OVERVIEW OF URIC ACID LEVEL EXAMINATION RESULTS IN GREEN VEGETABLE CONSUMERS IN MOUTONG DISTRICT

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ABSTRACT

Increased uric acid levels in the body occur due to several factors, one of which is consuming foods high in purines. To prevent this from happening, it is important t o pay attention to the frequency of consumption of foods containing purines, one of which is green vegetables. This study aims to examine uric acid levels in people who consume excessive amounts of green vegetables in Moutong District. The research method used a quantitative approach. The type of research design used was a descriptive design with an observational descriptive design. It used 30 samples of excessive green vegetable consumers in Moutong District. The results of this study obtained 30 samples, consisting of 19 females and 11 males. The results showed that the average uric acid levels were within the normal range. It can be concluded that excessive consumption of green vegetables can increase uric acid levels, but this can also be influenced by several other factors, such as genetic history, age, gender, alcohol consumption, and consumption of other foods high in purines.

Keywords: Uric Acid, Green Vegetables

INTRODUCTION

According to the World Health Organization (WHO), uric acid is the end product of purine metabolism, a physiological process occurring in the human body. Disruptions in this metabolic process can lead to the accumulation of uric acid crystals in joint tissue, which then triggers severe pain.[1]

According to WHO data (2020), approximately 33.3% of the global population suffers from high uric acid levels. This condition is common in several developed countries, with prevalence reaching 39% in the United States and around 32% in the United Kingdom. However, the increase in gout cases is not limited to developed countries; similar incidents are also occurring in several developing countries, including Indonesia. This fact indicates that gout is a global health
problem that requires attention worldwide, in both developing and developed countries.

Indonesia ranks fourth in the world for the number of gouty arthritis sufferers, with approximately 35% of cases occurring in men aged 45 years and older. The incidence of gout in Indonesia increases with age, reaching 45% in the 55–64 age group, 51% in the 65–74 age group, and reaching 54.8% in those aged 75 and above.[1]

Foods high in purines can increase uric acid levels. Therefore, it's important to control your intake of high-purine foods, such as organ meats, meat, certain vegetables, and nuts, in

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your daily diet. Limiting these foods is highly recommended for individuals diagnosed with high uric acid levels, as excessive consumption of purine-containing foods can accelerate purine metabolism and lead to uric acid buildup in the blood.[2]

While green vegetables are generally safe to consume, there are situations where consuming green vegetables/high-purine foods is worth considering if someone already has severe hyperuricemia or gout attacks, and also has poor kidney excretion. Uric acid levels in green vegetable consumers can increase, especially when combined with other factors such as alcohol consumption, excess body weight, lack of exercise, and dehydration.[3]

People with gout generally experience severe pain in the joints, most commonly affecting the feet, the base of the big toe, knees, elbows, wrists, and fingers and toes. Affected joints typically appear swollen, tender to the touch, warm, and reddish. Pain typically lasts 3 to 10 days, with symptoms tending to increase in intensity rapidly within the first few hours after the initial attack.[4]

The maximum daily intake of green vegetables such as spinach, green beans, cauliflower, asparagus, kale, snow peas, long beans, and cassava leaves is 100 grams, or the equivalent of six tablespoonfuls. Consuming these vegetables more than three times a week can potentially increase uric acid levels.[5].

Hyperuricemia is not solely caused by increased uric acid levels due to purine metabolism from food or genetic factors such as Lesch-Nyhan syndrome, but in most cases, approximately 90%, is caused by a decrease in the kidney's ability to excrete uric acid. Uric acid levels increase due to a combination of excess uric acid production and impaired renal excretory function, which ultimately leads to the accumulation of uric acid in the bloodstream and its deposition in joint tissue.[6].

Some factors that increase a person's tendency to experience gout include gender, age, consumption patterns of foods with high purine content, excessive alcohol consumption habits, obesity, hypertension, cardiovascular disorders, use of certain medications such as diuretics, and decreased kidney function.[7].

Overall, the MCC and HPMC-based excipient co-processing technology successfully overcomes various challenges in the formulation of sambiloto extract tablets, including flow, compressibility, and dissolution issues.[8].

RESEARCH METHODS

This study used a quantitative method with a descriptive observational design to observe the description of uric acid level examination results in green vegetable consumers in Moutong District. The study was conducted from July 5 to 18, 2025, in Moutong District. The study sample consisted of 30 people selected by purposive sampling based on certain inclusion and exclusion criteria. Primary data were obtained from examinations using the POCT tool, while secondary data were obtained from supporting literature. Data analysis was carried out univariately with descriptive tests to determine the description of uric acid level examination results in green vegetable consumers in Moutong District.

RESEARCH RESULT

1. Distribution of Respondents by Gender

Table 1. Distribution of Respondents by Gender

Gender	Frequency	Presentation %
L	11	36.7%
P	19	63.3%
Total	30	100%

(Source: Primary Research Data, 2025)

Based on Table 4.1, of the 30 respondents who consumed green vegetables excessively, there were 11 male respondents (36.7%) and 19 female respondents (63.3%).

2. Distribution of Respondents by Age

Table 1. Distribution of Respondents by Age

Age	Frequency	Presentation%
18-25 Years	8	26.7%
26-35 Years	3	10%
36-45 Years	11	36.7%
46-55 Years	6	20%
56-65 Years	2	6.7%
Total	30	100%

(Source: Primary Research Data, 2025)

Based on Table 4.1, of the 30 respondents who frequently consumed green vegetables excessively, 11 respondents (36.7%) were male, while 19 respondents (63.3%) were female.

3. Distribution of Respondents Based on Genetic Factors

Table 3. Distribution of Respondents Based on Genetic Factors

Genetic History	Frequency	Presentation%
There is	7	23.3%
There isn't any	23	76.7%
Total	30	100%

(Source: Primary Research Data, 2025)

Based on Table 4.3, it shows that of the 30 respondents who often consume excessive amounts of green vegetables, 7 respondents (23.3%) had a genetic history, while 23 respondents (76.7%) did not have a genetic history.

4. Distribution of Respondents Based on Other High Purine Consumption

Table 4. Distribution of Respondents Based on Other High Purine Consumption

Frequently Consuming Other High Purine Foods	Frequency	Presentation%
Yes	21	70%
No	9	30%
Total	30	100%

(Source: Primary Research Data, 2025)

Based on Table 4.4, it shows that of the 30 respondents who often consume excessive amounts of green vegetables, 20 respondents (70%) often consume other high-purine foods, while 10 people (30%) do not or are still within reasonable limits.

5. Distribution of Respondents Based on Frequency of Consuming Green Vegetables

Table 5. Distribution of Respondents Based on Frequency of Consuming Green Vegetables

Consumption of Green Vegetables	Frequency	Presentation%
Currently	22	73.3%
Tall	8	26.7%

Total	30	100%

(Source: Primary Research Data, 2025)

Based on Table 4.5, it shows that of the 30 respondents who frequently consume green vegetables, 22 respondents (73.3%) consumed green vegetables at a moderate level (3-4 days/week), while 8 people (26.7%) consumed green vegetables at a high level (5-7 days/week).

6. Descriptive Test Results

Table 6. Descriptive Test Results of Uric Acid Levels

	N	Minimum	Maximum	Mean
Uric Acid Levels	30	5.9	13.7	7,877

(Source: Primary Research Data, 2025)

Based on Table 4.6, of the 30 respondents, the average uric acid level was 7.877 mg/dL, with a range of values between 5.9 mg/dL and 13.7 mg/dL. This average value is above the normal uric acid level limit for both women (2–6 mg/dL) and men (3.5–7.7 mg/dL). Therefore, it can be concluded that many respondents who consume excessive amounts of green vegetables have abnormal uric acid levels.

DISCUSSION

Uric acid levels can increase due to several external factors, one of which is consuming foods and drinks that trigger uric acid formation. If the amount of uric acid produced exceeds the body's ability to excrete it, it means there is a disruption in the kidney's excretion process, causing uric acid crystals to accumulate in the kidneys and joint tissue. This metabolic process begins with the processing of nutrients such as carbohydrates, proteins, and fiber through various biochemical reactions in the body to produce the necessary energy and chemical components. An imbalance or dysfunction in this metabolic process can lead to increased uric acid production and accumulation in the body's system.[9]

The study results showed that the average uric acid level in respondents was 7.877 mg/dL with a range of 5.9 to 13.7 mg/dL. In general, this value is above the normal limit, both in men (3.5–7.7 mg/dL) and women (2–6 mg/dL). Average uric acid levels that exceed the normal threshold can be caused by various factors that affect the balance of uric acid production and excretion in the body. First, consumption of green vegetables with moderate to high purine content, such as spinach (57 mg/100 g), cassava leaves (68 mg/100 g), long beans (80 mg/100 g), and papaya leaves (75 mg/100 g), is one of the main causes.

This study found a significant association between the habit of consuming green vegetables containing high purines and increased uric acid levels. Based on the mechanism of purine metabolism, purine compounds obtained from food will undergo a degradation process to hypoxanthine, then converted to xanthine, and finally metabolized to uric acid through the catalysis of the enzyme xanthine oxidase. If the amount of purine consumed exceeds the kidney's excretion capacity, uric acid will accumulate in the bloodstream, potentially leading to hyperuricemia.[10].

The results of this study showed that 73.3%

of respondents consumed green vegetables at a moderate level (3–4 days in 1 week), while 26.7% consumed them at a high frequency (5–7 days in 1 week).

This research is in line with the results of studiesFauziah et al., (2022)which shows that consuming certain foods contributes to increased uric acid levels. The foods with the most significant impact are green leafy vegetables, followed by nuts and seafood, which are known to be high in purines.

Significantly high uric acid levels can be triggered by a high intake of foods containing purines. Diet and daily consumption habits play a significant role in determining a person's metabolic health status. In individuals with high uric acid levels, consuming foods high in purines can worsen the condition, considering that approximately 85% of purines in the body are produced endogenously to meet physiological needs, while only about 15% comes from dietary intake[12].

Based on Table 4.1, it is known that of the 30 respondents who reported having the habit of consuming green vegetables excessively, 11 respondents (36.7%) were male and 19 respondents (63.3%) were female.

Gender is also associated with differences in physiology and purine metabolism. Men generally have greater muscle mass and higher purine metabolism, resulting in higher uric acid production. Meanwhile, women generally have different levels of sex hormone-binding globulin (SHBG) and body composition, which also affect uric acid levels.[13].

Based on Table 4.2 regarding the distribution of respondents based on age group, it is known that the majority of respondents are in the 36–45 y ear age range (36.7%), followed by the 18–25 year age group (26.7%), while the lowest proportion is in the 56–65 year age group (6.7%).

According toAmrullah et al., (2023)The productive age group (15–64 years) is vulnerable to health problems that often go undetected early, which can impact quality of life and work productivity. Respondents in the 46–55 year age group (20%) and 56–65 year age group (6.7%) have entered late adulthood to early old age.

The results displayed in Table 4.3 show that the majority of respondents, namely 76.7%, did not have a genetic history, while only 23.3% of respondents reported a genetic history.

The results of this study are also in line with those conducted byLasmawanti et al., (2022), which revealed a significant association between genetic factors and the occurrence of gout. Genetic factors in individuals with hyperuricemia are generally associated with impaired purine metabolism, where genetic abnormalities can disrupt glycogen storage and lead to enzyme deficiencies that play a role in digestion and energy metabolism. This enzyme deficiency disrupts normal metabolic processes, leading the body to produce excess compounds such as lactic acid and triglycerides.

According to Riswana and Mulyani (2022) Genetic factors play a significant role in increasing the prevalence of gout in certain ethnic groups. Genetically, individuals with gout generally have a genetic disorder or disruption in purine metabolism, resulting in excess uric acid production or a decreased

ability of the body to excrete it. This condition leads to the accumulation of uric acid in the blood, potentially leading to clinical symptoms of hyperuricemia.

In this study, 70% of respondents were recorded as frequently consuming other high-purine foods. Combining consumption of moderately to high-purine green vegetables with other foods has the potential to accelerate the development of hyperuricemia.

This research is in line with the results of studiesHerawati et al., (2020)reported that 15 respondents (34.1%) still consumed foods and drinks that gout sufferers should avoid. This indicates difficulty in changing their drinking habits, such as strong tea and coffee. Furthermore, several respondents were also known to still frequently consume high-fat foods, such as thick coconut milk. This consumption pattern has the potential to increase uric acid levels, as high purine and fat content can interfere with uric acid metabolism and excretion in the body.

Consistent consumption of foods high in purines can trigger increased uric acid levels, thereby increasing the risk of gouty arthritis. Certain foods high in purine nucleotides, including sardines, kale, organ meats, and spinach, significantly contribute to increased uric acid production in the body.[17].

CONCLUSION

Based on the results of a study entitled "Overview of Uric Acid Level Examination Results in Consumers of Excessive Green Vegetables in Moutong Regency" involving 30 respondents, it was found that the majority of respondents had uric acid levels exceeding the normal threshold. The average uric acid level obtained was 7.877 mg/dL, with a range of values between 5.9 and 13.7 mg/dL. In general, these results indicate that the respondents' uric acid levels were above the normal reference value, which is 2–6 mg/dL in women and 3.5–7.7 mg/dL in men.

Most respondents consumed green vegetables with moderate frequency (3–4 times/week)73.3% of the population consumed high amounts of purine, while 26.7% consumed high amounts of purine. The types of vegetables consumed were in the moderate to high purine category. Factors contributing to increased uric acid levels included a genetic history (23.3%) and consumption of high-purine foods (70%).

High uric acid levels were found in all age groups, with the highest proportion in those aged 36–45 years (36.7%), followed by those aged 18–25 years (26.7%), indicating that hyperuricemia affects not only the elderly but also those of productive age. Women dominated the number of respondents (63.3%), but high uric acid levels were found in both sexes.

BIBLIOGRAPHY

[1] WH Organization,*Prevalence of Gout Arthritis in the World*. WHO, 2020.

[2] Febriyanti, "The Relationship Between the Ability to Manage a Low Purine Diet and Uric Acid Levels,"*J. Ners LENTERA*, vol. 8, no. 1, pp. 72–79, 2020.

[3] R. Asiah and H. Turochman, “Application of Acupressure Techniques in Families with Gout Arthritis,”*Health. Publ. Ilm. Bid.*

Health., vol. 7, no. 2, 2023, doi: 10.36971/keperawatan.v7i2.143.

[4] S. Salsabila,*Gout Disease, Symptoms and Treatment*. UMSU, 2023.

[5] N. Endah and A. Zulmah, "Description of Dietary Patterns Based on Type, Frequency and Amount of Meals on Increased Uric Acid Levels: Literature Review,"*J. Borneo Student Res.*, vol. 3, no. 1, 2022.

[6] Yanita,*Making Peace with Gout*. Bumi Medika, 2022.

[7] DL Shiyama, EY Mahtuti, M. Masyhur, and Faisal, "Examination of Uric Acid Levels of Farmers and Farm Laborers in RT. 30 Sananrjo Turen,"*J. Meditory*, vol. 10, no. 2, pp. 175–181, 2022.

[8] N. Afni, L. Tri, and S. Maulana, "APPLICATION OF EXCIPIENT CO-PROCESSING TECHNOLOGY FOR SAMBILOTO EXTRACT TABLETS," pp. 67–76, 2025.

[9] A. Widiyanto*et al.*, "Innovation of Joint Stretching Exercises as a Promotive and Preventive Effort to Increase Uric Acid Levels in the Elderly in Sokokerep Hamlet, Garangan Village, Wonosamodro District, Boyolali Regency," J. Peduli Masy., vol. 4, no. 1, 2022.

[10] Wulandari,*Gout and Rheumatism*. Jakarta: Puspaswara, 2023.

[11] ANF Fauziah, Fifi; Muftadi; Rahayu, "Literature Review: The Effect of Giving Boiled Bay Leaves (Syzygium polyanthum) Water on Reducing Uric Acid Levels in the Elderly,"*J. Ners Widya Husada*, vol. 9, no. 1, 2022.

[12] Indriawan, "Gout Disease,"*Unikom.ac.id*, vol. 7, p. 69, 2022.

[13] I. Riswana and NS Mulyani, "Risk Factors Affecting Uric Acid Levels in Hyperuricemia Patients in the Muara Satu Community Health Center Work Area, Lhokseumawe City,"*Darussalam Nutr. J.*, vol. 6, no. 1, pp. 29–36, 2022.

[14] AA Amrullah*et al.*, "Description of Uric Acid in the Elderly at Posyando Melati, Cipayung District, East Jakarta," J. Ris. Health Sciences and Nursing, vol. 1, no. 2, 2023.

[15] S. Lasmawanti, Yuniati, and DS Daulay, "Factors for Preventing Gout in the Elderly in Hamlet IV, Air Jorman Village,"*J. Heal. Purp.*, vol. 1, no. 1, 2022.

[16] R. Herawati, N. Sumiati, and F. Kiki, "The Relationship Between Diet and Uric Acid Levels in the Elderly,"*J. Phenomenology. Health.*, vol. 3, no. 2, 2020.

[17] A. Dinata, "The Effect of Consuming High-Purine Vegetables on Uric Acid Levels in the Elderly,"*J. Nutrition and Healthy Food*, vol. 8, no. 2, pp. 45–52, 2020.

[18] AASM Indrayani, "Analysis of Triglyceride and HDL (High Density Lipoprotein) Levels in Pharmacy Workers at Indobat Pharmacy, Denpasar,"*J. Muhammadiyah Med. Lab. Technol.*, vol. 2, no. 2, p. 18, 2019, doi: 10.30651/jmlt.v2i2.2581.

[19] W. Febiola and HH, "The Relationship between Body Mass Index (BMI) and

Triglyceride Levels in Women Aged40-60 Years," J. Science and Technol. Lab. Med., vol. 2, no. 1, pp. 2–7, 2017.

[20] RNI Siregar, "THE EFFECT OF Eugenia polyantha EXTRACT ON LDL CHOLESTEROL.,"*J. Delima Harapan*, vol. 7, no. 2, pp. 118–127, 2015.

[21] DN Khasanah, I. Setiyobroto, and W.Kurdanti, "The Relationship between Carbohydrate and Fat Intake and Triglyceride Levels in Female Aerobic Gymnasts," J. Nutr., vol. 19, no. 2, p. 84, 2020, doi: 10.29238/jnutri.v19i2.249.