAL
2021, Vol. 2, No. 1, 6 – 11
http://dx.doi.org/10.11594/banrj.02.01.02

Research Article

Effectiveness between Salam Leaf Booking Water and Red Ginger Towards Reducing Acid Levels in Patients of Gout Arthritis

Chicilia Puspita Darmaningrum*, Hartono

Department of Nursing Poltekkes Kemenkes Surakarta

Article history:
Submission July 2021
Revised September 2021
Accepted September 2021

**Corresponding author:*
E-mail:
chiciliapusda@gmail.com

ABSTRACT

Background. The prevalence of Gout Arthritis in the world is 34.2%. Gout Arthritis is characterized by an increase in uric acid levels >7.2 mg/dl in men and >6 mg/dl in women. This disease can be treated pharmacologically and non-pharmacologically, one of which is bay leaf and red ginger. Research purposes. The purpose of this study was to determine the effectiveness of boiled water of bay leaves and red ginger on reducing uric acid levels in patients with gout arthritis. Methods. This research method is a pre-experimental static-group comparison design. The sampling technique used purposive sampling. A sample of 60 respondents was divided into two groups of 30 respondents each, group A intervention boiled bay leaf water for 7 days, group B intervention boiled red ginger water for 7 days. Both groups were observed uric acid levels before and after the procedure using the GCU tool. Result: The results of the paired t-test analysis of group A p = 0.000 and group B p = 0.005 p value <0.05 which means there is a difference between before and after intervention A and intervention B were given. The results of the Independent t-test analysis showed that there was a difference in uric acid levels. after intervention A and intervention B with p = 0.004. The results showed that boiled water of bay leaves was more effective than boiled water of red ginger in reducing uric acid levels. Conclusion. Boiled water of bay leaves is more effective than boiled water of red ginger in reducing uric acid levels in gout arthritis patients.

Keywords: *bay leaf boiled water; gout arthritis; red ginger boiled water; uric acid level*

Introduction

Gout arthritis or gout is a complication of hyperusemia triggered by monosodium urate crystals in joints and soft tissues [1]. High uric acid levels will cause an increase in needle-shaped uric acid crystals, especially in the joints which will cause pain. Complaints that are commonly felt in gout are pain, impaired movement of the legs, difficulty walking and difficulty in performing daily activities. If left unchecked will cause disability, deformity, stress and decreased quality of life and lead to further complications as well as kidney and heart disorders and even death [2].

The prevalence of gouty arthritis in the world is 34.2% [3]. Gout arthritis is common in developed countries. In America, gouty arthritis affects 4% of the adult population of the

How to cite:
Darmaningrum, C. P. & Hartono, H. (2021). Effectiveness between Salam Leaf Booking Water and Red Ginger Towards Reducing Acid Levels in Patients of Gout Arthritis. *Basic and Applied Nursing Research Journal*, *2*(1), 6 – 11. doi: 10.11594/banrj.02.01.02

United States [4]. According to the results of Riskesdas 2018, the prevalence of joint disease based on doctor diagnoses in Indonesia is 7.30%, while Central Java Province has a prevalence of 6.78%. Joint disease often occurs in those aged over 40 years with a prevalence of 6.13% for males and 8.46% for females. In 2016 the number of gout sufferers in Sukoharjo reached 3245 patients from 12 health centers in Sukoharjo and in 2017 the number of gout sufferers increased by 21.04% to 3507 sufferers.

This shows that joint disease in Central Java, especially Sukoharjo Regency is still quite high Gouty arthritis is characterized by elevated levels of uric acid > 7.2 mg / dl in men males and > 6 mg / dl in women [5]. Gejala beginning marked by Hyperuricemia later develop into gout and complications that caused [6]. Causes of high uric acid in the blood to occur hiperusemia there are some which are: the existence of metabolic disorders of purine congenital abnormalities carrier trait or gene, dietary habits levels of purine high (such as meat, offal, crab, shellfish, cheese, peanut ground, spinach, beans) , disease (leukaemia), chemotherapy, radiotherapy. Increased levels of uric acid in the blood (hyperuricemia) are caused by increased production (overproduction), decreased expenditure (underexcretion) of uric acid through the kidneys, or a combination of both [7].

Treatment of gout can be divided into two, namely by pharmacological and non-pharmacological. Use of therapy farmakogis proved capable of lowering uric acid levels in the blood however, the use of the term when that long can cause effects side such as nausea, diarrhea, and pain in the abdomen [8]. Treatment of gout arthritis in addition to pharmacological, there are non- pharmacological treatment. Non-pharmacological treatment of gout can be done with herbal plants. Type of plant herbs that can be efficacious to overcome gout among which, bay leaf and red ginger [9].

Aprillia [10] in her research entitled "The Effect of Giving Salam Leaf Boiled Water On Reducing Uric Acid Levels in the Elderly", it is proven that the boiled water of bay leaves can reduce uric acid levels, with a dose of 7 bay leaves per day The results of the Wilcoxon test showed a value of p = 0.00 (p<0.05), which means that there was a significant difference between before giving bay leaf boiled water and after giving bay leaf cooking water. Bay leaves are able to reduce uric acid levels because bay leaves contain flavonoid compounds that can inhibit the formation of uric acid. In addition to bay leaves, a study conducted by Irman et al., [9] regarding the effect of red ginger boiled water on reducing uric acid levels at a dose of 20 grams or two red ginger segments per day, the results of the independent T-test statistical test obtained a p value = 0.002, where 0.002 is less than 0.05 which means that there is an effect of giving red ginger boiled water on reducing uric acid levels in patients with gout arthritis.

Red ginger contains flavonoids which function as inhibitors of the xanthine oxidase enzyme, where this enzyme plays a role in the formation of uric acid so that uric acid formation is inhibited. The effect of flavonoids as inhibitors of the xanthine oxidase enzyme does not last long because it is rapidly excreted through the urine. Increased excretion of uric acid in urine is influenced by the content of saponins contained in red ginger.

The research that has been done by the two researchers is proven to be able to reduce uric acid levels. However, there has been no study comparing the effectiveness of boiled water of bay leaves and red ginger on reducing uric acid levels. From the description of the background above, the researchers are interested in conducting research on "Effectiveness of Boiled Water of Salam Leaves and Red Ginger on Reducing Uric Acid Levels in Patients with Gout Arthitis".

Materials and Methods

The design of this study was pre- experimental with a static- group comparison design [11]. This research was carried out in Packaging Village, Polokarto District, Sukoharjo Regency on 22 February 2021 – March 29, 2021. The population in this study is gout arthritis sufferers who live in Packaging Village. In this study, the sample was taken using a purposive sampling technique with a sample size of 60 respondents.

Respondents were divided into two groups with each group totaling 30 respondents. Group A was given the intervention of boiled water of bay leaves while group B was given intervention of boiled water of red ginger. The researcher went to the respondents one by one to explain to the respondents who were included in group A both to the respondents and their families about the benefits of bay leaf boiled water, how to make bay leaf boiled water and how to consume it. In addition to group A, the researchers also gave explanations to respondents who were included in group B about the benefits of red ginger boiled water, how to make red ginger boiled water and how to consume it.

Respondents who are willing to participate in the study, are asked to fill out a signed consent form. Then the researchers took pre-test data by checking uric acid levels in the respondents. After that, an intervention was given in the form of giving boiled water of bay leaves in group A and boiled water of red ginger in group B. Group A was given an intervention of boiled water of bay leaves with a dose of 7 bay leaves for 7 days taken every morning after breakfast. Group B is given intervention red ginger boiled water with a dose of 2 segment or 20 grams is weighed using the analytical balance for the accuracy of the dose that is given for 7 days taken every morning after breakfast. Bay leaves are given by choosing good leaves, no holes and choosing those that are not too young or too old but by choosing the fourth or fifth leaf from the tip of the first leaf because the main content of bay leaves is in leaves with medium maturity. Ginger red selected red ginger is old. Evaluation of group A and group B was carried out on the 8th day in the morning before the respondent was active with Checking uric acid levels using the GCU tool.

In this study, data analysis includes univariate and bivariate analysis. Univariate analysis consisted of gender and age. Bivariate analysis aims to determine the effectiveness of boiled water of bay leaves and red ginger on the value of uric acid levels in patients with gout arthritis. Normality test using Shapiro-Wilk test. Bivariate analysis using paired T test parametric test to see the difference between pre-test and post-test on the variables of boiled water of bay leaves and red ginger. Parametric independent T test was used to see the difference between boiled water of bay leaves and red ginger on reducing uric acid levels in patients with gout arthritis.

Results and Discussion

The description of the characteristics of the respondents shows that group A with a total of 30 respondents consists of 11 respondents (36.7%) being male and 19 respondents (63.3%) being female. In group B with a total of 30 respondents, 12 respondents (40%) were male and 18 respondents (60%) were female. The age of respondents in group A at most was age > 40 years as many as 26 respondents (86.7%) and respondents with age 40 years as many as 4 respondents (13.3%). While in Group B the most respondents were aged > 40 years with 25 respondents (83.3%) and respondents aged 40 years as many as 5 respondents (16.7%). Type of occupation of respondents in group A.

Most are housewives as many as 16 respondents (53%), farmers 6 respondents (20%), self-employed 4 respondents (13.3%), private 2 respondents (6.7%) and Teachers as many as 2 respondents (6.7%). In Group B, the most types of work are farmers as many as 13 respondents (43.3%), housewives 10 respondents (33.3%), self-employed 5 respondents (16.7%), private 1 respondent (3.3%) and Teachers as many as 1 respondent (3.3%).

Levels of acid uric respondents before granted intervention in group A or group were given water decoction of leaves has a minimum value of 6, 40 mg / dl, the maximum value of 9.20 mg / dl, the mean value of 7.493 mg / dl and value standard deviation of 0.75289. While in group B or the group that was given the intervention of red ginger boiled water, the minimum value was 6.30 mg/dl, the maximum value was 10.70 mg/dl, the mean value was 8.056 and the standard deviation value was 1.22606. Respondents' levels of uric acid after a given intervention in group A or group were given water decoction of leaves has a minimum value of 5.00 mg / dl, the maximum value of 9.00 mg / dl, the mean value of 6.526 mg / dl

and value standard deviation of 1.09479. While in group B or the group that was given the intervention of red ginger boiled water, the minimum value was 5.30 mg/dl, the maximum value was 10.50 mg/dl, the mean value was 7.393 and the standard deviation was 1.455.

Result of analyze shows that the Shapiro Wilk test for both groups, both pre-test and post-test, had p value > 0.05, which means that the data is normally distributed. Results of the Paired t-test on the value of uric acid levels in group A or the intervention group giving boiled water of bay leaves obtained p count = 0.000, where the p count is less than 0.005 which means that there is an influence in giving boiled water of bay leaves to decrease in uric acid levels in patients with gouty arthritis. In group B or the intervention group, giving red ginger boiled water obtained p count = 0.005, where p count is less than 0.005, which means that there is an influence in giving red ginger boiled water to reduce uric acid levels in patients with gout arthritis.

Results of the t-test of two independent samples (Independent Sample T-Test) on the variables of boiled water of bay leaves and boiled water of red ginger obtained Sig. (2-tailed) P = 0.004. Where P = 0.004 is smaller than 0.05, which means that there is a difference. There is a significant difference between giving boiled water of bay leaves and boiled water of red ginger on decreasing uric acid levels in patients with gout arthritis.

In this study, the results of the analysis using the paired t-test or paired t-test showed that the value of p = 0.000, p <0.05, which means that there is an effect of giving boiled water of bay leaves on reducing uric acid levels in patients with gout arthritis.

According Aprilia (2018) said that the provision of water decoction of leaves as much as 200 ml which is made by boiling 7 bay leaves with 700 cc of water for 10-15 minutes or until the remaining 200 ml water and 1x daily given to respondents proven to reduce acid levels veins in patients with gout arthritis in the village of Sepanyul. This research is in line with [12] entitled The Effect of Giving Bay Leaf Boiled Water on Reducing Uric Acid Levels in Patients with Gout Arthritis in the Work Area of the Ranatana Weru Health Center, obtained a p value of 0.000 which means there is an effect before and after giving bay leaf decoction.

Uric acid is the end product of purine catabolism which is assisted by the enzyme xanthine oxidase. The enzyme xanthine oxidase has an important role in the process of formation of uric acid by catalyzing successively purine-derived compounds, namely hypoxanthine to xanthine and then from xanthine to uric acid. Uric acid is carried to the kidneys through the bloodstream and then excreted with urine [13],[14]. Bay leaves contain flavonoids. The content of flavonoids in bay leaves can bind the enzyme compound xanthine oxidase so that it can reduce the formation of flavonoids xanthine which can form uric acid. The structure of flavonoids that have double bonds easily binds to compounds from the xanthine oxidase enzyme so that in the metabolism of uric acid formation (urid acid) xanthine production can be controlled [15].

In this study, the results of the analysis that had been carried out using the paired t-test or paired t-test showed p value = 0.005, p <0.05, which means that there was an effect of giving red ginger boiled water on reducing uric acid levels in patients with gout arthritis. This study is in line with the research conducted by Irman et al., (2018) entitled The Effectiveness of Red Ginger Consumption Against Uric Acid Levels in Gout Arthitis Patients in the Salido Health Center Work Area, Pesisir Selatan Regency. In this study, respondents were given boiled water of red ginger by boiling red ginger as much as 2 segments or 20 grams with 300 ml of water for 20 minutes, the p-value was 0.002, which means that there was an effect before and after consumption of red ginger.

Red ginger contains a variety of chemical compounds including gingerol, shogaol and zingerone [16].

The content of the compound 6-gingerol which can function as an antihyperuresemia. Red ginger also contains flavonoids which function as inhibitors of the xanthine oxidase enzyme [17]. When consuming red ginger boiled water, the content of flavonoid compounds that

enter the body will be absorbed by the body. Then these compounds act to inhibit the work of the xanthine oxidase enzyme, where this enzyme functions to catabolize purines into uric acid. So that when the function of this enzyme is inhibited, the process of uric acid formation is also inhibited.

In this study, the results of the analysis that had been carried out using the Independent T-Test or unpaired T- test showed p value = 0.004, p <0.05, which means there was a different value in the group given boiled water of bay leaves and boiled water of red ginger. The results of the average value of uric acid levels after administration of the water decoction of leaves smaller than the given provision of water decoction of red ginger with a difference of 0.980, which means that the water decoction of leaves greetings to more effectively reduce uric acid levels in the water decoction of red ginger. Bay leaves contain flavonoids.

The content of flavonoids in bay leaves can bind the enzyme compound xanthine oxidase so that it can reduce the formation of xanthine which can form uric acid. The structure of the flavonoids that have a double bond easily binding compound of the enzyme xanthine oxidase resulting in the formation of uric acid metabolism (urid acid) production of xanthine can be controlled [14]. Ginger contains compounds 6-gingerol which can function as antihyperuresemia. The flavonoid content in red ginger functions as an inhibitor of the xanthine oxidase enzyme [16].

The flavonoid content found in both bay leaves and red ginger has been shown to be able to reduce uric acid levels. The difference in the effectiveness of the two in reducing uric acid levels can be influenced by one of them because of the different amount of flavonoid content. According to the researcher's assumption, bay leaf has a higher flavonoid content than red ginger. Therefore, bay leaf boiled water is proven to be more effective in reducing uric acid levels compared to bay leaf boiled water. This is in line with the research of [18] which suggests that the strong flavonoid content is more effective in reducing uric acid levels.

Conclusion

There is a difference in effectiveness between the boiled water of bay leaves and red ginger to reduce uric acid levels in patients with gout arthritis. The structure of flavonoids that have double bonds easily binds to compounds from the xanthine oxidase enzyme so that in the metabolism of uric acid formation (urid acid) xanthine production can be controlled.

References

1. Sutanto, T. (2013). Asam Urat Deteksi, Pencegahan, Pengobatan. Buku Pintar.
2. Olf, G., Dib, E. R., & Stewart F, A. J. (2016). Cochrane Database of Systematic Reviews Electrical stimulation with non-implanted electrodes for overactive bladder in adults (Review). August. https://doi.org/10.1002/14651858.CD010098.pub3.CITATIONS
3. World Health Organization. (2018). Global desease estimates, 2000-2016. June, 12. http://www.who.int/healthinfo/global_burden_disease/GHE2016_DALY_Global_2000_2016_.xls?ua=1
4. Kumar, B., & Lenert, P. (2016). Gout and African Americans: Reducing disparities. *Cleveland Clinic Journal of Medicine*, *83*(9), 665–674. https://doi.org/10.3949/ccjm.83a.15133
5. Sudoyo, A., Setiyohadi, B., Alwi, I., Simadibrata, M., & Setiati, S. (2010). Buku Ajar Ilmu Penyakit Dalam Jilid II (V). Interna Publising.
6. Newcombe, D. S. (2013). Gout "Basic Science and Clinical Practice" (D. R. Robinson (ed.)). Springer London Heidelberg New.
7. Kurnia, H. (2015). *Kiat Jitu Penyakit Orang Kantoran* (Vol. 15, Issue 2). Best Publisher
8. Dianati, N. A. (2015). *Gout and hyperuricemia*. *4*, 82–89.
9. Irman, V., Ibrahim, & Yulliandra, N. (2018). Efektifitas Komsumsi Jahe Merah (Zingiber Officinale) Terhadap Kadar Asam Uratpada Pasien Gout Arthritis Di Wilayah Kerja Puskesmas Salido Kabupaten Pesisir Selatan. *Jurnal Kesehatan Saintika Meditory*, *1*(2), 64–74.
10. Aprillia, E. P. (2018). Pengaruh Pemberian Air Rebusan Daun Salam Terhadap Penurunan Kadar Asam Urat Pada Lansia
11. Nursalam. (2016). Konsep & Penerapan Metodologi Penelitian Ilmu Keperawatan (4th ed.).
12. Oroh, W. (2019). Pengaruh Pemberian Rebusan Daun Salam Terhadap Penurunan Kadar Asam Urat Pada Penderita Gout Artritis Di Wilayah Kerja Puskesmas Ranotana Weru. Jurnal Keperawatan, 7(1).
13. Ningtiyas, I. F., & Ramadhian, M. R. (2016). Efektivitas Ekstrak Daun Salam untuk Menurunkan Kadar Asam Urat pada Penderita Artritis Gout. Medical Journal of Lampung University, 5(3), 105–110.

14. Huang, J., Wang, S., Zhu, M., Chen, J., & Zhu, X. (2011). Effects of genistein, apigenin, quercetin, rutin and astilbin on serum uric acid levels and xanthine oxidase activities in normal and hyperuricemic mice. *Food and Chemical Toxicology*, *49*(9), 1943–1947. https://doi.org/10.1016/j.fct.2011.04.029
15. Madyastuti, L. R., & Septiadi, D. N. (2014). Rebusan Daun Salam Menurunkan Kadar Asam Urat Pasien Gout. 5(1), 1–8
16. Febriani, Y., Riasari, H., Winingsih, W., Aulifa, L., & Permatasari, A. (2018). Potensi Pemanfaatan Jahe Merah (Zingiber officinale Roscoe) sebagai Obat Analgetik. *Indonesian Journal of Pharmaceutical Science and Technology*, *1*(1), 57–64.
17. Lallo, S., Mirwan, M., Palino, A., Nursamsiar, N., & Hardianti, B. (2018). Aktifitas Ekstrak Jahe Merah Dalam Menurunkan Asam Urat Pada Kelinci Serta Isolasi Dan Identifikasi Senyawa Bioaktifnya. Jurnal Fitofarmaka Indonesia, 5(1), 271–278. https://doi.org/10.33096/jffi.v5i1.319
18. Li, J., Yang, Y., Lu, L., Ma, Q., & Zhang, J. (2018). Preparation, characterization and systemic application of self-assembled hydroxyethyl starch nanoparticles-loaded flavonoid morin for hyperuricemia therapy. International Journal of Nanomedicine, 13, 2129–2141.