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An Ethnobotanical Study of Medicinal Plants Used for the Treatment of Gout by the Community of Bandung City

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Abstract: Gout is a metabolic disorder characterized by elevated uric acid levels that can cause inflammation and joint pain. In recent years, the incidence of gout has increased, including among younger populations, highlighting the need for alternative and complementary treatments. This study aimed to explore the ethnobotanical knowledge of medicinal plants used by the community of Ujungberung District, Bandung City, in the management of gout. This research employed a qualitative ethnobotanical approach. Data were collected through in-depth interviews, participatory observation, and literature review involving 20 selected informants using purposive sampling. The study was conducted from December 2025 to January 2026. The results identified nine medicinal plant species commonly used to treat gout, with ginger, turmeric, and bay leaf being the most frequently utilized. The plants were mainly processed by boiling, and their use was based on traditional knowledge passed down through generations. These plants contain bioactive compounds such as flavonoids, curcuminoids, and essential oils, which are known to have anti-inflammatory and uric acid–lowering properties. In conclusion, the community in Ujungberung District continues to rely on medicinal plants as a complementary therapy for gout management. This study emphasizes the importance of documenting ethnobotanical knowledge and highlights the potential of local medicinal plants as accessible and affordable alternatives for gout treatment.

Keywords: Ethnobotany; Gout; Medicinal Plants; Tradicional Medicine; Uric Acid.

Introduction

Medicinal plants are plants that contain natural chemical compounds or bioactive metabolites in their parts, such as roots, stems, leaves, bark, flowers, and seeds, which can be utilized for therapeutic purposes, disease prevention, health recovery, and improvement of physiological conditions of the body. The use of medicinal plants generally relies on traditional knowledge passed down from generation to generation, but it is also supported by scientific research demonstrating specific pharmacological properties, such as anti-inflammatory, analgesic, antioxidant, and antipyretic activities. Consequently, medicinal plants serve as an important source of natural materials that can be effectively used in the development of traditional and modern medicines.

High levels of uric acid in the blood often lead to kidney damage and gout. Excessive accumulation of purines can result in increased uric acid levels in the body. An individual is suspected of having hyperuricemia when blood uric acid levels reach 7.0 mg/dL in men and 6.0 mg/dL in women. If this condition is not properly managed, it can progress to gout, a condition in which urate crystals are deposited in tissues, causing inflammation. Common symptoms include severe pain in the affected area, swelling, and may also trigger systemic reactions in the body. The prevalence of gout tends to be higher in men than in women and increases significantly with advancing age (Cross, et al., 2024).

The main issue in the current treatment of gout (gouty arthritis) is related to the use of allopurinol as an antihyperuricemic drug. Patients with gouty arthritis are generally required to take allopurinol for long-term or periodic use. Prolonged use of this drug increases the risk of adverse effects. These side effects often contribute to patient non-adherence to treatment, which ultimately leads to failure in

achieving therapeutic goals and may worsen the condition. Therefore, the search for safer and more effective treatment approaches has become increasingly important, including the potential use of natural or herbal medicines.

Before the development of modern medicine, Indonesian communities had utilized natural resources through ethnobotanical knowledge to help alleviate the symptoms of gout. This practice is not solely based on traditions passed down through generations but is also supported by scientific studies demonstrating that various herbal plants contain active compounds, such as flavonoids, alkaloids, and saponins, which play a role in reducing uric acid levels. Through various educational activities and programs implemented at the village level, public awareness of the potential of Family Medicinal Plants (TOGA) has continued to increase. Communities have begun to use medicinal plants as a more affordable and easily accessible alternative available in their surrounding environment. Efforts to cultivate and process herbal plants independently also promote self-reliance in maintaining health, thereby reducing dependence on chemical-based medicines in daily life (Puspitasari, Sari, & Indrayati, 2021)

In recent years, the incidence of gout among younger age groups in Bandung has continued to increase and has become a serious concern in the health sector. Consumptive lifestyles and habitual consumption of purine-rich foods play a significant role as triggering factors. On the other hand, the utilization of local medicinal plants as alternative treatments has not yet been systematically documented. This study aims to re-examine how the people of Bandung utilize surrounding natural resources in efforts to reduce uric acid levels and to analyze these practices through a scientific approach. This effort is of particular importance, as it not only contributes to the preservation of traditional knowledge passed down through generations but also enhances public understanding that health maintenance can be achieved through affordable means. The utilization of local natural potential is expected to encourage health self-reliance through methods that are safer for the body and more economical for the community.

Material and Methods

This study employed a qualitative method with an ethnobotanical approach to examine the utilization of medicinal plants for gout treatment by the community of Bandung City. The research was conducted in Ujungberung District, as the local community continues to preserve traditional herbal-based medicinal practices. The study was carried out over a two-month period, from December 2025 to January 2026.

The Data were collected through in-depth interviews, participatory observation, and the review of supporting documents. Interviews were conducted with community members who regularly use medicinal plants to manage gout in order to obtain information regarding the types of plants used, preparation methods, usage patterns, and the cultural values underlying these practices. The collected data were further strengthened by literature review to ensure the scientific validity of the findings.

The study involved 20 participants selected using purposive sampling based on specific criteria, including individuals who had used or were currently using medicinal plants to treat gout, local elders or key informants with extensive traditional knowledge, and community members who were knowledgeable about and willing to explain traditional medicinal practices in their environment. This approach is expected to provide a comprehensive overview of ethnobotanical practices and cultural values related to the use of medicinal plants in Ujungberung District. The data were analyzed descriptively using a qualitative approach by grouping responses into thematic categories related to plant species, parts used, preparation methods, and patterns of use.

Result and Discussion

Result

The results of this study were obtained through data collection conducted via interviews with informants who had a history of gout and used medicinal plants as a form of treatment. The data collected included respondents' characteristics, gout health history, and patterns of medicinal plant use, covering the types of plants used, methods of preparation, dosage, as well as informants' perceptions of the benefits and side effects experienced when using medicinal plants for gout treatment. All data are presented in tabular form to facilitate understanding and analysis.

Table 1. Characteristics of Respondents in Ujung Berung District

No.	Respondens Characteristics	Frequency	Percentage (%)
1.	**Age (Years)**		
	25 – 35	3	15%
	36 – 45	5	25%
	46 – 55	4	20%
	56 – 65	6	30%
	>65	2	10%
2.	**Gender**		
	Female	13	65%
	Male	7	35%
3.	**Last Education Level**		
	Elementary School	4	20%
	Junior High School	5	25%
	Senior High School/Vocational School	8	40%
	Diploma (D3)		
	Bachelor's Degree	1	5%
		2	10%
4.	**Occupation**		
	Daily Laborer	3	15%
	Entrepreneur	2	10%
	Private Employee	4	20%
	Teacher	1	5%
	Housewife	8	40%
	Unemployed	2	10%

Based on Table 1, most respondents were in the 56–65 years age group (30%). The majority were female (65%), had completed senior high school or vocational high school education (40%), and were predominantly housewives (40%).

Table 2. History of Gout Among Respondent

No.	Variable	Frequency	Percentage (%)
1.	**Duration of Gout**		
	< 1 year	8	40%
	1 – 3 years	8	40%
	>3 years	4	20%
2.	**Use of Doctor-Prescribed Medication**		
	Yes	9	45%
	No	11	55%
3.	**Comorbid Diseases**		
	Yes	7	35%
	No	13	65%

Based on Table 2, all respondents were diagnosed with gout with varying durations of the disease. A total of 40% of respondents had experienced gout for less than one year, 40% for 1–3 years, and 20% for more than three years. Regarding treatment, 45% of respondents were still using medications prescribed by physicians, while 55% were not. In addition, 65% of respondents reported having comorbid conditions such as hypertension and diabetes mellitus.

Based on Table 3, respondents utilized various types of medicinal plants to manage gout, using different plant parts such as leaves, rhizomes, stems, stems, and seeds. The most commonly used preparation method was boiling, as it was considered practical and easy to perform.

Table 3. Use of Medicinal Plants

No.	Local Name	Scientific Name	Plant Part Used	Preparation Method
1	Bay Leaf	*Syzgium polyanthum*	Leaves	3-6 bay leaves are boiled and then consumed as a decoction (1-2 times per day)
2	Ginger	*Zingiber officinale*	Rhizome	One slice of ginger is grated, boiled, and consumed as a decoction (1-2 times per day)
3	Turmeric	*Curcuma longa* L.	Rhizome	1-2 slices of turmeric are boiled and consumed as a decoction (1-2 times per day)
4	Black Pepper	*Piper ningrum* L.	Fruit/seed	One teaspoon of black pepper is boiled and consumed as a decoction (once daily on an empty stomach)
5	Celery Leaves	*Apium graveolens* L.	Leaves	Consumed directly or boiled and combined with other medicinal plants.
6	Sambung Nyawa	*Gynura procumbens*	Leaves	Boiled and mixed with honey or prepared as juice.
7	Sambiloto	*Andrographis paniculata*	Leaves	Boiled and consumed as a decoction (1-3 times per day, 1 hour before meals or 2 hours after meals)
8	Binahong	*Anredera cordifolia*	Leaves	Prepared as herbal tea by washing, drying, blending, and steeping in hot water.
9	Lemongrass	*Cymboppogon nardus*	Stem/base of stem	Prepared as infused water by soaking the stems in 500 mL of boiled water.

Discussion

Based on the results of the interviews, nine types of medicinal plants were identified as being used by the community in Ujung Berung District for the treatment of gout. Furthermore, each of these medicinal plants will be compared with findings from relevant scientific literature and research journals to examine their uses and scientific basis.

Figure 1. Bay Leaf (*Syzgium polyanthum)*

A total of 11 out of 20 respondents (21.6%) reported using bay leaves (*Syzygium polyanthum*) as a medicinal plant for the treatment of gout. This finding indicates that bay leaves are among the most commonly used medicinal plants for gout management, typically prepared by boiling and subsequently steeping the leaves. Bay leaves contain various bioactive compounds, including flavonoids, tannins, polyphenols, alkaloids, and triterpenes. In addition, they are rich in essential oils, as well as vitamins B and C. Bay leaves are believed to support kidney function in facilitating the excretion of metabolic waste through urine, a process that contributes to the reduction of uric acid levels in the blood (Alawiah, Ismafiaty, & Badrujamaludin, 2024).

Figure 2. Ginger (*Zingiber officinale)*

Ginger was the most frequently used medicinal plant among the respondents, accounting for 31.4% of the total medicinal plant usage. Ginger contains oleoresin compounds such as gingerol, zingerone, and shogaol, which are effective in relieving pain caused by gout. These compounds not only contribute to the characteristic pungent taste and aroma of ginger but also function as anti-inflammatory and analgesic agents. Gingerol works by inhibiting prostaglandin synthesis, thereby reducing inflammation, swelling, and pain (Suryani, Sutiyono, & Pistanty, 2021).

Figure 3. Turmeric (*Curcuma longa* L.)

Turmeric is also one of the medicinal plants frequently used in the treatment of gout, with a usage percentage of 23.5%. It is commonly prepared by boiling it together with other medicinal plants and then consumed as an infusion. Turmeric is effective in alleviating joint inflammation and swelling that are commonly experienced by individuals with gout. These benefits are attributed to its curcumin content as well as other bioactive compounds such as kaempferol and epigallocatechin gallate (EGCG) (Arinda, Mujahidin, & Utama, 2024)

Figure 4. Black Pepper (*Piper ningrum* L.)

In this study, black pepper accounted for 3.9% of the total usage in gout treatment. Black pepper seeds contain natural flavonoid compounds that are effective in managing gout. These flavonoids inhibit the activity of xanthine oxidase, which plays a key role in uric acid formation. By suppressing the activity of this enzyme, uric acid production can be reduced (Hardian, Sulistiarini, & Rijal, 2025).

Figure 5. Celery Leaves (*Apium graveolens* L.)

Celery leaves were used for gout treatment with a usage percentage of 3.9%. Celery is known to contain natural compounds such as flavonoids, apigenin, and essential oils, as well as vitamins including vitamins A, B, and C. These constituents exhibit anti-inflammatory and antioxidant properties that help reduce inflammation. Therefore, celery has the potential to aid in lowering uric acid levels and alleviating rheumatic symptoms, making it a supportive medicinal plant (Rahayu, Afifah, & Muflikhah, 2022).

Figure 6. Sambung Nyawa (*Gynura procumbens)*

Gynura procumbens leaves were used in the treatment of gout with a usage percentage of

2.0%. This plant contains flavonoid compounds that inhibit the xanthine oxidase enzyme, thereby reducing uric acid production. *Gynura procumbens* also contains other bioactive constituents, such as saponins and essential oils, which contribute to the alleviation of fever, rheumatism, and hypertension. Several studies have reported that flavonoids such as quercetin and kaempferol can reduce elevated uric acid levels by up to 35%, supporting the use of *Gynura procumbens* as a medicinal plant (Hidayah, Gunarti, Rizki, & Amal, 2023).

Figure 7. Sambiloto (*Andrographis paniculata)*

In this study, the use of *Andrographis paniculata* leaves for gout treatment accounted for 3.9%. *Andrographis paniculata* has long been recognized in traditional medicine due to its bioactive compounds, including flavonoids and the characteristic bitter compound andrographolide, which are known to reduce uric acid levels. In addition, flavonoids and saponins are reported to inhibit the xanthine oxidase enzyme, thereby preventing the formation of uric acid (Ali, et al., 2022).

Figure 8. Binahong (*Anredera cordifolia)*

Anredera cordifolia leaves were used in the treatment of gout with a usage percentage of 2.0% of the total medicinal plant utilization. *Anredera cordifolia* is a tropical plant widely used as a herbal remedy due to its therapeutic properties. The leaves contain flavonoids, saponins, and steroids. Flavonoids are known to inhibit xanthine oxidase enzyme activity, thereby suppressing uric acid production. In addition, *Anredera cordifolia* contains antioxidant compounds that help neutralize free radicals (Winda, Virgo, & Aprilla, 2025)

Figure 9. Lemongrass (*Cymbopogon nardus)*

Lemongrass (*Cymbopogon citratus*) leaves were used in the treatment of gout with a usage percentage of 7.8% of the total medicinal plant utilization. In addition to being commonly used as a culinary ingredient, lemongrass has potential as a medicinal plant due to its bioactive compounds, such as geraniol, citronellol, and eugenol. These compounds are known to help reduce cholesterol levels and support metabolic health. Lemongrass also acts as a natural detoxifying agent that aids digestion and facilitates the excretion of uric acid from the body (Andriani & Fatmawati, 2023)

Conclusion

This study shows that the community of Ujungberung District, Bandung City, still actively utilizes medicinal plants to manage gout. A total of nine plant species were identified, with ginger, turmeric, and bay leaf being the most commonly used. These plants contain bioactive compounds such as flavonoids and curcuminoids, which are scientifically proven to have anti-inflammatory and uric acid–lowering effects. The findings highlight the importance of

preserving ethnobotanical knowledge and support the potential use of local medicinal plants as complementary therapy for gout management.

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