

**ETHNOPHARMACOLOGICAL STUDY OF ANTIHYPERTENSIVE IN THE CIATER
REGION, SUBANG, 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 ethnomedicinal to treat HT by communities in the Ciater Region, Subang, West Java, Indonesia. Fieldwork was carried out from May to June 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 Ciater Region to treat HT. Among the various plant parts used, leaves (60.0%) are most frequently used in making medicines, followed by rhizomes (16.7%), fruit (10.0%), rind (6.7%), stem, and bark (respectively 3.3%). Meanwhile, the most frequently used preparation methods were decoction (63.3%), followed by infusion (23.3%), and juice (13.3%). The results of this research confirm that people in the Ciater 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, Ciater Region, Hypertension.

INTRODUCTION

Hypertension often referred to as a silent killer, is commonly asymptomatic in nature thus identified as a common risk factor in cardiovascular diseases. Renin-angiotensin converting enzymes system (RAS) is involved in the etiology of hypertension.^[1] As a part of RAS, angiotensin converting enzyme (ACE) has been a targeted enzyme in medical field. An inactive form of decapeptide, Angiotensin I is produced by catalytic cleavage from angiotensinogen; and is further cleaved to octapeptide angiotensin II by ACE-I. As a potent vasoconstrictor, elevated levels of angiotensin II will consolidate with free radical generation as well as degradation of bradykinin. Drugs called ACE inhibitors

stop the production of angiotensin-II, which constricts blood vessels and reduces blood pressure. Thus, a high level of radical scavenging characteristics is crucial for an antihypertensive treatment.^[2] Natural products offer noteworthy features as compared to conventional synthetic molecules due to their unique attributes as a significant source of therapeutic phytochemicals and their safety, efficacy, and minimal side effects.^[3] They are best source for the development of inhibitors to discover biologically active compounds, and possess vast structural diversity.^[4] Currently, research to obtain antihypertensive drugs derived from natural ingredients is continuing, one of which is through the exploration of active compounds from natural ingredients, especially

medicinal plants that have traditionally been used by communities to treat HT in various regions in Indonesia.^[5-7] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat HT, is the Ciater Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for HT in Ciater Region, Subang, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Ciater is located in Subang Regency, West Java, Indonesia, with an area of 47.18 km². This area has an altitude of 1800 meters above sea level with an average maximum air temperature of 26°C and a minimum of 20°C. Moreover, it is located between 06°42'48" South Latitude and 107°40'10" East Longitude. This region 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 4,000 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 May to June 2025 in the Ciater 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 (e.g., infusion, paste, juice and

decoction) of all collected ethnomedicinal plants was 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 (60.0%) are most frequently used in making medicines, followed by rhizomes (16.7%), fruit (10.0%), rind (6.7%), stem, and bark (respectively 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 (63.3%), 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.^[8]

Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Ciater, Subang, 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	50 grams once a day
2	<i>Allium fistulosum</i> L.	Amaryllidaceae	Bawang Daun	Leaf	Decoction	50 grams once a day
3	<i>Allium sativum</i> L.	Alliaceae	Bawang Putih	Rhizome	Juice	25 grams once a day
4	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams once a day
5	<i>Apium graveolens</i> L.	Apiaceae	Seledri	Leaf	Infusion	100 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	100 grams once a day
8	<i>Chromolaena odorata</i> L.	Asteraceae	Balakacida	Leaf	Decoction	50 grams once a day
9	<i>Cinnamomum verum</i> L.	Lauraceae	Kayu Manis	Bark	Decoction	50 grams once a day
10	<i>Cucumis sativus</i> L.	Cucurbitaceae	Timun	Fruit	Juice	250 grams once a day
11	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Decoction	100 grams once a day
12	<i>Curcuma xanthorrhiza</i> Roxb	Zingiberaceae	Temulawak	Rhizome	Decoction	100 grams once a day
13	<i>Cymbopogon nardus</i>	Poaceae	Sereh Wangi	Leaf	Decoction	50 grams once a day
14	<i>Dracaena angustifolia</i> (Medik.) Roxb.	Asparagaceae	Suji	Leaf	Infusion	20 grams once a day
15	<i>Durio zibethinus</i> Murr.	Bombacaceae	Durian	Leaf	Decoction	10 grams once a day
16	<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Rind	Decoction	150 grams once a day

17	<i>Kaempferia galanga</i> L.	Zingiberaceae	Kencur	Seed	Decoction	100 grams once a day
18	<i>Mentha longifolia</i> L.	Lamiaceae	Mint	Leaf	Infusion	200 grams once a day
19	<i>Morus</i> L.	Moraceae	Murbei	Leaf	Infusion	100 grams once a day
20	<i>Muntingia calabura</i> L.	Muntingiaceae	Kersen	Leaf	Decoction	100 grams once a day
21	<i>Ocimum sanctum</i> L.	Lamiaceae	Kemangi	Leaf	Decoction	100 grams once a day
22	<i>Orthosiphon aristatus</i> (Blume) Miq.	Lamiaceae	Kumis Kucing	Leaf	Decoction	100 grams once a day
23	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan	Leaf	Infusion	50 grams once a day
24	<i>Persea americana</i> Mill.	Lauraceae	Alpukat	Fruit	Juice	100 grams once a day
25	<i>Piper betle</i> L.	Piperaceae	Sirih	Leaf	Decoction	200 grams once a day
26	<i>Psidium guajava</i> L.	Myrtaceae	Jambu biji	Leaf	Decoction	250 grams once a day
27	<i>Punica granatum</i> L.	Lythraceae	Delima	Rind	Decoction	250 grams once a day
28	<i>Sandoricum koetjape</i> Merr	Meliaceae	Kecapi	Leaf	Decoction	50 grams once a day
29	<i>Terminalia catappa</i> L.	Combretaceae	Ketapang	Leaf	Decoction	100 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 Ciater 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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