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AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTI-NEPHRITIC EFFECTS IN THE WANAYASA REGION, PURWAKARTA, WEST JAVA, INDONESIA

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ABSTRACT

Kidney problems are becoming more common globally and are considered a major health issue in the modern world with high mortality rate. This research aims to document and preserve the use of ethnomedicine to treat nephritis by people in the Wanayasa Region, Purwakarta, West Java, Indonesia. Fieldwork was carried out from April to May 2026 using direct interviews, questionnaires and discussions. Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature. The plant types obtained were grouped into families according to the Cronquist classification system. Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org). This study reports that 30 plant species are commonly used by people in the Wanayasa Region to treat nephritis. Among the various plant parts used, leaves (56.7%) are most often used in making medicine, followed by fruit (23.3%), rhizome (10.0%), stem, rind, and seeds (3.3% respectively). Meanwhile, the most frequently used preparation method was infusion (56.7%), followed by decoction (20.0%), juice (20.0%), and paste (3.3%). The research results confirm that the Sundanese people in the Wanayasa Region still rely heavily on medicinal plants for the treatment of nephritis. However, efforts to preserve medicinal plants and the local wisdom of the people in this area have not been significant. Therefore, it is recommended that local indigenous communities and the government carry out *in situ* and *ex situ* conservation strategies for medicinal plants in the Wanayasa Region, so that the availability of medicinal plants in the region is maintained.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Wanayasa Region, Nephritis.

INTRODUCTION

The kidney is a vital organ that participates in body homeostasis by regulating the pH of the intracellular and extracellular environment, osmoregulation, maintaining blood pressure and extra- cellular fluids volume and helping in the elimination of various waste products into the urine produced in cellular metabolism.[1,2] Kidney diseases are currently one of the leading causes of death and disability worldwide.[3] A gradual and severe decline in kidney function is triggered by renal failure and is further exacerbated by infections, autoimmune illnesses, and other conditions.[4] Numerous risk factors, including drug and toxin exposure, sepsis, and ischemia–reperfusion, frequently contribute to the onset of nephritis, leading to a decline in the glomerular filtration rate and acute tubular cell death.[5] In terms of this nephropathy, key biological processes have been identified, including cell death, cellular proliferation, inflammation, fibrosis, and the release of pro-oxidant free radicals, that can exacerbate renal injury and play a crucial role in the development of severe complications.[6,7]

Currently, research to obtain new anti-nephritic drugs derived from natural ingredients continues to be carried out, one of which is through exploration of active compounds from natural ingredients, especially medicinal plants that have traditionally been used by people to treat nephritis in various regions in Indonesia.[8-10] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat nephritis is Wanayasa Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for nephritis in Wanayasa Region, Purwakarta, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Wanayasa is located in Purwakarta Regency, West Java, Indonesia, with an area of 24.83 km^2. This area has an altitude of 736 meters above sea level with an average maximum air temperature of 27°C and a minimum of 17°C (humidity: approximately 54%). Moreover, it is located between 06°40′ 56″ South Latitude and 107°33′ 30″ East Longitude. This area is a tropical climate area that is mostly inhabited by Sundanese tribes (98%) and other tribes (2%). Vegetation in the study area is in humid conditions with an average rainfall of 3,093 mm/year.

Data Collection

An extensive field survey was carried out to obtain information about medicinal plants from the Sundanese tribe in the study area. To document existing information about medicinal plants from tribal practitioners, several field visits were conducted from April to May 2026 in the Wanayasa Region, Purwakarta, West Java, Indonesia. During the research, ethnomedicinal information was collected from middle-aged and older tribal practitioners in their local language (Sundanese), through direct interviews, questionnaires, and discussions. Information on local names of plants, plant parts used, preparation methods and administration routes (e.g., infusion, paste, juice and decoction) of all ethnomedicinal plants collected were recorded during the survey period.

Botanical Identification

Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature.[11] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[12] Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org).

Ethics Statement

All participants provided verbal consent before the interview and gave consent to publish the information they provided.

RESULTS AND DISCUSSION

Nephritis refers to inflammation affecting kidney structures, including the glomeruli or renal interstitium, depending on the underlying disease. The development and progression of inflammatory kidney disorders may involve immune dysregulation, inflammatory cytokine production, oxidative stress, endothelial dysfunction, and tissue injury. In some conditions, persistent inflammation can contribute to renal fibrosis and progressive loss of kidney function. Consequently, investigating natural products that may modulate inflammatory responses and protect renal tissue represents a relevant research direction.[13,14] This research revealed that there are 30 plant species commonly used by the local Sundanese tribe to treat nephritis (Table 1). Among the various plant parts used, leaves (56.7%) are most often used in making medicine, followed by fruit (23.3%), rhizome (10.0%), stem, rind, and seeds (3.3% respectively). Meanwhile, the most frequently used preparation method was infusion (56.7%), followed by decoction (20.0%), juice (20.0%), and paste (3.3%). However, the present ethnobotanical Table 1 does not identify the diseases treated by each plant or report measurements of renal inflammation, kidney function, or histopathological changes. Therefore, the documented plants should be regarded as candidates for further investigation rather than established anti-nephritic remedies.

Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Wanayasa, Purwakarta, West Java, Indonesia.

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	*Allium sativum* L.	Alliaceae	Bawang Putih	Rhizome	Juice	10 cloves once a day
2	*Aloe vera* L.	Xanthorrhoeaceae	Lidah buaya	Stem	Paste	10 grams once a day
3	*Annona muricata* L.	Annonaceae	Sirsak	Leaf	Infusion	15 grams once a day
4	*Apium graveolens* L.	Apiaceae	Seledri	Leaf	Infusion	15 grams once a day
5	*Averrhoa carambola* L.	Oxalidaceae	Belimbing	Fruit	Infusion	10 mL once a day
6	*Carica papaya* L.	Caricaceae	Pepaya	Leaf	Decoction	10 grams once a day

7	*Citrus aurantiifolia* (Cristm.) Swingle	Rutaceae	Jeruk Nipis	Fruit	Juice	5 mL/kg once a day
8	*Citrus maxima* (Burm.) Merr.	Rutaceae	Jeruk Bali	Rind	Infusion	10 grams once a day
9	*Curcuma longa* L.	Zingiberaceae	Kunyit	Rhizome	Infusion	15 grams once a day
10	*Cymbopogon nardus*	Poaceae	Sereh Wangi	Leaf	Infusion	10 grams once a day
11	*Daucus carota* L.	Apiaceae	Wortel	Fruit	Juice	30 grams once a day
12	*Dracaena angustifolia* (Medik.) Roxb.	Asparagaceae	Suji	Leaf	Infusion	50 grams once a day
13	*Glycine max* L.	Fabaceae	Kacang Kedelai	Seed	Juice	10 grams once a day
14	*Malus sylvestris* Mill	Rosaceae	Apel	Fruit	Juice	5 mL once a day
15	*Mentha longifolia* L.	Lamiaceae	Mint	Leaf	Infusion	10 grams once a day
16	*Momordica charantia* L.	Cucurbitaceae	Pare	Leaf	Decoction	15 grams once a day
17	*Morinda citrifolia* L.	Rubiaceae	Mengkudu	Fruit	Infusion	10 grams once a day
18	*Moringa oleifera* Lamk.	Moringaceae	Kelor	Leaf	Decoction	15 grams once a day
19	*Morus* L.	Moraceae	Murbei	Leaf	Infusion	10 grams once a day
20	*Murraya koenigii* (L.) Sprengel	Lamiaceae	Kari	Leaf	Infusion	10 grams once a day
21	*Pandanus amaryllifolius* Roxb.	Pandanaceae	Pandan	Leaf	Infusion	5 grams once a day
22	*Persea americana* Mill.	Lauraceae	Alpukat	Fruit	Juice	50 grams once a day
23	*Phaseolus vulgaris* L.	Fabaceae	Buncis	Fruit	Infusion	10 grams once a day
24	*Physalis angulata*	Solanaceae	Ciplukan	Leaf	Infusion	20 grams once a day
25	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Jintan	Leaf	Decoction	5 grams once a day
26	*Salvia rosmarinus* Spenn	Lamiaceae	Rosemari	Leaf	Infusion	10 grams once a day
27	*Syzygium polyanthum* (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	10 mL once a day
28	*Tamarindus indica* L.	Fabaceae	Asam Jawa	Leaf	Infusion	5 grams once a day
29	*Zingiber officinale* Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	100 grams once a day
30	*Ziziphus mauritiana* L.	Rhamnaceae	Bidara	Leaf	Infusion	10 grams once a day

CONCLUSIONS

The documentation of 30 medicinal plant entries in Wanayasa Region, contributes to the recording of local ethnomedicinal knowledge and provides a preliminary inventory for future pharmacological investigations**.** The practice of treatment using traditional medicinal plants is an important strategy for maintaining knowledge about complementary and alternative medicine in the health care system. In addition, ethnopharmacological studies provide important information for guidance in the bioprospecting of new drugs of plant origin. The results of this study confirm that people in the Wanayasa Region still rely heavily on medicinal plants for their health care system, especially for the treatment of nephritis. However, efforts to preserve medicinal plants and the local wisdom of the people in this area have not been significant. Therefore, it is recommended that local Indigenous communities and the government carry out *in situ* and *ex situ* conservation strategies for medicinal

plants in the Wanayasa Region, so that the availability of medicinal plants in the region is maintained.

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