



THE EFFECT OF LAYER LEAVES ON REDUCING URIC ACID IN THE ELDERLY: A SYSTEMATIC REVIEW

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ABSTRACT

Gout is an inflammatory disease of the joints caused by excess uric acid content in the blood, resulting in a buildup of uric acid crystals in the joints and other soft tissues. Bay leaf or with the Latin name *Syzygium Polyanthum* is a plant that can be used to treat gout. This study aims to estimate the effect of bay leaves on reducing uric acid levels in the elderly. This research is a systematic review research using the PRISMA diagram. Article searches were carried out based on the PICO Model eligibility criteria. P= Elderly; I= Drink boiled bay leaves; C= Do not drink bay leaf decoction; O= Uric acid. The articles used come from 1 database, namely: Google Scholar. With keywords including "gout" AND "bay leaf" AND "elderly" In 5 articles from 2016-2022, it can be concluded that regarding the effect of bay leaves on gout in the elderly, it shows that boiling bay leaf water can reduce uric acid in the elderly.

Keywords: bay leaves; elderly; gout

First Received 18 December 2023	Revised 19 December 2023	Accepted 30 December 2023
Final Proof Received 18 January 2024		Published 10 February 2024
How to cite (in APA style) Nurhayati, I., Hidayat, A. R., Yuniarti, T., & Widiyanto, A. (2024). The Effect of Layer Leaves on Reducing Uric Acid in the Elderly: A Systematic Review. <i>Indonesian Journal of Global Health Research</i> , 6(1), 271-278. https://doi.org/10.37287/ijghr.v6i1.2740 .		

INTRODUCTION

Gout Arthritis, or inflammation of the joints commonly known as gout, is an inflammatory disease of the joints caused by excessive levels of uric acid in the blood and the accumulation of uric acid crystals in the joints and other soft tissues.(Pulung et al., 2023). The buildup of uric acid crystals in joints and soft tissues can cause inflammation and severe pain. The areas of the body most often affected by gout include joints such as the fingertips, thumbs, ankles, knees, wrists, elbows, shoulders and the tops of the feet (Nuranti et al., 2020). Common symptoms of gout include pain, limited leg movement, difficulty walking, and difficulty carrying out daily activities, which are caused by an inflammatory response due to deposits of uric acid crystals in the joint spaces (Suryagustina, Prinawatie, 2022). If not controlled, this can cause disability, deformity, stress, and reduced quality of life, leading to further complications, kidney and heart problems, and even death (Alvita, 2018; Widiyanto et al., 2023).

Uric acid in the body can be measured by checking serum uric acid levels, and normal uric acid levels in men are 3.0 to 7.0 mg/dL. Meanwhile for women it ranges between 2.4 and 6.0 mg/dl. Gout or gouty arthritis most often occurs in elderly people (Widiyono, 2020). Elderly people generally suffer from degenerative diseases. In the process of aging, the body gradually loses its resistance to infectious diseases, and metabolic and structural disorders

increase. One of the degenerative diseases that the elderly often suffer from is gout. In this study the average age of respondents was 60 years (Ramadani et al., 2021). The prevalence of this disease is increasing every year. According to the World Health Organization (2018), the number of gout sufferers increased by 1,370 (33.3%). According to Basic Health Research (2018), the prevalence of gout based on diagnosis in residents aged 15 years and over is 11.9%, but if you take into account age characteristics, the prevalence reaches 18.9% in residents aged 75 years and over. Amelia (2019) states that gout is estimated to attack 840 people per 100,000 population, with a prevalence of 68% in people over 34 years of age and 32% in people under 34 years of age (Santoso et al., 2023).

During this period, gout patients rely on various medications to treat the disease. WHO data shows that 81% of patients in Indonesia tend to buy medicines, and 71% of them are sold freely. However, only 24% of people visit a doctor. The remaining 5% choose herbal or non-drug therapy as their treatment (Febriyanti & Andika, 2018). There are two treatment models for treating gout, namely drug therapy and non-drug therapy. Drug therapy often includes nonsteroidal anti-inflammatory drugs (NSAIDs), colchicine, corticosteroids, probenecid, sulpifilazone, and xanthine oxydiase inhibitors (IXOs) (Ryan et al., 2013). Bay leaf or its Latin name *Syzygium Polyanthum* is a plant that can be used to treat gout. There are many bay plants in Indonesia. The reason is, the leaves have been widely used as a kitchen spice (Kusuma et al., 2021). You can easily find it here, you can even grow it yourself, the price is relatively cheap, and the processing and production process is also relatively cheap. Giving medicine is easy for them. However, not many people realize that bay leaves can also be used to treat gout (Rhacik, 2014). Bay leaves contain several components that can help reduce blood uric acid levels, including flavonoids, tannins, and essential oils such as eugenol and citral oil. Apart from that, bay leaves have diuretic and analgesic properties, improve blood circulation and reduce uric acid levels (Ariyanti et al., 2007).

Based on the background above and several previous research findings relating to the effect of bay leaves on reducing uric acid levels in the elderly, researchers are interested in conducting this research using a systematic review, which can combine the results of primary studies or previous research with a systematic search to obtain estimates. which is more appropriate to produce new conclusions. This study aims to estimate the effect of bay leaves on reducing uric acid levels in the elderly.

METHOD

This research is a systematic review research using the PRISMA diagram. Article searches were carried out based on the PICO Model eligibility criteria. P= Elderly; I= Drink boiled bay leaves; C= Do not drink bay leaf decoction; O= Uric acid. The articles used come from 1 database, namely: Google Scholar. With keywords including "gout" AND "bay leaf" AND "elderly".

RESULTS

Search for articles in this research through databases including Google Scholar. With keywords, among others "gout" AND "bay leaf" AND "elderly". The review process for related articles can be seen in the PRISMA flow diagram in Figure 1. Research related to the effect of bay leaves on reducing uric acid levels in the elderly from 5 articles from the initial search process yielded 107 articles, after the process of deleting published articles we obtained 67 articles with 24 of them meet the requirements for further full text review of 5 articles.

It can be seen in Figure 2 that the research articles come from 5 of the Asian continents (Indonesia).

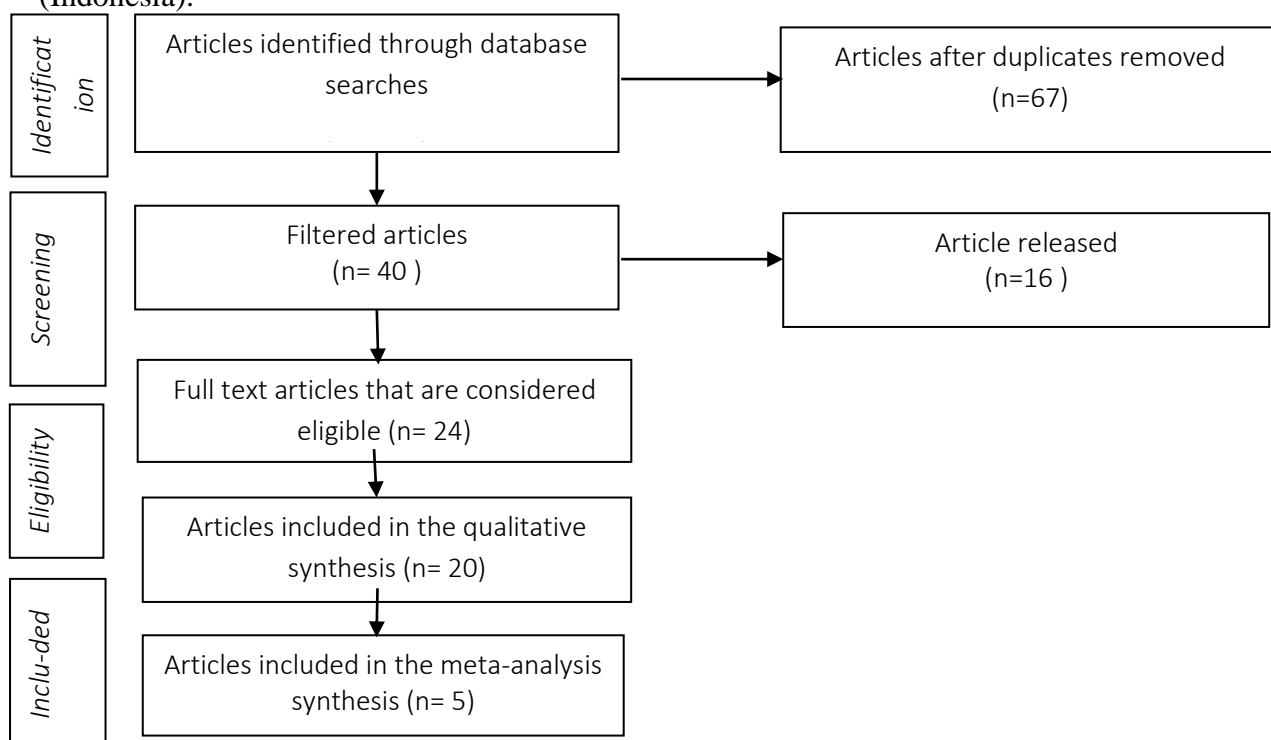


Figure 1. Chat flow diagram



Figure 2. Map of the research area

Table 2.
Description of primary studies

Title and Author	Research methods	Results
The Effect of Giving Bay Leaf Decoction (Syzygium Polyanthum) on Uric Acid Levels in the Elderly (Febriyanti & Andika, 2018)	This research uses a pre-experimental method with a one group pre-test and post-test design approach. In this research design, initial observations (pretest) were carried out so that the research could test the changes that occurred after	The mean uric acid level before giving cooked bay leaves was 8.14 with a standard deviation of 0.775. The mean uric acid level after giving cooked bay leaves was 4.24 with a standard deviation of 0.720. There is a difference in the average uric acid levels of elderly people before and after being given boiled bay

	<p>treatment. Post-test measurements were carried out to determine changes in uric acid levels in the elderly.</p>	<p>leaves of 3,900 points, meaning that giving boiled bay leaves is effective in reducing uric acid levels in elderly people in Kranji Village, Padang City.</p>
<p>The Effect of Giving Boiled Bay Leaf Water on Reducing Uric Acid Levels in Gouty Arthritis Patients (Marlinda & Dafriani, 2022)</p>	<p>The type of research used is pre-experimental research with a pre-test and post-test design in one group. This research was conducted in the working area of the Arai Padang City Health Center in 2019. The research began with the submission of a proposal and was carried out from November to June 2019. The subjects of this research were only gout sufferers in the Arai Padang City Health Center working area.</p>	<p>Bay leaves can be used as an alternative complementary therapy to reduce uric acid levels in gouty arthritis sufferers. Education and support for patients suffering from gouty arthritis is very important so that the benefits of bay leaves are available as an easily available treatment ingredient.</p>
<p>The Effect of Giving Boiled Water from Bay Leaves (<i>Syzygium Polyanthum</i>) on Reducing Uric Acid Levels (Aida Andriani & Chaidir, 2016)</p>	<p>This type of research is pre-experimental research using a pre-test-post-test approach. We will use the total sampling method with a sample size of 10 people. Data was collected directly from respondents using interviews, observation sheets, and measuring uric acid and blood sugar levels.</p>	<p>Based on the results of the T test, there were differences in uric acid levels before and after giving bay leaf boiled water. The average uric acid level before was 7.16 mg/dl and the average uric acid level after was 5.76 mg/dl. This results in a p value = 0.000. Based on the research results, it can be concluded that consuming bay leaf boiled water can reduce uric acid levels thanks to the flavonoid content found in bay leaves. Therefore, more research is needed regarding the side effects and other benefits of bay leaves.</p>
<p>Bay Leaf Decoction for Reducing Uric Acid Levels and Gouty Arthritis Pain Intensity at Andalas Health Center, Padang (Cumayunaro, 2017)</p>	<p>The type of research used was a preliminary experiment with a one group pretest-posttest approach using a purposive sampling technique with a sample size of 16 people. Data collection was carried out by measuring uric acid levels using blood uric acid and pain intensity using a numerical rating scale. Treatment is carried out twice a day for 7 days.</p>	<p>Based on the research results, there were differences in the average uric acid levels and pain intensity before and after administering bay leaf boiled water. The results of data analysis using a paired difference test (paired sample t-test) obtained a p-value of 0.000, so it can be concluded that giving boiled bay water has an effect on uric acid levels and pain intensity in gouty arthritis sufferers. Therefore, other benefits of boiled bay water require further research.</p>
<p>The Role of Bay Leaf Boiled Water (<i>Syzygium Polyanthum</i>) in Reducing Uric Acid Levels (Darussalam & Kartika Rukmi, 2016)</p>	<p>This research is quantitative research, namely a quasi-experiment (quasi-experiment) using a pre-test and post-test design without a control group. The study population included all hyperuricemia patients in the Pandak I Community Health Center. The sampling technique in this study was continuous sampling.</p>	<p>Bay leaf boiled water is able to reduce uric acid levels, with the Wilcoxon test showing a significance value of 0.009 ($p < 0.05$), thus there is a significant difference between before giving bay leaf boiled water and after giving bay leaf boiled water.</p>

DISCUSSION

Uric acid is a substance that is formed when purines or waste products are broken down in the body and is the result of the breakdown of purines with the help of the enzymes guanase and xanthine oxidase (Asmira et al., 2020). This uric acid is carried by the bloodstream to the kidneys and excreted in the urine. If the excretion of uric acid from the kidneys is impaired due to a decrease in uric acid secretion in the renal tubules, the concentration of uric acid in the blood increases (Efendi, 2017).

Bay leaf (*Syzygium Polyanthum*) is a plant that has long been known to Indonesians as an additional ingredient in kitchen spices because of its unique aroma and taste. Bay leaves are a plant that is easy to obtain and cheap (Ndede et al., 2019). Bay leaves can be found from southern Burma to Indonesia. On the island of Java, laurel trees grow at an altitude of 5 meters to 1000 meters above sea level from West Java to East Java. Laurel grows in many forests and forests (Darussalam & Kartika Rukmi, 2016). This plant is characterized by a tree shape with opposite leaves and two rows of horizontal branches. This bay can be used to treat various diseases, including diarrhea, itching, diabetes, stroke, high cholesterol, ulcers, and of course gout (Adriani et al., 2021).

Bay leaves are a plant that can reduce blood uric acid levels because they contain flavonoid compounds, essential oils and tannins. The structure of flavonoids with double bonds can easily bind to the xanthine oxidase enzyme compound, thereby controlling the production of this enzyme in the metabolism of uric acid production. (Yankusuma & Putri, 2016). The structure of flavonoids generally consists of three benzene rings containing C atoms (C2 and C3 as inhibitors, C5 and C7 as hydroxyl groups, and C4 as hydrogen bonds). Essential oils consisting of citral oil and eugenol have diuretic properties. These essential oils and tannins can increase urine production, and uric acid that is not needed by the body will be excreted in the urine through the kidneys (Setianingrum, 2019).

4 boiled bay leaves to each respondent every morning and evening for seven days, and found that boiled bay leaf water was effective in reducing uric acid levels in the elderly (Hidayat et al., 2013). Proven. This is proven by the decrease in uric acid levels after giving boiled bay leaves, this is due to the compliance and regularity of respondents drinking bay leaf boiled water every morning and evening for 7 days (Asih, 2002). Apart from that, bay leaves also contain chemicals such as flavonoids, tannins, polyphenols, alkaloids, triterpenes, essential oils, and vitamins B and C which are diuretics, that increase urine production and remove urine from the body. It converts the body to metabolic waste and can lower uric acid levels in the blood (Zuhriyah & Sari, 2018).

The flavonoid content is thought to play a role in reducing blood uric acid levels, because flavonoids can inhibit the action of the xanthine oxidase enzyme, thereby inhibiting uric acid production. Therefore, bay leaf infusion can be used as an alternative non-drug therapy for gout sufferers (Alvita, 2018). The uric acid level after administering bay leaf decoction was 5.76 mg/dl. This is because the flavonoid content found in bay leaves belongs to the flavonoid group. Flavonoids act as diuretics, inhibiting the action of the chitin oxidase enzyme in the production of uric acid and helping to excrete uric acid into the blood through urine (Ndede et al., 2019). The effect of uric acid levels before and after administering bay leaf decoction is shown by paired test values. The mean value before giving the bay leaf decoction was 7.26, and the mean value after giving the bay leaf decoction was 4.75, with a p value of $0.001 < \alpha (0.05)$. This means that for elderly people who suffer from gout, they can

reduce uric acid by cooking bay leaves, which in turn will also reduce uric acid levels.(Widiyono, 2020a).

CONCLUSION

Based on the results of a systematic review of 5 databases, it can be concluded that regarding the effect of bay leaves on gout in the elderly, it shows that boiling bay leaf water can reduce uric acid in the elderly.

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