

ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTIHYPERTENSIVE EFFECTS IN THE SERANGPANJANG REGION, SUBANG, WEST JAVA, INDONESIA

Nabila Putri Pinata, Yulia Marshalova, Randini Rahmadani, Ratu Balqis Hidayati, Eka Kristin Aditya, Sabrina Putri Nurhikmah, Vallerina Berlian, Pahlevi Muhammad Noor, Elsa Asri Liana, Rosmala, Rahma Septiani, Intan Kirana Natalia, Kania Meilani Putri, Farhah Laili Fauziyah, Dindin Zaenudin, Rizqi Lukmanul Hakim, Maulana Yusuf Alkandahri*

Faculty of Pharmacy, Universitas Buana Perjuangan Karawang, Karawang, West Java, Indonesia.



*Corresponding Author: Maulana Yusuf Alkandahri

Faculty of Pharmacy, Universitas Buana Perjuangan Karawang, Karawang, West Java, Indonesia.

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ABSTRACT

Hypertension (HT) is a common progressive disorder leading to numerous chronic diseases such as cardiovascular disease, stroke, renal disease, diabetes and accounts for about 50% of cardiovascular disease worldwide. Research is continuous to find more current medications and a few novel helpful targets are being investigated for HT. This research aims to document and preserve the use of ethnomedicinal to treat HT by communities in the Serangpanjang Region, Subang, 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 research reports that 30 plant species are commonly used by people in the Serangpanjang Region to treat HT. Among the various plant parts used, leaves (50.0%) are most frequently used in making medicines, followed by rhizomes (13.3%), fruit (13.3%), flowers, stem, and seed (respectively 6.7%) and rind (3.3%). Meanwhile, the most frequently used preparation methods were decoction (76.7%) and infusion (23.3%). The results of this research confirm that people in the Serangpanjang Region still rely heavily on medicinal plants for their health care system, especially for the treatment of HT with the most frequently used parts of the leaves and their use in decoctions and infusions.

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

INTRODUCTION

Hypertension (HT) is the most common cardiovascular condition worldwide, affecting both industrialized and developing nations. It stands as one of the leading causes of mortality and morbidity globally. Currently, it is estimated that one-quarter of the adult population has hypertension, and this number is projected to increase to 1.56 billion by 2025.^[1] Hypertension, a condition characterized by high blood pressure, is a dangerous health problem that often goes unnoticed. It is closely linked to dyslipidemia (abnormal levels of lipids in the blood), smoking, excessive alcohol use, stress, insulin

resistance, and metabolic syndrome.^[2] Furthermore, the link between high blood pressure and risk of myocardial infarction is continuous, persistent and independent of other risk variables. The higher the blood pressure, the greater is the likelihood of myocardial infarction, heart failure, stroke and hypertensive renal disease.^[3] Antihypertensive medications are widely prescribed for the management of hypertension and associated cardiovascular disorders.^[4] Herbal drugs, which have a reduced incidence of adverse effects in comparison to synthetic drugs, are the preferable alternative therapies due to the increased incidence of such side

effects associated with synthetic drugs.^[5,6] Therefore, it is necessary to search for new antihypertensive agents derived from natural ingredients in the form of medicinal plants. Medicinal plants have been widely used in traditional practices by different ethnic populations throughout the world for the prevention and/or treatment of several chronic diseases. Despite the development of newer technologies and advances in modern medicine, most of the world's population still relies on traditional systems of medicine to fulfill their medical care, especially in Indonesia.^[7] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat HT, is the Serangpanjang Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for HT in Serangpanjang Region, Subang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Serangpanjang is located in Subang Regency, West Java, Indonesia, with an area of 1,311,844 km². This area has an altitude of 1,000 meters above sea level with an average maximum air temperature of 31°C and a minimum of 21°C. Moreover, it is located between 06°41'49" South Latitude and 107°35'50" East Longitude. This region is a tropical climate area that is mostly inhabited by Sundanese tribes (90%) and other tribes (10%). Vegetation in the study area is in humid conditions with an average rainfall of 3,000 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 Serangpanjang Region, Subang, 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.^[8] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.^[9] 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 30 plant species are commonly used by local people to treat HT (Table 1). This shows that the study location is affordable in terms of biodiversity. Among the various plant parts used, leaves (50.0%) are most frequently used in making medicines, followed by rhizomes (13.3%), fruit (13.3%), flowers, stem, and seed (respectively 6.7%), and rind (3.3%). 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.^[10] Meanwhile, the most frequently used preparation methods were decoction (76.7%) and infusion (23.3%). 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.^[8]

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	<i>Adenanthera pavonine</i> L.	Fabaceae	Saga	Leaf	Decoction	10 grams once a day
2	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Infusion	25 grams once a day
3	<i>Aloe vera</i> Burm.f.,	Asphodelaceae	Lidah Buaya	Stem	Decoction	50 grams once a day
4	<i>Andrographis paniculata</i> Nees	Acanthaceae	Sambiloto	Leaf	Decoction	50 grams once a day
5	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	20 grams once a day
6	<i>Averrhoa carambola</i> L.	Oxalidaceae	Belimbing	Leaf	Infusion	80 grams once a day
7	<i>Brassica oleracea</i> L.	Brassicaceae	Kubis	Leaf	Decoction	10 grams once a day

8	<i>Cinnamomum verum</i> J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	100 grams once a day
9	<i>Citrus aurantifolia</i> (Christm) Swingle	Rutaceae	Jeruk Nipis	Fruit	Decoction	10 grams once a day
10	<i>Clitoria ternatea</i> L.	Fabaceae	Bunga Telang	Flower	Decoction	10 grams once a day
11	<i>Cosmos caudatus</i> Kunth	Asteraceae	Kenikir	Leaf	Decoction	50 grams once a day
12	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Infusion	100 grams once a day
13	<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Rind	Infusion	150 grams once a day
14	<i>Hibiscus sabdariffa</i> L.	Malvaceae	Rosela	Flower	Decoction	200 grams once a day
15	<i>Kaempferia galanga</i> L.	Zingiberaceae	Kencur	Rhizome	Infusion	100 grams once a day
16	<i>Mangifera indica</i> L.	Anacardiaceae	Mangga	Leaf	Decoction	20 grams once a day
17	<i>Momordica charantia</i> L.	Cucurbitaceae	Pare	Leaf	Decoction	10 grams once a day
18	<i>Morinda citrifolia</i> L.	Rubiaceae	Mengkudu	Fruit	Infusion	30 grams once a day
19	<i>Moringa oleifera</i> Lamk.	Moringaceae	Kelor	Leaf	Decoction	10 grams once a day
20	<i>Nigella sativa</i> L.	Ranunculaceae	Jinten Hitam	Seed	Decoction	100 grams once a day
21	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan Wangi	Leaf	Decoction	50 grams once a day
22	<i>Persea americana</i> Mill.	Lauraceae	Alpukat	Seed	Decoction	10 grams once a day
23	<i>Phaleria macrocarpa</i> (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	20 grams once a day
24	<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Meniran	Leaf	Decoction	30 grams once a day
25	<i>Piper betle</i> L.	Piperaceae	Sirih	Leaf	Decoction	80 grams once a day
26	<i>Psidium guajava</i> L.	Myrtaceae	Jambu Biji	Leaf	Decoction	20 grams once a day
27	<i>Solanum torvum</i> Sw.	Solanaceae	Tokakak	Fruit	Decoction	80 grams once a day
28	<i>Syzygium polyanthum</i> (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	10 grams once a day
29	<i>Tinospora crispa</i> L.	Menispermaceae	Baratawali	Leaf	Decoction	50 grams once a day
30	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	100 grams once a day

CONCLUSIONS

The results of this research confirm that people in the Serangpanjang Region still rely heavily on medicinal plants for their health care system, especially for the treatment of HT with the most frequently used parts of the leaves and their use in decoctions and infusions.

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