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THE EFFECT OF GIVING MANGO LEAF BOILING ON REDUCING URIC ACID LEVELS IN ELDERLY IN PMB NY. R GANDUL CINERE DEPOK YEAR 2023

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Abstract

If purine intake from food is too high, exceeding 15% of the body's needs, there will be a buildup of purine in the body. Foods that contain high levels of purine cause uric acid levels to rise in the body. In Indonesia, the prevalence of gout at ages 55-64 years is around 45%, and at ages 65-74 years is around 51.9%, and at ages >75 years is around 54.8%. The prevalence of gout arthritis in Indonesia in 2018 was around 11.9%, with Aceh at 18.3%, West Java at 17.5%, and Papua at 15.4%. Based on the symptoms of gouty arthritis in East Nusa Tenggara, it is 33.1%, West Java is 32.1%, and Bali is also 30%. According to one study, increasing uric acid levels in the blood, apart from causing gout, is a strong predictor of death due to cardiovascular damage. The aim of this research was to determine the effect of giving boiled mango leaves on reducing uric acid levels in PMB Ny. R Gandul Cinere Depok 2023. Type pThe research used was an experiment with Quasy Experiment using a one group Pre-Post test design approach. The population in this study was 30 menopausal elderly people. Data analysis used the Shapiro Wilk test and Wilcoxon test.The results of the analysis research show that the average pretest before given boiled mango leaves, namely 7.233 and the average posttest score after being given boiled mango leaves was 5.257with a significant p-value = 0.000. ConclusionThere is an effect of giving boiled mango leaves on uric acid levels in menopausal elderly in PMB Ny. R Gandul Cinere Depok in 2023.

Keywords: Uric Acid, Mango Leaves, Elderly

Background

Coinciding with an increase in a person's income, it causes unhealthy eating

habits, often consuming foods that contain excessive amounts of purine such as offal, meat, sardines and nuts. If purine intake from food is too high, exceeding 15% of the body's needs, there will be a buildup of purine in the body. Foods that contain high levels of purine cause uric acid levels to rise in the body (Suriana, 2014).

One of the triggers for increasing uric acid levels is the aging process in the elderly. Every human being in this world will experience a natural aging process. Along with the aging process, the body will experience various health problems which are usually called degenerative diseases. One of the degenerative diseases experienced by the elderly is gout. The course of gout is characterized by pain in the legs. In laboratory examination results, the diagnostic criteria for men are > 7 mg/dl and for women > 5.7 mg/dl (Crwther, 2006 in Sri S, 2021).

In the United States, gout itself has increased and affects 8.3 million (4%) Americans. In 2016 in China the prevalence of hyperuricemia was 25.3% and gout was 0.36%, occurring in adults aged 20-74 years (Syahradesi, 2020 in Elvie FD, 2022). Meanwhile, the prevalence of hyperuricemia has also increased and affects 43,300,000 (21%) adults in the United States alone. Research in Taiwan in 2013 found that the prevalence of gout was 41.4% and also increased by 0.5% every year (Songgigilan et al., 2019 in Elvie FD, 2022).

Gout is estimated to occur in 840 people out of every 100,000 people. In one study, it was found that the incidence of uric acid was 4.9% at levels > 9 mg/dL, 0.5% at levels 7-8.9 mg/dL, and 0.1% at levels 9 mg/dL (Hidayat, 2009 in Fira DC et al., 2019).

Based on WHO (World Health Organization) data in the Non-Communicable Dissease Country Profile (2011), in Indonesia the prevalence of gout at the age of 55-64 years is around 45%, and at the age of 65-74 years it is around 51.9%, and age >75 years ranges from 54.8% (Syarifuddin et al., 2019 in Elvie FD, 2022). The prevalence of gout in Indonesia in 2018 was around 11.9%, with Aceh at 18.3%, West Java at 17.5%, and Papua at 15.4%. Based on the symptoms of gout in East Nusa Tenggara, it is 33.1%, West Java is 32.1%, and Bali is also 30% (Syahradesi, 2020 in Elvie FD, 2022).

In 2020, gout was included in the top 10 most common non-communicable diseases in Depok City. Based on data from the elderly posyandu conducted at PMB Ny.

R found a number of 30 menopausal elderly people who suffered from gout. Risk factors that cause people to develop gout are age, excessive intake of purine compounds, excessive alcohol consumption, overweight (obesity), lack of physical activity, hypertension and heart disease, certain medications (especially diuretics) and impaired kidney function. According to one study, increasing uric acid levels in the blood is a strong predictor of death due to cardiovascular damage (Fatwa MS, 2014).

Gout treatment is non-pharmacological by using mango leaf plants. Mango is a plant that is easy to obtain and has benefits, mango leaves contain antioxidant, antimicrobial, antitumor properties, and also contain flavonoid compounds. Flavonoids are natural phenolic compounds that have potential as antioxidants and have bioactivity as medicines. The antioxidant properties found in mango leaves can reduce the formation of uric acid. The effectiveness will be felt by giving boiled water from mango leaves for 7 days once per day.

Based on the above background, researchers are interested and want to conduct further research on "The Effect of Giving Mango Leaf Decoction on Reducing Uric Acid Levels".

Method

1. Research design

The type of research used in this research is an experimental research design with Quasy Experiment using a one group Pre-Post-test design approach. This research analyzes the effect of giving boiled mango leaf water on uric acid levels in the elderly at PMB Ny. R Gandul Cinere Depok in 2023.

2. Settings and samples

The population in this study was 30 menopausal elderly people who came for check-ups at PMB Ny. R Gandul Cinere Depok 2023. The sample in this study was 30 menopausal elderly people suffering from gout. In research, the samples taken must have criteria.

3. Intervention (applies to experimental studies)

This research uses decoction of mango leaves by boiling 7-10 mango leaves with 700

ml of water, let it boil until 150 ml remains, then strain and drink 1 time/day, 150 ml/administration for 7 days.

4. Measurement and data collection

This research uses an observation sheet which is used to measure respondents' uric acid levels using GCU before and after being given boiled mango leaf water and data collection in this research, namely explaining to potential respondents about the research that will be carried out and if they are willing to be respondents, they are invited to fill out the informed consent, explaining to respondents about the implementation of the SOP for making boiled mango leaf water, checking uric acid levels on respondents before and after giving boiled mango leaf water, respondents are asked to drink boiled mango leaf water 1x/day for 7 days, documenting respondents who have drunk boiled water from mango leaves and the results of uric acid levels on the observation sheet.

5. Data analysis;

Data analysis in this study used the Shapiro Wilk test and the Wilcoxon test.

Results

Table 1
Average Value of Uric Acid Levels Before and After Giving Mango Leaf Decoction

Uric Acid Levels	N	Min.	Max.	*Mean*	elementary school
Pretest	30	6.0	8.7	7,233	0.855
Posttest	30	4.3	7.2	5,257	0.697

Based on the table above, it is known that the average value of uric acid levels before being given boiled mango leaves was 7.233 and the average value after giving boiled mango leaves for 7 days was 5.257. This means that there is a decrease in the average value, which means that there is a decrease in uric acid levels after being given boiled mango leaves.

Table 2

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Normality Test Before and After Giving Decoction of Mango Leaves with the Shapiro-Wilk Type

Rate	Variable	Sig.
Gout	Pretest	0.059
	Posttest	0.002

Based on table 2, it is known that the Sig. before and after treatment were 0.059 and 0.002. From this data, it shows that the pretest value is > 0.05, meaning the data is normally distributed, while the posttest value < 0.05 means the data is not normally distributed, so the statistical test used in this research is the Wilcoxon test.

Based on the table above, it is known that the Sig. after treatment is 0.002. From this data, it shows that the posttest value is <0.05, meaning the data is not normally distributed, so the statistical test used is the Wilcoxon test.

Table 3
The Effect of Giving Mango Leaf Decoction on Uric Acid Levels in PMB Ny. R Gandul Cinere Depok in 2023

Uric Acid Levels	N		*Mean*	ele-men-tary school	p-value	Mean rank	Sum of ranks	Z
Pretest	Negative Ranks	24	7,233	0.855		0.00	0.00	
	Positive Ranks	0						
Posttest	Ties	6	5,257	0.697	0,000	12.50	300.00	-4,289
	Total	30						

Based on table 3, the results of the analysis of uric acid level values before and after being given boiled mango leaves, it is explained that the average value of uric acid levels before being given boiled mango leaves has a mean value of 7.233, with a standard deviation of 0.855, with a mean rank result value of 0.00. sum of rank 0.00 and Z value -4.289. Regarding uric acid levels after being given boiled mango leaves, it was explained that the mean value was 5.257 with a standard deviation of 0.697, with a mean rank value of 12.50, sum of rank 300.00 and a Z value of -4.289.

Because it is not normally distributed, using the Wilcoxon Sign Rank Test statistical test shows the value of $p = 0.000 < \alpha = 0.05$, this means that H0 is rejected and Ha is accepted, meaning that there is an influence on uric acid levels before and after

administering the mango leaf decoction.

Discussion

The mango plant (Mangifera indica L.) is a plant that has potential as a herbal medicine because it contains secondary metabolite compounds. The research that has been carried out on mango plants is the mango leaves themselves (Widijanti & Bernard, 2007 in Dian RN et al., 2017). In this study, mango leaves were very influential in reducing uric acid levels. Based on research data, decoction of mango leaves was given for 7 days as an effort to reduce uric acid levels in menopausal elderly people. In this study, from 30 respondents, the average result obtained before administering the mango leaf decoction was 7.233 with a standard deviation of 0.855, the highest frequency of uric acid levels was 8.7 and the lowest was 6.0. Meanwhile, after being given boiled mango leaves, the average result was 5.257 with a standard deviation of 0.697 with the highest frequency of uric acid levels being 7.2 and the lowest being 4.3. So it can be concluded that there was a decrease in the average uric acid levels in menopausal elderly in PMB Ny. R Gandul Cinere Depok in 2023.

Reducing uric acid levels using mango leaves has also been proven by (Pramudia et al, 2014) that mango leaf extract can be used to reduce uric acid levels in melinjo seeds. This research was carried out by boiling peeled melinjo seeds in young mango leaf extract. Then dried using an oven or can also be dried using sunlight if possible. The results of this study showed that there was a decrease in uric acid levels in melinjo seeds by 17.86%.

Researchers proved that uric acid levels in gout sufferers at PMB Ny.R Gandul Cinere Depok experienced changes after being given decoction of mango leaves as shown in table 4.3 where it was found that uric acid levels were successfully reduced in 24 respondents and uric acid levels remained stable in 6 respondents. This occurs due to non-compliance in consuming foods with low purine content and also inconsistency in consuming boiled mango leaves.

These changes show that boiled mango leaves have a significant effect on uric acid levels in gout sufferers. The effect of mango leaf decoction therapy on uric acid levels has been carried out statistical tests using the Wilcoxon test at a significance level of $\alpha =$

0.05 with a value (ρ) obtained of 0.000 with the help of SPSS 16. Because the value (ρ) is smaller than the value (α), then H0 is rejected and Ha is accepted, meaning that there is a significant difference between boiled mango leaves and changes in uric acid levels.

Viewed from a theoretical perspective (Fragil KB et al., 2022), mango leaves contain various nutrients that are beneficial for health. Mango leaves contain antioxidant, anti-inflammatory and antibacterial substances as well as several nutrients contained in mango leaves, namely Water, Protein, Fat, Sugar, Fiber, Minerals, Lime, Phosphorus, Potassium, Iron, Vit A, Vit B1, Vit B2, Vit C, nicotinic acid, calories. Mango leaves also contain purine dissolving compounds, namely flavonoids, which play an important role in reducing uric acid levels (Pramudia BD et al., 2014).

This is also in line with research conducted by, (Kumar, M et al., 2021), that in mango leaves there is the active compound mangiferin, followed by phenolic acid, benzophenone, and other antioxidants such as flavonoids, carotenoids, quercetin, isoquercetin, Ascorbic acid, and tocopherol, these ingredients really contribute to improving health, one of which is flavonoids, which play a big role in reducing uric acid levels in the body.

Researchers assume that there is an accelerated decrease in uric acid levels with the content contained in boiled mango leaves. Apart from that, respondents' compliance in following the research process also greatly influences the results obtained. So there needs to be another alternative to deal with uric acid levels, namely, decoction of mango leaves which appears to be very effective in this study for reducing uric acid levels.

Limitations

In carrying out this research, researchers acknowledged that there were many weaknesses and shortcomings, making it possible that the existing results were not optimal or could be said to be imperfect. Every research definitely has obstacles in the implementation process, in this study it had limitations, namely the researcher had difficulty making boiled mango leaves, because of limited time and the researcher had difficulty collecting respondents.

Conclusion

Knowing the average uric acid level before being given boiled mango leaves,

namely 7.233 and after being given boiled mango leaves, namely 5.257. So, there is an effect of giving boiled mango leaves on changes in uric acid levels in Mrs. PMB. R Gandul Cinere Depok with a significant p-value = 0.000.

Confession

The researcher would like to thank the owner of TPMB, the house of the National University cadre and all parties who have helped carry out this research.

Author contributions

Contributions in writing this article were made by the main author and supervisor so that this article was created according to the template provided.

Reference

1. Elvie FD. Diet and its Relationship to Uric Acid Levels. Jambura Nurisng Journal. 2022;4(1), 7-15.
2. Fatwa MS. Diagnosis and Treatment of Gouty Arthritis. J Majority. 2014;3(7), 39-45.
3. Fira DC, Fajar S, Sri ES. Effect on The Decrease Intensity Gymnastics Rheumatic Pain in Gout Arthritis Patients. Nursing Journal window. 2019;3(2):89-97.
4. Fragil KB, Novita C, Oktafany, Rasmi ZO. Antibacterial Activity of Mango Plants (Mangifera indica L.): Literature Review. Agromedicine. 2022;9(1), 31-36.
5. Kumar, M., Saurabh, V., Tomar, M., Hasan, M., Changan, S., Sasi, M., Maheswari, C., Prajapati, U., Singh, S., Prajapat, KR, Dumal , S., Punia, S., Amarowicz, R., & Mekhemar, M. Mango (Mangifera indica L.) Leaves: Nutritional Composition, Phytochemical Profile, and Health-Promoting Bioactivities. Antioxidants. 2021; 10(1), 1-23.
6. Pramudia BD, Ulys L, Siti, S. Utilization of Mango Leaf Extract (Mangifera foetida L.) as a Uric Acid Reducer in Melinjo Seeds. Chemica. 2014;1(2):67-75.
7. Sri S. Uric Acid Levels Enzymatic Method in Serum Samples and Edta Plasma Samples (Study at Tambakrejo Health Center, Jombang). Husada's Health Journal. 2021;9(2): 104-111.
8. Suriana N. Magical Herbs for Treating Gout. Depok: Mutiara; 2014.

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