



**ETHNOBOTANICAL SURVEY OF MEDICINAL PLANTS USED TO TREAT
HYPERTENSION IN THE PLERED REGION, PURWAKARTA, WEST JAVA,
INDONESIA**

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ABSTRACT

The use of traditional medicinal plants has significant advantages for cultural development, acceptability and economic affordability. In addition, medicinal plants are claimed to be able to cure several types of diseases compared to modern medicines. This research aims to document and preserve the use of ethnomedicine to treat hypertension by people in the Plered Region, Purwakarta, West Java, Indonesia. Fieldwork was carried out from March to April 2024 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 Plered Region for the treatment of hypertension. Among the various parts of plants used, leaves (60%) are most often used in making medicine, followed by rhizomes (16.7%), fruit (10%), rhizome (6.7%), stem, and bark (3.3% respectively). Meanwhile, the most frequently used preparation method was decoction (63.3%), followed by infusion (23.3%), and juice (13.3%). The research results confirm that people in the Plered Region still rely heavily on medicinal plants for the treatment of hypertension. 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 Plered Region, so that the availability of medicinal plants in the Region is maintained.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Plered Region, Hypertension.

INTRODUCTION

Knowledge about the diversity of plant and animal species and the properties of plants and animals used as medicine is usually obtained empirically which is part of local wisdom. Local wisdom is formed evolutionarily, initiated by a certain group of people, and through gradual and continuous trial and error so that it becomes traditional knowledge for the community.^[1] Scientific studies regarding the knowledge of residents regarding the types of plants and animals used for medicine are studied specifically in the field of ethnopharmacology. Ethnomedicine is concerned with the study of the relationship between humans and plants.^[2] Plants are an important resource in the preparation of herbal medicines and play an important role in the survival of tribal and

indigenous communities throughout the world. According to the World Health Organization (WHO), it is estimated that more than 80% of the world's population relies on traditional medicine for their health needs.^[3] In developing countries, 25% of herbal medicines are used to treat chronic diseases and infections. Indigenous people in rural areas have extensive knowledge about how to use plants for the treatment of various diseases. Tribes and indigenous peoples have a strong belief in herbal medicine to cure diseases. In general, each ethnic group has extensive ethnomedicine knowledge to identify medicinal plants and also has unique and different techniques for using these medicinal plants for the treatment of various diseases.^[2]

In Indonesia, several tribal groups have started using allopathic medicine along with ethnomedicine.^[4] However, currently, there is still a lack of documentation of herbal medicinal plants. So it is necessary to search for information on their ethnomedicine knowledge for the treatment of disease. One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially for hypertension, is the Plered Region. Some of these medicinal plants include palacida, garlic, cucumber, celery, suji, and others. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for hypertension in Plered Region, Purwakarta, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study area

Plered is located in Purwakarta Regency, West Java, Indonesia, with an area of 31.48 km². This area has an altitude of 290 meters above sea level with an average maximum air temperature of 32°C and a minimum of 22°C. Plered is located between 06°25' 45" South Latitude and 107°30' 40" East Longitude. This area is a tropical climate area that is mostly inhabited by Sundanese tribes (95%) and other tribes (5%). Vegetation in the study area is in humid conditions with an average rainfall of 3,039 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 March to April 2024 in the Plered 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.^[5] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.^[6] 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

This research revealed that there are 30 plant species commonly used by the local Sundanese tribe for the treatment of hypertension (Table 1). This shows that the study location is affordable in terms of biodiversity. Among the various parts of plants used, leaves (60%) are most often used in making medicine, followed by rhizomes (16.7%), fruit (10%), rhizome (6.7%), stem, and bark (3.3% respectively). The use of leaves is reported to be easier to prepare and easier to extract active substances from them for treatment. At the same time, leaves have less effect on the mother plant.^[7] Meanwhile, the most frequently used preparation method was decoction (63.3%), followed by infusion (23.3%), and juice (13.3%). These results are in line with previous research which reported that the forms of traditional medicine most widely used by the community were decoctions and infusions.^[5]

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	<i>Allium cepa</i> L.	Amaryllidaceae	Bawang bombai	Rhizome	Juice	5 grams once a day
2	<i>Allium fistulosum</i> L.	Amaryllidaceae	Bawang Daun	Leaf	Decoction	20 grams once a day
3	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Juice	1.2 grams once a day
4	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	60 grams once a day
5	<i>Apium graveolens</i> L.	Apiaceae	Seledri	Leaf	Infusion	40 grams once a day
6	<i>Averrhoa carambola</i> L.	Oxalidaceae	Belimbing	Fruit	Infusion	100 grams once a day
7	<i>Carica papaya</i> L.	Caricaceae	Pepaya	Leaf	Decoction	105 grams once a day
8	<i>Chromolaena odorata</i> L.	Asteraceae	Balakacida	Leaf	Decoction	1.2 grams once a day
9	<i>Cinnamomum verum</i> L.	Lauraceae	Kayu Manis	Bark	Decoction	4 grams once a day
10	<i>Cucumis sativus</i> L.	Cucurbitaceae	Timun	Fruit	Juice	400 grams once a day
11	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Decoction	2 grams once a day
12	<i>Curcuma xanthorrhiza</i> Roxb	Zingiberaceae	Temulawak	Rhizome	Decoction	50 grams once a day
13	<i>Cymbopogon nardus</i>	Poaceae	Sereh Wangi	Leaf	Decoction	8 grams once a day

14	<i>Dracaena angustifolia</i> (Medik.) Roxb.	Asparagaceae	Suji	Leaf	Infusion	750 grams once a day
15	<i>Durio zibethinus</i> Murr.	Bombacaceae	Durian	Leaf	Decoction	240 grams once a day
16	<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Rind	Decoction	60 grams once a day
17	<i>Kaempferia galanga</i> L.	Zingiberaceae	Kencur	Seed	Decoction	2 grams once a day
18	<i>Mentha longifolia</i> L.	Lamiaceae	Mint	Leaf	Infusion	400 grams once a day
19	<i>Morus</i> L.	Moraceae	Murbei	Leaf	Infusion	30 grams once a day
20	<i>Muntingia calabura</i> L.	Muntingiaceae	Kersen	Leaf	Decoction	15 grams once a day
21	<i>Ocimum sanctum</i> L.	Lamiaceae	Kemangi	Leaf	Decoction	200 grams once a day
22	<i>Orthosiphon aristatus</i> (Blume) Miq.	Lamiaceae	Kumis Kucing	Leaf	Decoction	2 grams once a day
23	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan	Leaf	Infusion	6 grams once a day
24	<i>Persea americana</i> Mill.	Lauraceae	Alpukat	Fruit	Juice	200 grams once a day
25	<i>Piper betle</i> L.	Piperaceae	Sirih	Leaf	Decoction	600 grams once a day
26	<i>Psidium guajava</i> L.	Myrtaceae	Jambu biji	Leaf	Decoction	60 grams once a day
27	<i>Punica granatum</i> L.	Lythraceae	Delima	Rind	Decoction	100 grams once a day
28	<i>Sandoricum koetjape</i> Merr	Meliaceae	Kecapi	Leaf	Decoction	40 grams once a day
29	<i>Syzygium polyanthum</i> (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	6 grams once a day
30	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	4 grams once a day

CONCLUSIONS

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 Plered Region still rely heavily on medicinal plants for their health care system, especially for the treatment of hypertension. 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 Plered Region, so that the availability of medicinal plants in the Region is maintained.

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