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AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTIDYSLIPIDEMIC EFFECTS IN THE KARANGBAHAGIA REGION, BEKASI, WEST JAVA, INDONESIA

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ABSTRACT

High levels of fats like triglycerides and cholesterol in the blood can cause cardiovascular diseases, prompting the search for safer, natural treatments. This research aims to document and preserve the use of ethnomedicine to treat hyperlipidemia by people in the Karangbahagia Region, Bekasi, West Java, Indonesia. Fieldwork was carried out from April to May 2026 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 Karangbahagia Region to treat hyperlipidemia. Among the various plant parts used, leaves (50.0%) are most often used in making medicine, followed by rhizome (13.3%), fruit (13.3%), stem, seeds, and flower (6.7% respectively), and rind (3.3%). Meanwhile, the most frequently used preparation method was decoction (76.7%) and infusion (23.3%). The research results confirm that the Sundanese people in the Karangbahagia 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 Karangbahagia Region, so that the availability of medicinal plants in the region is maintained.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Karangbahagia Region, Antihyperlipidemic.

INTRODUCTION

The disorder known as hyperlipidaemia is one of important risk factor involved in the development of cardiovascular disease.[1,2] Hyperlipidaemia is characterised by elevated or abnormally high levels of lipids and/or lipoproteins in the blood. It is also known as hyperlipoproteinemia because these fatty molecules can only travel through the bloodstream when they are attached to proteins and stay dissolved while moving through the body.[3] Low levels of HDL-C (high density lipoprotein cholesterol), high levels of TG (triglycerides), LDL-C (low density lipoprotein cholesterol), and VLDL-C (very low density lipoprotein cholesterol) are all indicators of hyperlipidaemia.[4] An extensive data has confirmed the crucial role of hyperlipidaemia in the pathogenesis of cardiovascular disease such as atherosclerotic coronary heart disease (CHD).[5] The manifestation of the disorder is

considerably influenced by factors such as (central) obesity, saturated fat intake, and the cholesterol content within a person's diet. Another mechanism involves elevated levels of "apo B-100″ lipoproteins within the plasma, which may lead to atherosclerotic disease, even when the patient has no other risk factors. For most patients, hyperlipidemia is polygenic in inheritance, and it is often a combination of genetic and environmental factors at play that ultimately contributes to a person's risk of developing hyperlipidemia and cardiovascular disease.[6] Currently, research to obtain new antidyslipidemic drugs derived from natural ingredients continues to be carried out, one of which is through exploration of active compounds from natural ingredients, especially medicinal plants that have traditionally been used by people to treat hyperlipidemia in various regions in Indonesia.[7-9] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat hyperlipidemia is Karangbahagia Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for hyperlipidemia in Karangbahagia Region, Bekasi, West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Karangbahagia is located in Bekasi Regency, West Java, Indonesia, with an area of 38.55 km^2. This area has an altitude of 15 meters above sea level with an average maximum air temperature of 35°C and a minimum of 25°C (humidity: approximately 44%). Moreover, it is located between 06°11′15″ South Latitude and 107°11′33″ East Longitude. This region is a tropical climate area that is mostly inhabited by Sundanese tribes (80%) and other tribes (20%). Vegetation in the study area is in humid conditions with an average rainfall of 3,500 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 April to May 2026 in the Karangbahagia Region, Bekasi, 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.[10] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[11] 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

Hyperlipidemia is characterized by abnormal circulating lipid levels, particularly elevated total cholesterol, triglycerides, and low-density lipoprotein cholesterol (LDL-C), accompanied in some cases by reduced high-density lipoprotein cholesterol (HDL-C). This condition represents an important risk factor for atherosclerosis and cardiovascular diseases.[12] The findings of this study demonstrate the extensive use of medicinal plants by the community in Karangbahagia, Bekasi, West Java, Indonesia, as part of traditional healthcare practices. A total of 30 medicinal plant species belonging to various botanical families were identified, with different plant parts, preparation methods, and dosages used for therapeutic purposes. Among the various plant parts used, leaves (50.0%) are most often used in making medicine, followed by rhizome (13.3%), fruit (13.3%), stem, seeds, and flower (6.7% respectively), and rind (3.3%). Meanwhile, the most frequently used preparation method was decoction (76.7%) and infusion (23.3%). These findings provide valuable information regarding the potential development of plant-based therapeutic agents, particularly for the management of metabolic disorders, including hyperlipidemia.

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

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	*Allium sativum* L.	Alliaceae	Bawang Putih	Rhizome	Infusion	10 grams once a day
2	*Aloe vera* Burm.f.,	Asphodelaceae	Lidah Buaya	Stem	Decoction	50 grams once a day
3	*Andrographis paniculata* Nees	Acanthaceae	Sambiloto	Leaf	Decoction	50 grams once a day
4	*Annona muricata* L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams

						once a day
5	*Anredera cordifolia* (Ten.) Steenis	Basellaceae	Binahong	Leaf	Decoction	10 grams once a day
6	*Averrhoa carambola* L.	Oxalidaceae	Belimbing	Leaf	Infusion	50 grams once a day
7	*Carica papaya* L.	Caricaceae	Pepaya	Leaf	Decoction	40 grams once a day
8	*Cinnamomum verum* J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	100 grams once a day
9	*Citrus aurantifolia* (Christm) Swingle	Rutaceae	Jeruk Nipis	Fruit	Decoction	50 grams once a day
10	*Clitoria ternatea* L.	Fabaceae	Bunga Telang	Flower	Decoction	50 grams once a day
11	*Colocasia esculenta* (L.) Schott	Araceae	Talas	Leaf	Decoction	12 grams once a day
12	*Curcuma longa* L.	Zingiberaceae	Kunyit	Rhizome	Infusion	150 grams once a day
13	*Garcinia mangostana* L.	Clusiaceae	Manggis	Rind	Infusion	50 grams once a day
14	*Hibiscus sabdariffa* L.	Malvaceae	Rosela	Flower	Decoction	50 grams once a day
15	*Kaempferia galanga* L.	Zingiberaceae	Kencur	Rhizome	Infusion	20 grams once a day
16	*Mangifera indica* L.	Anacardiaceae	Mangga	Leaf	Decoction	20 grams once a day
17	*Momordica charantia* L.	Cucurbitaceae	Pare	Leaf	Decoction	10 grams once a day
18	*Morinda citrifolia* L.	Rubiaceae	Mengkudu	Fruit	Infusion	10 grams once a day
19	*Moringa oleifera* Lamk.	Moringaceae	Kelor	Leaf	Decoction	15 grams once a day
20	*Nigella sativa* L.	Ranunculaceae	Jinten Hitam	Seed	Decoction	20 grams once a day
21	*Ocimum tenuiflorum* L.	Lamiaceae	Kemangi	Leaf	Decoction	50 grams once a day
22	*Persea americana* Mill.	Lauraceae	Alpukat	Seed	Decoction	50 grams once a day
23	*Phaleria macrocarpa* (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	50 grams once a day
24	*Phyllanthus niruri* L.	Phyllanthaceae	Meniran	Leaf	Decoction	80 grams once a day
25	*Piper betle* L.	Piperaceae	Sirih	Leaf	Decoction	10 grams once a day
26	*Psidium guajava* L.	Myrtaceae	Jambu Biji	Leaf	Decoction	100 grams once a day
27	*Solanum torvum* Sw.	Solanaceae	Tokakak	Fruit	Decoction	80 grams once a day
28	*Syzygium polyanthum* (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	10 grams once a day
29	*Tinospora crispa* L.	Menispermaceae	Baratawali	Leaf	Decoction	50 grams once a day
30	*Zingiber officinale* Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	100 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 Karangbahagia 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 Karangbahagia Region, so that the availability of medicinal plants in the region is maintained.

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