



**AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH
ANTIHYPERTENSIVE EFFECTS IN THE MAJALAYA REGION, KARAWANG, WEST
JAVA, INDONESIA**

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ABSTRACT

Hypertension (HT) is a major risk factor contributing to cardiovascular disease, which is a leading cause of global morbidity and mortality. This research aims to document and preserve the use of ethnomedicine to treat HT by people in the Majalaya Region, Karawang, West Java, Indonesia. Fieldwork was carried out from November to December 2025 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 Majalaya Region to treat HT. 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 Majalaya Region still rely heavily on medicinal plants for the treatment of HT. 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 Majalaya Region, so that the availability of medicinal plants in the region is maintained.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Majalaya Region, Antihypertensive.

INTRODUCTION

Improvement of the living and working conditions of man made possible by new technologies has led to unprecedented behavioral changes. A sedentary lifestyle, greater ease of doing daily chores, and consumption of high-calorie or oversalty foods, cigarettes, or alcohol are important contributors to the emergence of conditions such as obesity, diabetes, and high blood pressure (HBP). Hypertension (HT) is a cardiovascular disease whose

complications (hypertrophic cardiomyopathy, hypertensive encephalopathy, malignant retinopathy, malignant nephroangiosclerosis, arteriosclerosis, etc.) are the leading causes of death worldwide. The global prevalence of hypertension in the adult global population was estimated in 2014 at 30%.^[1] In sub-Saharan Africa, the prevalence of hypertension was estimated at 16.2% or 74.7 million hypertensive patients in 2013. Epidemiological data suggest that this proportion is

expected to reach 68% or 125.5 million people in 2025.^[2] Prevalence growth in developing countries is probably related to changes in nutritional habits, sedentary lifestyle, or alcohol use.^[3] Alcohol consumption is related in a dose-dependent manner to an increase in systolic and diastolic blood pressure. This increase is mainly observed when drinking more than 20 g/day for both men and women.^[4] The treatment of hypertension has several axes including drugs and improving lifestyle. An antihypertensive treatment possibly associated with dietary and lifestyle measures considerably reduces the arterial pressure and consequently reduces cardiovascular morbidity and mortality.^[5] These drugs have several limitations, namely, side effects, cost, and inaccessibility for some locations in developing countries. The search for new drugs, especially from natural products and mainly plants, is of great interest for the development of more efficient and better tolerated drugs.

Medicinal plants are the most important and sometimes the only source of HT treatment. This is because medicinal plants are culturally acceptable, easy to access, and cheap compared to modern medicine.^[6-8] Indonesia is the second largest country in the world with forest biodiversity, where there are 28,000 plant species and 2,500 of these species are medicinal plants.^[9-11] Currently, research to obtain new antihypertensive drugs derived from natural ingredients continues to be carried out, one of which is through exploring active compounds from natural ingredients, especially medicinal plants which have traditionally been used by people to treat HT in various regions in Indonesia.^[12,13] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially for treating HT, is the Majalaya Region. This research aims to obtain detailed information about the use of herbal plants for alternative HT therapy in Majalaya Region, Karawang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Majalaya is located in Karawang Regency, West Java, Indonesia, with an area of 34.67 km². This area has an altitude of 18.2 meters above sea level with an average maximum air temperature of 34°C and a minimum of 29°C. Majalaya is located between 06°18'9" South Latitude and 107°21'59" East Longitude. This region 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 1,500 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 November to December 2025 in the Majalaya Region, Karawang, 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 about local plant names, plant parts used, preparation methods and administration methods (e.g., infusion, topical, 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.^[14] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.^[15] 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 to treat HT (Table 1). This shows that the study location is affordable in terms of biodiversity. 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). 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.^[16] Meanwhile, the most frequently used preparation method was infusion (56.7%), followed by decoction (20.0%), juice (20.0%), and paste (3.3%). These results are in line with previous research which reported that the forms of traditional medicine most widely used by the community were infusions and decoctions.^[14]

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Juice	100 cloves once a day
2	<i>Aloe vera</i> L.	Xanthorrhoeaceae	Lidah buaya	Stem	Paste	100 grams once a day
3	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	150 grams once a day
4	<i>Apium graveolens</i> L.	Apiaceae	Seledri	Leaf	Infusion	100 grams once a day
5	<i>Averrhoa carambola</i> L.	Oxalidaceae	Belimbing	Fruit	Infusion	20 mL once a day
6	<i>Carica papaya</i> L.	Caricaceae	Pepaya	Leaf	Decoction	10 grams once a day
7	<i>Citrus aurantiifolia</i> (Cristm.) Swingle	Rutaceae	Jeruk Nipis	Fruit	Juice	15 mL/kg once a day
8	<i>Citrus maxima</i> (Burm.) Merr.	Rutaceae	Jeruk Bali	Rind	Infusion	10 grams once a day
9	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Infusion	30 grams once a day
10	<i>Cymbopogon nardus</i>	Poaceae	Sereh Wangi	Leaf	Infusion	10 grams once a day
11	<i>Daucus carota</i> L.	Apiaceae	Wortel	Fruit	Juice	35 grams once a day
12	<i>Dracaena angustifolia</i> (Medik.) Roxb.	Asparagaceae	Suji	Leaf	Infusion	55 grams once a day
13	<i>Glycine max</i> L.	Fabaceae	Kacang Kedelai	Seed	Juice	10 grams once a day
14	<i>Malus sylvestris</i> Mill	Rosaceae	Apel	Fruit	Juice	10 mL once a day
15	<i>Mentha longifolia</i> L.	Lamiaceae	Mint	Leaf	Infusion	15 grams once a day
16	<i>Momordica charantia</i> L.	Cucurbitaceae	Pare	Leaf	Decoction	50 grams once a day
17	<i>Morinda citrifolia</i> L.	Rubiaceae	Mengkudu	Fruit	Infusion	20 grams once a day
18	<i>Moringa oleifera</i> Lamk.	Moringaceae	Kelor	Leaf	Decoction	25 grams once a day
19	<i>Morus</i> L.	Moraceae	Murbei	Leaf	Infusion	10 grams once a day
20	<i>Murraya koenigii</i> (L.) Sprengel	Lamiaceae	Kari	Leaf	Infusion	80 grams once a day
21	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan	Leaf	Infusion	10 grams once a day
22	<i>Persea americana</i> Mill.	Lauraceae	Alpukat	Fruit	Juice	50 grams once a day
23	<i>Phaseolus vulgaris</i> L.	Fabaceae	Buncis	Fruit	Infusion	100 grams once a day
24	<i>Physalis angulata</i>	Solanaceae	Ciplukan	Leaf	Infusion	50 grams once a day
25	<i>Psidium guajava</i> L.	Myrtaceae	Jambu biji	Leaf	Decoction	10 grams once a day
26	<i>Salvia rosmarinus</i> Spenn	Lamiaceae	Rosemari	Leaf	Infusion	10 grams once a day
27	<i>Syzygium polyanthum</i> (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	20 mL once a day
28	<i>Tamarindus indica</i> L.	Fabaceae	Asam Jawa	Leaf	Infusion	5 grams once a day
29	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	150 grams once a day
30	<i>Ziziphus mauritiana</i> L.	Rhamnaceae	Bidara	Leaf	Infusion	15 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 Majalaya Region still rely heavily on medicinal plants for their health care system, especially for the treatment of HT. 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 Majalaya Region, so that the availability of medicinal plants in the region is maintained.

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