

**ETHNOPHARMACOLOGICAL STUDY OF ANTIHYPERLIPIDEMIC IN THE  
PONDOKSALAM 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 hyperlipidemia by people in the Pondoksalam 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](http://www.plantlist.org)) and the International Plant Name Index ([www.ipni.org](http://www.ipni.org)). This study reports that 30 plant species are commonly used by people in the Pondoksalam Region to treat hyperlipidemia. Among the various plant parts used, leaves (56.7%) are most often used in making medicine, followed by fruit (23.3%), rhizome (10%), stem, rind, and seeds (3.3% respectively). Meanwhile, the most frequently used preparation method was infusion (56.7%), followed by decoction (20%), juice (20%), and paste (3.3%). The research results confirm that the Sundanese people in the Pondoksalam Region still rely heavily on medicinal plants for the treatment of hyperlipidemia. 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 Pondoksalam Region, so that the availability of medicinal plants in the region is maintained.

**KEYWORDS:** Traditional medicine, Ethnomedicinal plants, Pondoksalam Region, Antihyperlipidemic.

**INTRODUCTION**

Hyperlipidemia is a predictor of coronary artery disease (CAD). The prevalence of this disease is quite high and increasing in both developed and developing countries in the world.<sup>[1]</sup> Hyperlipidemia is an important risk factor in the initiation and progression of atherosclerosis. The main manifestations of this disorder include increased plasma concentrations of total cholesterol (TC), triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), and low concentrations of high-density lipoprotein cholesterol (HDL-C).<sup>[2]</sup> Therefore, the main consideration in the therapy of hyperlipidemia and arteriosclerosis is to reduce the increase in blood serum/plasma lipid levels.<sup>[3]</sup> Currently available hypolipidemic drugs have been reported to have several worrying side effects including hyperuricemia, muscle damage, impotence, memory loss, peripheral neuropathy,

body aches, gynecomastia, skin rashes, and others. In addition, there is also an increased risk of myopathy and rhabdomyolysis which usually occurs when used in combination with other drugs.<sup>[4]</sup> Most hypolipidemic drugs can be effective if used for several weeks but may result in worsening side effects such as liver damage.<sup>[5]</sup> Therefore, it is necessary to search for new antihyperlipidemic agents derived from natural ingredients in the form of herbal plants. Compared with conventional medicines, herbal plants provide many advantages, including cost-effectiveness, broad cultural acceptance, ease of accessibility, and lower side effects.<sup>[6]</sup> One of the Region that still uses herbal plants as an alternative treatment for hyperlipidemia is Pondoksalam Region. Some of these medicinal plants include Moringa leaves, bay leaves, ginger, turmeric, apples and others. This research aims to obtain detailed

information about the use of herbal plants for alternative therapy for hyperlipidemia in Pondoksalam Region, Purwakarta, West Java, Indonesia using a field survey method.

## MATERIALS AND METHODS

### Study area

Pondoksalam is located in Purwakarta Regency, West Java, Indonesia, with an area of 44.08 km<sup>2</sup>. This area has an altitude of 321 meters above sea level with an average maximum air temperature of 28°C and a minimum of 17°C. Moreover, it is located between 06°32' 18.83" South Latitude and 107°26' 36.8" 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 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 March to April 2024 in the Pondoksalam 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.<sup>[7]</sup> The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.<sup>[8]</sup> Plant names were checked against the Plant List ([www.plantlist.org](http://www.plantlist.org)) and the International Plant Name Index ([www.ipni.org](http://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 hyperlipidemia (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%), 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.<sup>[9]</sup> Meanwhile, the most frequently used preparation method was infusion (56.7%), followed by decoction (20%), juice (20%), 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.<sup>[7]</sup>

**Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Pondoksalam, Purwakarta, 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	2 cloves once a day
2	<i>Aloe vera</i> L.	Xanthorrhoeaceae	Lidah buaya	Stem	Paste	50 grams once a day
3	<i>Annona muricata</i> L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams once a day
4	<i>Apium graveolens</i> L.	Apiaceae	Seledri	Leaf	Infusion	10 grams once a day
5	<i>Averrhoa carambola</i> L.	Oxalidaceae	Belimbing	Fruit	Infusion	200 mL once a day
6	<i>Carica papaya</i> L.	Caricaceae	Pepaya	Leaf	Decoction	7 grams once a day
7	<i>Citrus aurantiifolia</i> (Cristm.) Swingle	Rutaceae	Jeruk Nipis	Fruit	Juice	1.5 mL/kg once a day
8	<i>Citrus maxima</i> (Burn.) Merr.	Rutaceae	Jeruk Bali	Rind	Infusion	100 grams once a day
9	<i>Curcuma longa</i> L.	Zingiberaceae	Kunyit	Rhizome	Infusion	200 grams once a day
10	<i>Cymbopogon nardus</i>	Poaceae	Sereh Wangi	Leaf	Infusion	40 grams once a day
11	<i>Daucus carota</i> L.	Apiaceae	Wortel	Fruit	Juice	200 grams once a day
12	<i>Dracaena angustifolia</i> (Medik.) Roxb.	Asparagaceae	Suji	Leaf	Infusion	20 grams once a day
13	<i>Glycine max</i> L.	Fabaceae	Kacang Kedelai	Seed	Juice	25 grams once a day
14	<i>Malus sylvestris</i> Mill	Rosaceae	Apel	Fruit	Juice	200 mL once a day
15	<i>Mentha longifolia</i> L.	Lamiaceae	Mint	Leaf	Infusion	1.5 grams once a day
16	<i>Momordica charantia</i> L.	Cucurbitaceae	Pare	Leaf	Decoction	2 grams once a day
17	<i>Morinda citrifolia</i> L.	Rubiaceae	Mengkudu	Fruit	Infusion	200 grams once a day

18	<i>Moringa oleifera</i> Lamk.	Moringaceae	Kelor	Leaf	Decoction	10 grams once a day
19	<i>Morus</i> L.	Moraceae	Murbei	Leaf	Infusion	30 grams once a day
20	<i>Murraya koenigii</i> (L.) Sprengel	Lamiaceae	Kari	Leaf	Infusion	10 grams once a day
21	<i>Pandanus amaryllifolius</i> Roxb.	Pandanaceae	Pandan	Leaf	Infusion	6 grams once a day
22	<i>Persea americana</i> Mill.	Lauraceae	Alpukat	Fruit	Juice	200 – 500 grams once a day
23	<i>Phaseolus vulgaris</i> L.	Fabaceae	Buncis	Fruit	Infusion	17 grams once a day
24	<i>Phyllanthus acidus</i> (L.) Skeels	Phyllanthaceae	Cermai	Leaf	Infusion	2 grams once a day
25	<i>Psidium guajava</i> L.	Myrtaceae	Jambu biji	Leaf	Decoction	30 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	400 mL once a day
28	<i>Tamarindus indica</i> L.	Fabaceae	Asam Jawa	Leaf	Infusion	2 grams once a day
29	<i>Vernonia amygdalina</i> Del	Asteraceae	Daun Afrika	Leaf	Infusion	400 grams once a day
30	<i>Zingiber officinale</i> Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	10 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 Pondoksalam Region still rely heavily on medicinal plants for their health care system, especially for the treatment of hyperlipidemia. 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 Pondoksalam Region, so that the availability of medicinal plants in the region is maintained.

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