



Ethnobotany of Medicinal Plants in Leuwiliang (Bogor), Indonesia

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Research

Abstract

Background: Bogor, a suburban area of Jakarta, harbors a rich diversity of plants traditionally used for medicinal purposes, one of them is Leuwiliang. Furthermore, comprehensive documentation regarding the use of these plants as traditional medicine is lacking. Therefore, this study aims to identify the medicinal plants, their uses, and conservation efforts.

Methods: This study involved interviews with users of plant-based medicine. We interviewed 30 respondents from 11 villages. The inquiries encompassed characteristics of both the respondents and the medicinal plants. Additionally, we also conducted plant exploration and identification.

Results: A total of 101 species belonging to 44 families were identified as potential medicinal plants for treating various ailments prevalent in the Leuwiliang community. The Zingiberaceae family emerged as the most commonly used for medicinal purposes, followed by Asteraceae and other families. Degenerative diseases like diabetes and hypertension were found to be the most prevalent among the Leuwiliang community. Most of the plants used originated from the Malesian Region, and their conservation status is largely secure, given that most are herbaceous. The community in Leuwiliang practiced the cultivation of medicinal plants in their home gardens as a conservation effort to prevent these plants from becoming endangered.

Conclusions: The abundance of reported medicinal plants underscores the rich traditional knowledge within the Leuwiliang community. However, knowledge regarding the application of these medicinal plants is gradually waning due to the effects of climate change and modernization.

Keywords: Local wisdom; Medicinal plants; Plant diversity; Traditional knowledge; Traditional medicine

Background

Indonesia boasts abundant plant biodiversity, yet research into the use and documentation of medicinal plant species remains limited. According to Plants of the World Online (POWO) data, there are approximately 391,000 medicinal plant species globally, with Indonesia hosting around 30,000 species, a third of which possess medicinal properties (Heyne 1987). The 2015 Report of Plant-Based Medicine and Herbal Research (Indonesian: *Riset Tumbuhan Obat dan Jamu* or RISTOJA) identified 1,159 species of medicinal plants across 156 families. Salim *et al.* (2017) also reported that around 500 species are employed in the pharmaceutical and herbal industries.

Bogor holds a rich historical heritage that defines its identity. In the 14th century, circa 1482, Bogor was known as Pakuan, the capital of the Pajajaran Kingdom. Its distinctive undulating topography influences local weather patterns and temperatures. Bogor experiences annual rainfall ranging from 4,000 to 4,500 mm (Hidayat & Fariyah 2020), earning its reputation as a rainy city. In addition, the southwest monsoon brings moist air from the Indian Ocean, contributing to the area's high rainfall and humidity. This abundant rainfall supports a diverse array of plants in Bogor, especially medicinal ones, which the local community still uses for healing. Traditional medicinal plants passed down through generations, have demonstrated their efficacy (Syukur & Hernani 2002). Due to the rising costs of modern medication, particularly in rural areas with limited accessibility, traditional medicine has widespread usage (Kasika *et al.* 2015; Kasika *et al.* 2016). Unfortunately, this traditional knowledge is fading, paralleled by the erosion of cultural values and changing climate conditions.

Climate change impacts biodiversity (Rinawati *et al.* 2013), one of which is the alteration in rainfall patterns leading to a decline in diversity (Suggitt *et al.* 2019). This climate-induced influence does not just result in reduced diversity; over time, it can cause the extinction of various life forms and ecosystem degradation (Purwanto *et al.* 2012). Moreover, Aldrian *et al.* (2011) reported that the rise in global temperatures, climate shifts, and weather pattern changes contribute to diminishing plant diversity, thereby posing a threat to plant species in Bogor. The reduction in plant diversity will affect the utilization of traditional medicines, leading to the loss of knowledge regarding medicinal plant species and associated traditional healing practices. This could endanger biodiversity and the local wealth of knowledge (Brouwer *et al.* 2005; Pei *et al.* 2020). Modernization, lifestyle changes, and consumption habits drive the decline in understanding traditional medicine. Ongoing modernization has displaced and overlooked the utilization and existence of medicinal plants in the Bogor area (Hidayat 2012). However, a small segment of the Leuwiliang community still preserves and utilizes medicinal plants, making this study pivotal for documentation. Failure to document could result in the disappearance of medicinal plant diversity in Leuwiliang. Therefore, this study marks the initial attempt to document the medicinal plants in the suburban Jakarta area, specifically Leuwiliang, Bogor.

The use of plants as a traditional medicine is believed to be effective and without side effects. Considering the numerous benefits found in plants and the lack of well-documented knowledge in Leuwiliang due to the absence of previous reports, there is a crucial need for an inventory of medicinal plant species and their uses. This is essential to keep the traditional knowledge of medicinal plants from fading away. The ethnobotanical study of medicinal plants in Leuwiliang aims to identify plants used for treating local community illnesses, understand the medicinal uses of these plants, and explore efforts for their conservation.

Materials and Methods

Study area

The study was conducted in 11 villages, namely Barengkok, Cibeber 1, Cibeber 2, Karacak, Karehkel, Karyasari, Leuwiliang, Leuwimekar, Pabangbon, Purasari, and Puraseda. Administratively, these villages are located in Leuwiliang Sub-district, Bogor Regency, West Java, Indonesia, which lies at coordinates 6°34'37.7" S and 106°38'10" E (Figure 1). The distance is about 23.70 km from the capital of Bogor Regency, called Cibinong, and about 48.55 km from Jakarta, the capital city of Indonesia. The total area of Leuwiliang Sub-district is 61.51 km², with an elevation of 246 meters above sea level. Leuwiliang Sub-district has an air temperature of 26°C, average rainfall of 317.77 mmHg, and humidity of 90% (BPS Kabupaten Bogor 2023). The sub-district is inhabited by 131,352 Sundanese (Indigenous people), consisting of 67,780 men and 63,572 women (BPS Kabupaten Bogor 2021).

Data collection

The study was conducted using a combination of research methods, namely qualitative and quantitative methods. The data were collected through in-depth interviews, field observation, and identifications. The in-depth interviews with 30

informants selected by purposive sampling aimed to discover the indigenous local knowledge of the use of medicinal plants in the Leuwiliang Sub-district. Before conducting interviews, we explained the research purpose and request the informant's willingness to be interviewed per the principle of Free, Prior, and Informed Consent (FPIC) or voluntary consent without coercion (International Society of Ethnobiology 2006). The field observations were carried out at 30 sites within the Leuwiliang Sub-district to document the medicinal plants used by the indigenous people.

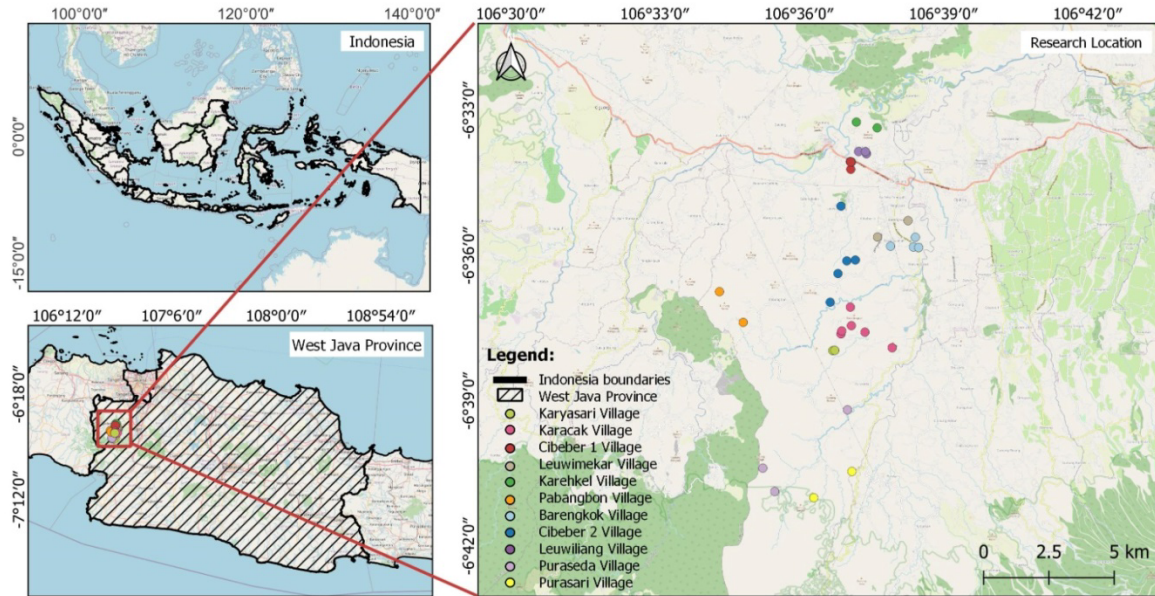


Figure 1. Study area: Leuwiliang Sub-district, Bogor Regency, West Java, Indonesia

We also conducted an identification of medicinal plant species to discover their species and family names. It was conducted by observing the morphological characteristics using several identification books, including Flora of Java (Backer and Bakhuizen van den Brink 1968), and Fundamentals of Plants Systematic (Radford 1986). The validation of species and family names was conducted by comparing with recent and related publications and using online database portals such as the International Plant Name Index (IPNI), Plant of the World Online (POWO), and Global Biodiversity Information Facility (GBIF). Floristic area information refers to the book Floristic Region of the World (Takhtajan 1986). Meanwhile, the conservation status was identified using the data provided by the International Union for Conservation of Nature (IUCN) data.

Data analysis

The data from in-depth interviews and identifications were analyzed using the Miles and Huberman Model by collecting, reducing, presenting, verifying, and concluding the data. The data were presented as a table and diagram using Microsoft Excel. Meanwhile, the data collected from the field observations were analyzed by calculating the ethnobotanical indices, including Use Value (UV), Relative Frequency of Citation (RFC), and Indices of Cultural Significance (ICS), in the following ways:

$$\text{Use Value (Uvis)} = (\sum U_{is}) / n_{is}$$

Where: U_{is} = the use values of the species s mentioned by the informants i ; $\sum U_{is}$ = the number of uses of species s mentioned in each event by the informants i ; n_{is} = the number of events in which the informants i cited species s (Siddique *et al.* 2021).

$$\text{Relative Frequency of Citation (RFC)} = FC / N \quad (0 < RFC < 1)$$

Where: FC = the number of informants who reported the uses of plant species; and N = the total of informants (Siddique *et al.* 2021).

$$\text{Indices of Cultural Significance (ICS)} = \sum_{i=1}^n (q_i \times i_i \times e_i) / n_i$$

Where: qi = the value of quality; ii = intensity value; ei = exclusivity value (Siddique *et al.* 2021).

Results and Discussion

Respondent characteristics

The characteristics of the respondents, which encompass gender, age, educational level, and livelihoods, are presented in Figure 2.

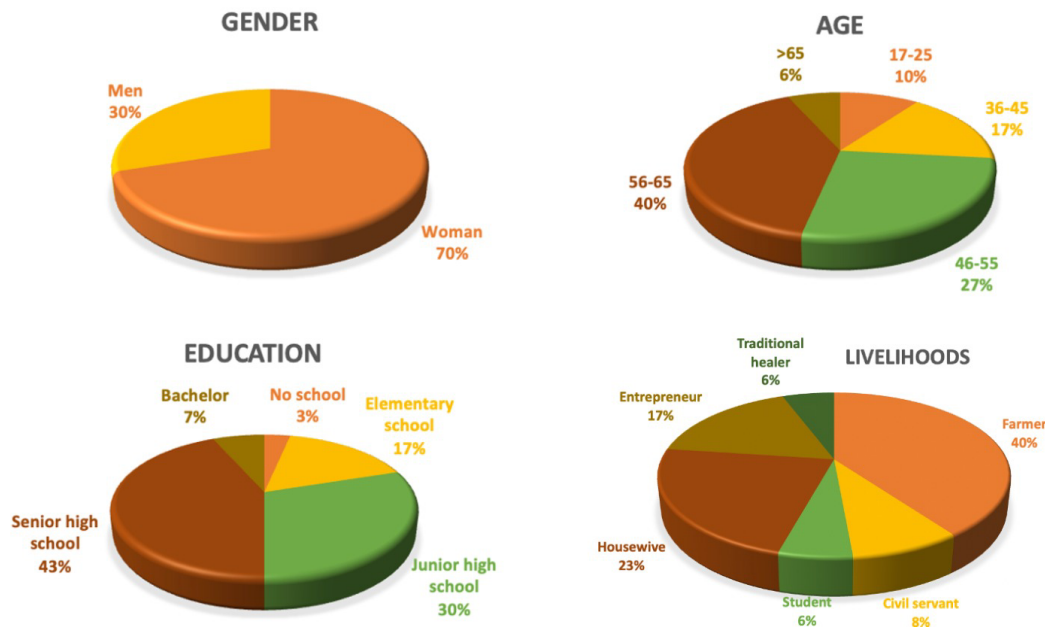


Figure 2. Respondent data

Socio-demographic factors significantly influence respondents' knowledge regarding the use of medicinal plants. Based on the interviews (Figure 3), women use plants more frequently as traditional medicine. According to Gautam *et al.* (2023), women are more knowledgeable than men about various plant species and their uses. Studies by Luitel *et al.* (2014) also report that women are more knowledgeable about medicinal plants. Ismarani (2013) and Maulana *et al.* (2021) suggest that women commonly use herbal remedies for personal health and to play an active role in family health. Women readily acquire knowledge about medicinal plants due to socializing activities with other mothers around their homes (Fadhil *et al.* 2022). Female respondents predominate because they use medicinal plants found around their homes or in household gardens (Jumriana *et al.* 2021), and rice fields (Nurmalasari *et al.* 2012).

The most dominant age group among the respondents is the older adults group, aged 56-65 years, comprising 40%, followed by the middle-aged group at 27%, late adults at 17%, seniors at 10%, and the least represented being late teenagers at 6%. Data regarding age groups indicate that older individuals possess a better understanding of utilizing plants as traditional medicine compared to the younger population. This result is consistent with the findings of Abbas *et al.* (2017) and Gautam *et al.* (2023). Hani *et al.* (2022), also report that older individuals have extensive experience, skills, and knowledge about medicinal plants' therapeutic properties, preparation, and administration. Generally, the older the respondents are, the more experience and knowledge they have regarding medicinal plants compared to younger respondents (Due *et al.* 2013; Sujarwo *et al.* 2014). The decline in knowledge among younger generations is attributed to lifestyle changes and a shift towards modern medicine. The educational level among respondents in the Leuwiliang community is predominantly at the Junior High School level, accounting for 43%. At the same time, the least represented group comprises those without formal education, standing at 3%. Data indicate that educational level does not significantly influence knowledge about medicinal plants, as education is not solely attained through formal schooling. Based on interviews, respondents' knowledge about plants used in treating various illnesses is passed down through generations. According to Fadhil *et al.* (2022), traditional medicine is an ancestral heritage from ancestors deeply rooted in the nation's

culture. This traditional healing method continues to be transmitted from one generation to another. Ancestors have bequeathed plant knowledge, serving as food sources and medicinal remedies as part of local wisdom (Metananda 2012).



Figure 3. Filling out questionnaires and interviews with traditional healers



Based on interviews conducted with respondents, there are six livelihood categories: farmers at 40%, housewives at 23%, entrepreneurs at 17%, civil servants at 8%, traditional healers at 6%, and students at 6%. Farmers represent the largest group among the respondents, as agriculture is highly relied upon in Leuwiliang. Farming stands out as the predominant livelihood in Leuwiliang due to the significant reliance on the agricultural sector. Karacak Village, in Leuwiliang, is recognized as one of Indonesia's largest mangosteen producers (Azizah 2016). The locals utilize mangosteen peels to enhance immunity. As Daldjoeni (1998) mentioned, rural communities depend mainly on farming, sustaining their livelihoods from the cultivated land. Housewives constitute the second-largest group after farmers. According to Oktarlina *et al.* (2018) and Hani *et al.* (2022), women who are typically engaged in home activities engage more in social interactions within their community, facilitating easier information absorption. This ongoing interaction contributes to expanding knowledge about medicinal plants among housewives.

Characteristics of Medicinal Plants

The Leuwiliang community utilizes 44 plant families encompassing 101 medicinal plants, detailed in Table 1. The most extensively used family is Zingiberaceae (Figure 4). This prominence is due to the prevalence of Zingiberaceae in tropical and subtropical regions, including Indonesia. This family serves various purposes, such as medicinal use, spices, ornamental cultivation, and others (Kuntorini 2005; Sujarwo *et al.* 2015). Among the species from the Zingiberaceae family utilized by the Leuwiliang community are *Boesenbergia rotunda*, *Curcuma aeruginosa*, *Curcuma amada*, *Curcuma domestica*, *Curcuma longa*, *Curcuma zanthorrhiza*, *Curcuma zedoaria*, *Etlingera elatior*, *Kaempferia galanga*, *Zingiber montanum*, *Zingiber officinale*, and *Zingiber zerumbet*. The community uses the rhizomes of these plants for treating diverse conditions, including indigestion, body aches, sore throats, diarrhea, headaches, appetite stimulation, digestive issues, measles, and blood sugar regulation. Specifically, the rhizomes of certain Zingiberaceae species like *Alpinia galanga*, *Boesenbergia rotunda*, *Curcuma longa*, and *Zingiber officinale* are employed to address diarrhea, stomachaches, and bloating (Faizah *et al.* 2002; Oonmetta-aree *et al.* 2006; Akinola *et al.* 2014; Chan *et al.* 2011). As per Ramadevi *et al.* (2004), Zingiberaceae alleviates fever, anorexia, diabetes, rheumatism, and respiratory issues, such as asthma and coughs. This owes to the compounds found in Zingiberaceae rhizomes, like essential oils (Sandy & Susilawati 2021), curcumin, flavonoids, and terpenoids, exhibiting potent antioxidant properties. Additionally, Zingiberaceae rhizomes show promise as antimicrobial, antioxidant, anticancer agents, and immune system stimulants (Hamid *et al.* 2010).

Other commonly utilized medicinal plant families in Leuwiliang include the Asteraceae family, which comprises several species, such as *Acmella paniculata*, *Ageratum conyzoides*, *Blumea balsamifera*, *Cosmos caudatus*, *Gomphrena globosa*, *Gymnanthemum amygdalinum*, *Gynura divaricata*, *Gynura procumbens*, *Pluchea indica*, *Smallanthus sonchifolius*, and *Sonchus arvensis*. The Asteraceae family contains bioactive compounds like sesquiterpenes, lactones, pentacyclic triterpenes, alcohols, alkaloids, tannins, polyphenols, saponins, and sterols that have medicinal uses (Wegiera *et al.* 2012). Additionally, research by Jan *et al.* (2011) suggests that Asteraceae contains active phytochemicals, such as alkaloids, terpenoids, flavonoids, and phenols. Some species from the Asteraceae family are often seen as fast-growing weeds in the wild, but their beneficial properties are often overlooked. A notable example of a wild-growing species with numerous medicinal benefits is *Ageratum conyzoides*. The leaves of *Ageratum conyzoides* contain various secondary metabolites, including alkaloids, phenolics, and terpenoids (Desiarianthy 2009).

Table 1. Medicinal plants used for treatment in Leuwiliang

Family	Scientific name	Local Name	Type of Disease	Habits	Plant Parts	Processing Method	How to use	Source	Habitat	Floristic Region	Conservation Status	Figure
Acanthaceae	<i>Andrographis paniculata</i> (Burm.f.) Wall. ex Nees	<i>Sambiloto</i>	Diabetes	Herb	Whole plant	Pressing	Drinking	Cultivation	Yard	Indian Region	DD	
	<i>Strobilanthes alternata</i> (Burm.f.) Moylan ex J.R.I. Wood	<i>Kiremek</i>	Bruises	Herb	Leaves	Pounding	Sticking	Wild	Yard	Malesian Region	DD	
	<i>Strobilanthes phyllostachya</i> Kurz	<i>Pecah beling</i>	Skin medicine	Herb	Leaves	Boiling	Drinking	Wild	Yard	Indochinese Region	DD	

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Agavaceae	<i>Dracaena trifasciata</i> (Prain) Mabb.	<i>Lidah mertua</i>	Fever, itching	Herb	Leaves	Boiling	Drinking	Cultivation	Yard	Eastern Asiatic to Northeast Australian Region	DD	
Amaranthaceae	<i>Amaranthus hybridus</i> L.	<i>Bayam</i>	Anemia	Herb	Leaves	Vegetables	Eating	Cultivation	Yard	North American Atlantic Region	DD	
	<i>Celosia argentea</i> L.	<i>Jengger ayam</i>	Nosebleed	Herb	Flower and root	Boiling	Drinking	Wild	Yard	Guineo-Congolian Region	LC	

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Amaryllidaceae	<i>Allium cepa</i> L.	<i>Bawang berem</i>	Hypertension, fever	Herb	Bulb	Pounding	Sticking	Cultivation	Garden	Eastern Asiatic Region	DD	
	<i>Zephyranthes candida</i> Herb.	<i>Kembang cokelat</i>	Seizure medicine, fever	Herb	Leaves	Boiling	Drinking	Wild	Yard	Brazilian Region to Chile-Patagonian Region	DD	
Annonaceae	<i>Annona muricata</i> L.	<i>Sirsak</i>	Cancer, high blood pressure	Tree	Leaves	Boiling	Drinking	Cultivation	Yard	Madrean Region to Polynesian Region	LC	
	<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	<i>Kenanga</i>	Treating scabies	Tree	Flower	Pounding	Sticking	Cultivation	Garden	Indochinese Region	LC	

Apiaceae	<i>Apium graveolens</i> L.	<i>Seledri</i>	Appetite enhancer	Herb	Leaves	Vegetables	Eating	Cultivation	Yard	Macaronesian Region	LC	
	<i>Centella asiatica</i> (L.) Urb.	<i>Antanan</i>	Healing wounds, slimming	Herb	Leaves	Boiling, pounding	Sticking Drinking	Wild	Garden	Central Australian or Eremacan Region	LC	
	<i>Coriandrum sativum</i> L.	<i>Ketumbar</i>	Facilitates digestion, increases appetite	Herb	Seed	Cooking	Eating	Cultivation	Garden	Saharan-Arabian Region to Sudano-Zambezian Region	DD	
	<i>Foeniculum vulgare</i> Mill.	<i>Adas</i>	Immune system	Herb	Flower	Boiling	Drinking	Cultivation	Yard	Saharan-Arabian to Sudano-Zambezian Region and Indian Region	LC	



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Apocynaceae	<i>Catharanthus roseus</i> (L.)	<i>Tapak dara</i>	Diabetes, high blood pressure	Herb	Leaves	Boiling	Drinking	Wild	Yard	Madagascan Region	DD	
Araliaceae	<i>Talinum paniculatum</i> (Jacq.) Gaertn.	<i>Gingseng</i>	Immune system, lose weight	Herb	Leaves	Pounding	Sticking	Cultivation	Yard	North American Atlantic Region	DD	
Arecaceae	<i>Areca catechu</i> L.	<i>Jambe</i>	Diarrhea medicine	Tree	Root	Boiling	Eating	Cultivation	Garden	Malasian Region	DD	
Asparagaceae	<i>Dracaena angustifolia</i> (Medik.) Roxb.	<i>Suji</i>	Maintain cholesterol levels	Shrub	Leaves	Pressing	Drinking	Cultivation	Yard	Eastern Asiatic Region to Northeast Australian Region	DD	
Asphodelaceae	<i>Aloe vera</i> (L.) Burm.f.	<i>Lidah buaya</i>	Body heat	Herb	Leaves	Cooking	Eating	Cultivation	Yard	Sudano-Zambezian Region	DD	


Asteraceae	<i>Acmella paniculata</i> (Wall. ex DC.) R.K.Jansen	<i>Jotang (bunga kuning)</i>	Womb Warmer	Herb	Leaves	Drying	Drinking	Wild	Yard	Eastern Asiatic Region	LC	
	<i>Ageratum conyzoides</i> L.	<i>Jukut bau atau Babandotan</i>	Reduces fever, flu, bloating, wound medicine	Herb	Leaves	Boiling, pounding	Drinking Sticking	Wild	Garden	Madrean Region	LC	
	<i>Blumea balsamifera</i> (L.) DC.	<i>Sembung</i>	Chest pain, appetite	Shrub	Leaves	Boiling	Drinking	Wild	Garden	Eastern Asiatic Region	LC	
	<i>Cosmos caudatus</i> Kunth	<i>Kenikir</i>	Gastric medication	Herb	Leaves	Vegetables	Eating	Cultivation	Yard	Madrean Region to Polynesian Region	DD	

	<i>Gomphrena globosa</i> L.	<i>Bunga Permen</i>	Asthma	Herb	Flower	Boiling	Drinking	Wild	Yard	Madrean Region to Brazilian Region	DD	
	<i>Gymnanthemum amygdalinum</i> (Delile) Sch.Bip	<i>Daun afrika</i>	Diabetes, worms, malaria, heart disease	Shrub	Leaves	Boiling	Drinking	Cultivation	Garden	Brazilian Region	DD	
	<i>Gynura divaricata</i> (L.) DC.	<i>Sambung nyawa</i>	Herpes, hypertension, diarrhea	Herb	Leaves	Boiling	Drinking	Wild	Yard	Eastern Asiatic region, Indochinese Region	DD	
	<i>Gynura procumbens</i> (Lour.) Merr.	<i>Sambung nyawa</i>	Fertility	Herb	Leaves	Drying	Drinking	Wild	Yard	Sudano-Zambezian Region	DD	



	<i>Pluchea indica</i> (L.) Less.	<i>Baluntas</i>	Bleeding after giving birth	Shrub	Leaves	Boiling	Drinking	Cultivation	Yard	Malesian, Northeast Australian Region	DD	
	<i>Smallanthus sonchifolius</i> (Poepp.) H.Rob.	<i>Insulin</i>	Diabetes, hypertension	Shrub	Leaves	Boiling	Drinking	Cultivation	Yard	North American Atlantic Region	DD	
	<i>Sonchus arvensis</i> L.	<i>Tempuyung</i>	Gout, kidney stones	Herb	Leaves	Boiling	Drinking	Wild	Yard	Circumboreal Region	DD	

Basellaceae	<i>Anredera cordifolia</i> (Ten.) Steenis	<i>Binahong</i>	Heals wounds	Liana	Leaves	Boiling	Drinking	Wild	Garden	North American Atlantic Region, Mediterranean Region	DD	
Caricaceae	<i>Carica papaya</i> L.	<i>Papaya</i>	Increase appetite	Shrub	Leaves	Boiling	Eating	Cultivation	Garden	Madrean Region	DD	
Clusiaceae	<i>Garcinia mangostana</i> L.	<i>Manggis</i>	Immune system	Tree	Rind	Boiling	Drinking	Cultivation	Garden	Malasian Region	DD	





Commelinaceae	<i>Tradescantia spathacea</i> Sw.	<i>Nanas kerang</i>	Cough and throat problems, reducing bruising from impact	Shrub	Leaves	Boiling Pounding	Drinking Sticking	Cultivation	Yard	Madrean Region	DD	
Crassulaceae	<i>Kalanchoe pinnata</i> (Lam.) Pers.	<i>Cocor bebek</i>	Mouthwash, tonsils	Herb	Leaves	Pressing	Gargling	Cultivation	Yard	Madagascan Region	DD	
Cucurbitaceae	<i>Mukia javanica</i> (Miq.) C.Jeffrey	<i>Bebontengan</i>	Hypertension	Liana	Whole plant	Drying	Drinking	Wild	Field	Eastern Asiatic Region, Indochinese Region, Malesian Region	DD	

Euphorbiaceae	<i>Codiaeum variegatum</i> (L.) Rumph. ex A.Juss.	<i>Puring</i>	Fever	Shrub	Leaves	Pounding	Sticking	Cultivation	Yard	Malasian Region	LC	
	<i>Euphorbia hirta</i> L.	<i>Nangkaan</i>	Slimming	Herb	Leaves	Drying	Drinking	Wild	Yard	North American Atlantic Region	DD	
	<i>Euphorbia tirucalli</i> L.	<i>Patah tulang</i>	Medicine for skin diseases, broken bones	Herb	Leaves	Pounding	Sticking	Cultivation	Yard	Madagascan Region	LC	
	<i>Jatropha multifida</i> L.	<i>Betadin</i>	Treat wounds	Shrub	Leaves	Pounding	Sticking	Cultivation	Yard	Madrean Region, Caribbean Region	LC	


Fabaceae	<i>Abrus precatorius</i> L.	<i>Saga</i>	Coughs, colds, mouth ulcer medicine	Liana	Leaves	Pressing	Drinking	Cultivation	Yard	Northeast Australian Region	DD	
	<i>Archidendron pauciflorum</i> Benth.) I.C.Nielsen	<i>Jengkol</i>	Stomachache	Tree	Rind	Boiling	Drinking	Cultivation	Garden	Malasian Region	DD	
	<i>Biancaea sappan</i> (L.) Tod.	<i>Secang</i>	Anti-tumor	Tree	Stem	Boiling	Drinking	Cultivation	Garden	Indian Region, Indochinese Region	LC	
	<i>Clitoria ternatea</i> L.	<i>Teleng</i>	Eye medication	Liana	Leaves and Flower	Pressing	Drinking	Cultivation	Garden	Saharan- Arabian Region	DD	

	<i>Mimosa pudica</i> L.	<i>Putri malu</i>	Immune system	Shrub	Root	Boiling	Drinking	Wild	Yard	Madrean Region, North American Atlantic Region	LC	
	<i>Tamarindus indica</i> L.	<i>Asem</i>	Broken bone	Tree	Fruit	Pounding	Sticking	Cultivation	Garden	Madagascan Region	LC	
Lamiaceae	<i>Coleus scutellarioides</i> (L.) Benth.	<i>Jawer kotok</i>	Vomiting blood, treating wounds	Herb	Leaves	Boiling	Drinking	Wild	Yard	Indochinese Region and Northeast Australian Region	DD	
	<i>Lavandula angustifolia</i> Mill.	<i>Lavender</i>	Prevent mosquito bites	Shrub	Leaves, flower	Pounding	Sticking	Cultivation	Yard	Sudano-Zambeian Region	LC	

	<i>Mentha x piperita</i> L.	<i>Mint</i>	Flu	Herb	Leaves	Soaking	Drinking	Cultivation	Yard	Macronesian to Sudano- Zambeian Region	DD	
	<i>Ocimum basilicum</i> L.	<i>Selasih</i>	Cholesterol	Herb	Seed	Boiling	Drinking	Cultivation	Yard	Eastern Asiatic Region to Northeast Australian Region	DD	
	<i>Ocimum tenuiflorum</i> L.	<i>Kemangi</i>	Eliminates body odor, dengue fever	Shrub	Leaves, seed	Cooking	Eating	Cultivation	Yard	Eastern Asiatic Region	DD	
	<i>Orthosiphon aristatus</i> (Blume) Miq.	<i>Kumis kucing</i>	Kidney stone	Shrub	Leaves, flower	Boiling	Drinking	Cultivation	Yard	Eastern Asiatic Region to Northeast Australian Region	DD	


Lauraceae	<i>Cinnamomum verum</i> J.Presl	<i>Kayu manis</i>	Diabetes, rheumatism	Tree	Bark	Boiling	Drinking	Cultivation	Yard	Indian Region	DD	
	<i>Persea americana</i> Mill.	<i>Alpukat</i>	Anti-inflammatory	Tree	Leaves, fruit	Boiling	Drinking	Cultivation	Yard	Guayana Highlands Region	LC	
Malvaceae	<i>Hibiscus sabdariffa</i> L.	<i>Rosella</i>	Lowers blood pressure and cholesterol, sore throat, loses weight	Shrub	Flower	Boiling	Drinking	Cultivation	Yard	Sudano-Zambezian Region	DD	
	<i>Sida rhombifolia</i> L.	<i>Sidagori</i>	Boil	Herb	Leaves, root	Boiling	Drinking	Wild	Yard	Mediterranean Region	DD	


Meliaceae	<i>Lansium domesticum</i> Corrêa	<i>Duku</i>	Skin medicine	Tree	Bark	Chewing	Eating	Cultivation	Garden	Malesian Region	DD	
	<i>Sandoricum koetjape</i> (Burm.f.) Merr.	<i>Kecapi</i>	Ringworm medication	Tree	Root	Chewing	Eating	Cultivation	Garden	Malesian Region	LC	
Menispermaceae	<i>Tinospora cordifolia</i> (Willd.) Hook.f. & Thomson	<i>Brotowali</i>	Rheumatism, cleaning wounds	Liana	Leaves, stem	Pressing	Drinking	Cultivation	Yard	Indian - Indochinese Region	DD	
Moringaceae	<i>Moringa oleifera</i> L.	<i>Kelor</i>	Anemia, stimulates breast milk	Shrub	Leaves	Vegetables	Eating	Cultivation	Yard	Eastern Asiatic Region to Northeast Australian Region	LC	




Muntingiaceae	<i>Muntingia calabura</i> L.	<i>Ceri</i>	Sore throat, hypertension	Tree	Fruit	Chewing	Eating	Wild	Garden	Madrean to North American Atlantic Region	DD	
Myrtaceae	<i>Psidium guajava</i> L.	<i>Jambu biji</i>	Treating diarrhea, dengue fever, cholesterol	Tree	Leaves, fruit	Pressing	Drinking	Cultivation	Garden	North American Atlantic Region	LC	
	<i>Syzygium aqueum</i> (Burm.f.) Alston	<i>Jambu air</i>	Immune system, body heat	Tree	Leaves	Boiling	Drinking	Cultivation	Yard	Malesian to Northeast Australian Region	DD	
	<i>Syzygium polyanthum</i> (Wight) Walp.	<i>Salam</i>	Gastric medicine	Tree	Leaves	Cooking	Eating	Cultivation	Garden	Indochinese and Malesian Region	DD	





Myristicaceae	<i>Myristica fragrans</i> Houtt.	<i>Pala</i>	Insomnia, flatulence	Tree	Fruit	Boiling	Drinking	Cultivation	Garden	Malesian Region	DD	
Oleaceae	<i>Jasminum sambac</i> (L.) Aiton	<i>Melati</i>	Stopping breast milk, skin health	Shrub	Flower	Boiling	Drinking	Cultivation	Yard	Indian Region	DD	
Oxalidaceae	<i>Averrhoa bilimbi</i> L.	<i>Belimbing wuluh</i>	Cough, cold medicine	Tree	Fruit	Vegetables	Eating	Cultivation	Yard	Malesian Region	DD	
Pandanaceae	<i>Pandanus amaryllifolius</i> Roxb. ex Lindl.	<i>Pandan</i>	Joint pain, treating burns	Shrub	Leaves	Pressing	Drinking	Cultivation	Yard	Malesian Region	DD	



Phyllantaceae	<i>Phyllanthus urinaria</i> L.	<i>Meniran</i>	Medicine for urinary stones, stomach ache, jaundice	Herb	Leaves	Vegetables	Eating	Wild	Yard	Eastern Asiatic Region to Northeast Australian Region	DD	
	<i>Sauropus androgynus</i> (L.) Merr.	<i>Katuk</i>	Facilitates breast milk, anemia	Shrub	Leaves	Boiling	Eating	Cultivation	Yard	Eastern Asiatic Region	DD	
Piperaceae	<i>Piper betle</i> L.	<i>Sirih</i>	Heals wounds, vaginal discharge, nosebleeds	Liana	Leaves	Boiling	Drinking	Cultivation	Yard	Indochinese to Malesian Region	DD	
	<i>Piper nigrum</i> L.	<i>Lada</i>	Anti-inflammatory, maintains sugar levels	Liana	Fruit	Cooking	Eating	Cultivation	Garden	Indian Region	DD	





	<i>Piper ornatum</i> N.E.Br.	<i>Sirih merah</i>	Diabetes, vaginal discharge	Liana	Leaves	Boiling	Drinking	Cultivation	Yard	Malasian Region	DD	
Poaceae	<i>Chrysopogon zizanioides</i> (L.) Roberty	<i>Akar wangi</i>	Rheumatism	Shrub	Root	Boiling	Drinking	Cultivation	Field	Indian to Indochinese region	DD	
	<i>Cymbopogon citratus</i> (DC.) Stapf.	<i>Sereh</i>	Medicine for digestive health, weight loss, heart health	Shrub	Stem	Boiling	Drinking	Cultivation	Yard	Indian Region	DD	
	<i>Cymbopogon nardus</i> (L.) Rendle	<i>Sereh wangi</i>	Antiseptic	Shrub	Leaves	Boiling	Drinking	Cultivation	Field	Sudano- Zambezian and Indochinese region	DD	




	<i>Imperata cylindrica</i> (L.) Raeusch.	<i>Ilalang</i>	Gastric medicine	Shrub	Root	Boiling	Drinking	Wild	Field	Sudano-Zambezian and Irano-Turanian Region	LC	
Ranunculaceae	<i>Nigella sativa</i> L.	<i>Jinten hitam</i>	Hypertension, cholesterol	Herb	Seed	Cooking	Eating	Cultivation	Garden	Circumboreal Region to Irano-Turanian Region	DD	
Rubiaceae	<i>Morinda citrifolia</i> L.	<i>Cangkudu</i>	Joint pain, heart disease, weight loss, blood pressure	Tree	Leaves and Fruit	Boiling	Drinking	Cultivation	Garden	Malesian Region	DD	
	<i>Oldenlandia orymbosa</i> L.	<i>Rumput Mutiara</i>	Fever	Herb	Leaves	Boiling	Drinking	Wild	Field	Mediterranean Region	DD	

	<i>Paederia foetida</i> L.	<i>Kentutan</i>	Easy to fart	Herb	Leaves	Boiling	Drinking	Wild	Yard	Eastern Asiatic Region	DD	
Rutaceae	<i>Citrus × aurantiifolia</i> (Christm.) Swingle	<i>Jeruk nipis</i>	Sore throat	Tree	Fruit	Pressing	Drinking	Cultivation	Yard	Eastern Asiatic Region	DD	
	<i>Citrus x limon</i> (L.) Osbeck	<i>Jeruk lemon</i>	Sore throat	Tree	Fruit	Pressing	Drinking	Cultivation	Yard	Indian Region	DD	
	<i>Evodia suaveolens</i> Scheff	<i>Zodia</i>	Treating malaria, fever	Shrub	Leaves	Boiling	Drinking	Cultivation	Garden	Malesian Region	DD	
Sapotaceae	<i>Manilkara zapota</i> L.	<i>Sawo</i>	Relieves fever, immune system, bone health	Tree	Leaves	Boiling	Drinking	Cultivation	Yard	Madrean Region	LC	

Selaginellaceae	<i>Selaginella doederleinii</i> Hieron.	<i>Rane</i>	Stomachache	Herb	Leaves	Drying	Drinking	Wild	Field	Eastern Asiatic Region and Indochinese Region	DD	
Simaroubaceae	<i>Eurycoma longifolia</i> Jack	<i>Pasak bumi</i>	Male fertility, stomachache medicine	Shrub	Root	Boiling	Drinking	Wild	Garden	Indochinese to Malesian Region	DD	
Solanaceae	<i>Physalis angulata</i> L.	<i>Ciplukan</i>	Diabetes	Herb	Whole plant	Boiling	Drinking	Cultivation	Yard	North American Atlantic Region	DD	
Thymelaeaceae	<i>Phaleria macrocarpa</i> (Scheff.) Boerl.	<i>Mahkota dewa</i>	Diabetes, gout medication, immune system	Tree	Fruit	Drying and Boiling	Drinking	Cultivation	Yard	Malesian Region	LC	

Zingiberaceae	<i>Boesenbergia rotunda</i> (L.) Mansf.	<i>Temu kunci</i>	Digestion	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Eastern Asiatic and Malesian Region	LC	
	<i>Curcuma aeruginosa</i> Roxb.	<i>Koneng hideung</i>	Increases appetite, treats colds, relieves menstrual pain, lowers cholesterol	Herb	Rhizome	Pressing and boiling	Drinking	Cultivation	Yard	Indochinese to Malesian Region	LC	
	<i>Curcuma amada</i> Roxb.	<i>Temu manga</i>	Medicine for diarrhea, immune system, wound healing	Herb	Rhizome	Pressing and boiling	Drinking	Cultivation	Yard	Indian to Indochinese Region	DD	
	<i>Curcuma longa</i> L.	<i>Koneng tanggang, kunyit</i>	Appetite	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Eastern Asiatic Region	DD	
	<i>Curcuma zanthorrhiza</i> Roxb.	<i>Temulawak</i>	Appetite	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Indian Region	DD	

	<i>Curcuma zedoaria</i> (Christm.) Roscoe	<i>Temu putih</i>	Anti-pain, allergies	Herb	Leaves, rhizome	Pressing, boiling	Drinking	Cultivation	Yard	Eastern Asiatic Region	DD	
	<i>Etlingera elatior</i> (Jack) R.M.Sm.	<i>Honje</i>	Treats measles, anemia, improves blood circulation	Herb	Flower, root	Boiling	Bathing	Cultivation	Yard	Malesian Region	DD	
	<i>Kaempferia galanga</i> L.	<i>Kencur</i>	Increase appetite	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Indian to Eastern Asiatic Region and Indochinese Region	DD	
	<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr	<i>Bangle</i>	Headache, increased appetite, rheumatism	Herb	Rhizome	Pressing, boiling	Drinking	Cultivation	Yard	Eastern Asiatic Region to Indochinese Region	DD	

	<i>Zingiber officinale</i> Roscoe	<i>Jahe</i>	Sore throat, immune system	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Indian to Eastern Asiatic Region	DD	
	<i>Zingiber officinale</i> Roscoe	<i>Jahe merah</i>	Fever, sore throat, flu	Herb	Rhizome	Boiling	Drinking	Cultivation	Yard	Indian to Eastern Asiatic Region	DD	
	<i>Zingiber zerumbet</i> (L.) Roscoe ex Sm.	<i>Lempuyang</i>	Appetite, diabetes	Herb	Leaves	Drying	Drinking	Cultivation	Yard	Eastern Asiatic Region	DD	

Notes: LC=Least Concern, DD=Data Deficient

The medicinal plants acknowledged and utilized by the Leuwiliang community originate from diverse habitats like gardens, fields, and yards. The most prevalent growing location is in yards (68.32%). This prevalence is due to many households having extensive yard spaces where residents cultivate various plants, including ornamental and medicinal ones. Sari *et al.* (2015) reported that medicinal plants available in yards are often used to prepare herbal supplies.

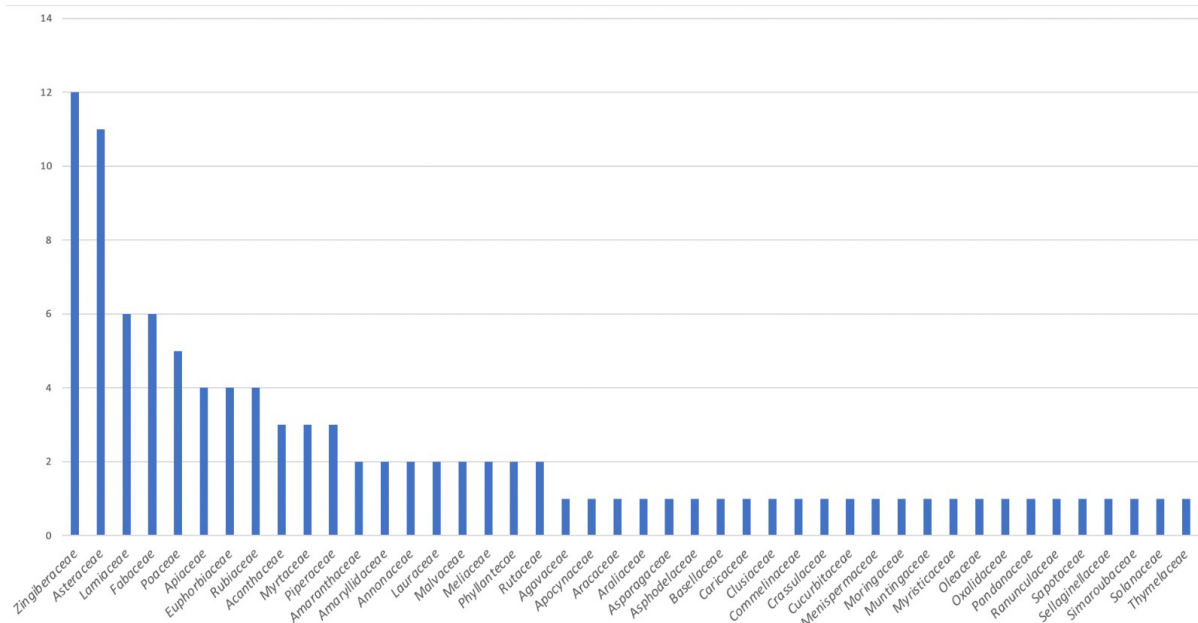


Figure 4. Medicinal plant families used

The Leuwiliang community utilizes medicinal plants classified into cultivated and semi-wild categories. There are 75 species (74.26%) of cultivated medicinal plants and 26 species (25.74%) categorized as semi-wild. Semi-wild plants grow in forests, on field edges, on roadsides, or near riverbanks without intentional cultivation by the community. Meanwhile, cultivated plants are more widely used as they are often grown in household yards, like *Carica papaya*, *Curcuma zanthorrhiza*, *Curcuma zedoaria*, *Garcinia mangostana*, *Kaempferia galanga*, *Moringa oleifera*, *Sauropus androgynus*, *Zingiber officinale*, and others. Besides home yards, these plants are also cultivated in the Leuwiliang Health Center (Indonesian: *Pusat Kesehatan Masyarakat* or PUSKESMAS), including *Morinda citrifolia*, *Moringa oleifera*, *Orthosiphon aristatus*, *Pandanus amaryllifolius*, *Phaleria macrocarpa*, *Piper betle*, *Smallanthus sonchifolius*, *Talinum paniculatum*, and *Zingiber officinale*. According to Utami *et al.* (2019), many medicinal plants are either wild-grown or directly cultivated by the community.

The predominant plant habit utilized is herbs, constituting 46%, followed by shrubs at 24%, trees at 22%, and lianas at 8% (Figure 5). Herbs are favored due to their shorter life cycles, making them relatively easy to cultivate and meet increased demands when necessary (Bekalo *et al.* 2009). Additionally, seasonal plants contain twice as many alkaloids as woody plants (Levin 1976). Furthermore, using various organ parts from herbs leads to higher chemical compound content.

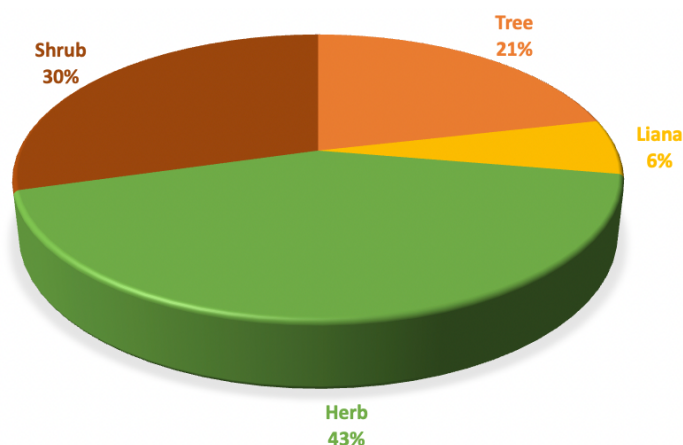


Figure 5. Percentage of medicinal plant habitus used

The parts of plants used vary across 10 types: leaves, rhizomes, roots, fruits, flowers, stems, rinds, whole plants, bark, and seeds (Figure 6). Leaves are the most widely used, accounting for 54.5%, while seeds and bark are the least used at 0.99%. Among these, leaves stand out as the most frequently utilized part. This corroborates the findings of Shah *et al.* (2018) and Nepali *et al.* (2021). Leaves harbor diverse plant secondary metabolites (Hani *et al.* 2022) and exhibit the highest metabolic activity (Ghorbani 2005). Hamzari (2008) notes that leaves are commonly chosen due to their easy availability and straightforward processing into medicinal forms compared to other plant parts. Fakhrozi (2009) highlights that leaves possess a high regeneration capacity, sprouting back after utilization, with minimal impact on the overall growth of the plant despite their role in photosynthesis. Furthermore, leaves reportedly contain more biologically active compounds than other plant parts (Srithi *et al.* 2009).

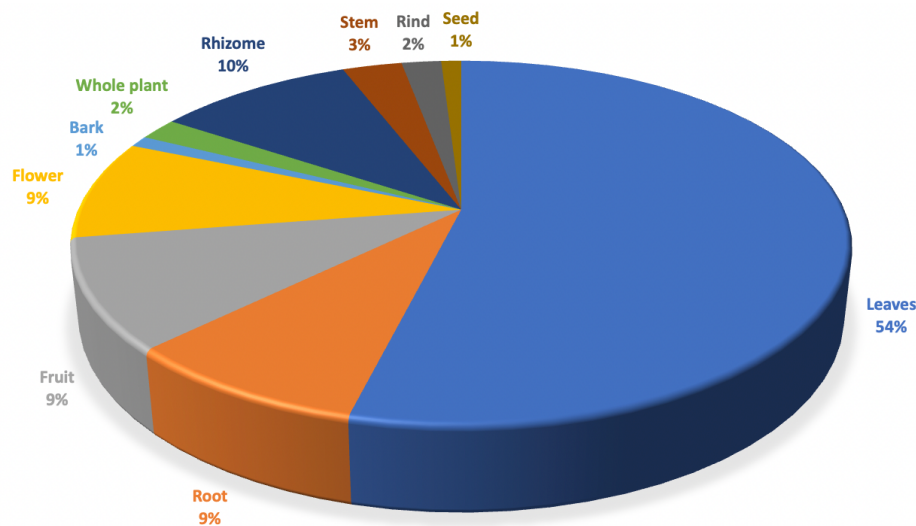


Figure 6. Percentage of plant parts used as medicine

The processing methods of medicinal plants include boiling, soaking, pressing, cooking, drying, pounding, being incorporated into dishes, pressing and boiling, and chewing (see Figure 7). The predominant utilization of medicinal plants involves boiling. According to Ghorbani (2005) and Nadembega *et al.* (2011), boiling or decoction is a frequently employed method. This technique stands out as one of the most prevalent as it involves simply mixing plant parts with water and boiling them. Puspitasari *et al.* (2016) note that boiling with water is highly preferred among communities due to its ease, consumability, and employment of simple tools. Boiling is considered the easiest and most effective way to maintain the medicinal properties even after repeated boiling (Hardadi 2005).

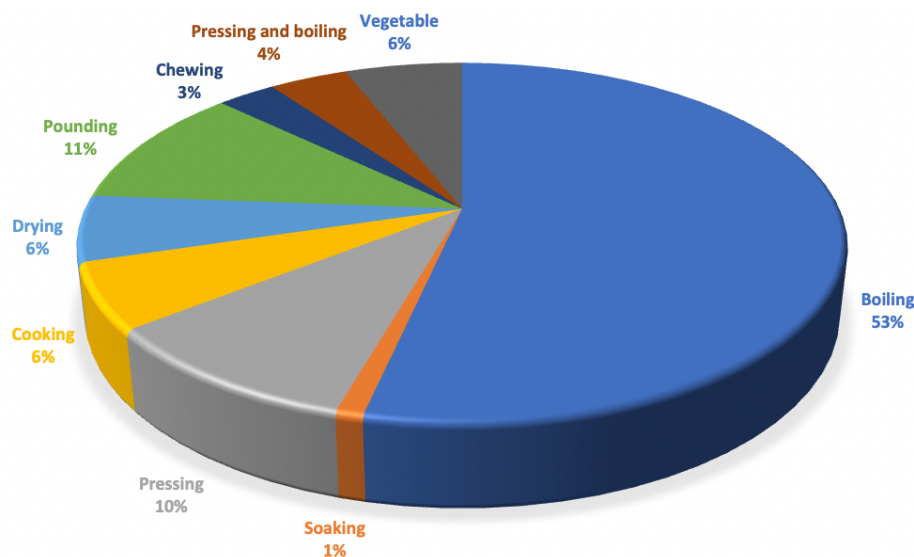


Figure 7. Percentage of methods to process plants into medicine

The most common way of using medicinal plants is drinking, accounting for 69%, while the least common methods are bathing and gargling, each representing 1% (Figure 8). In terms of application, the most common method is oral ingestion (72 species), followed by normal consumption (18 species), topical application (12 species), and bathing and gargling, each representing one species. Oral administration remains the most prevalent method in disease treatment (Nepali *et al.* 2020).

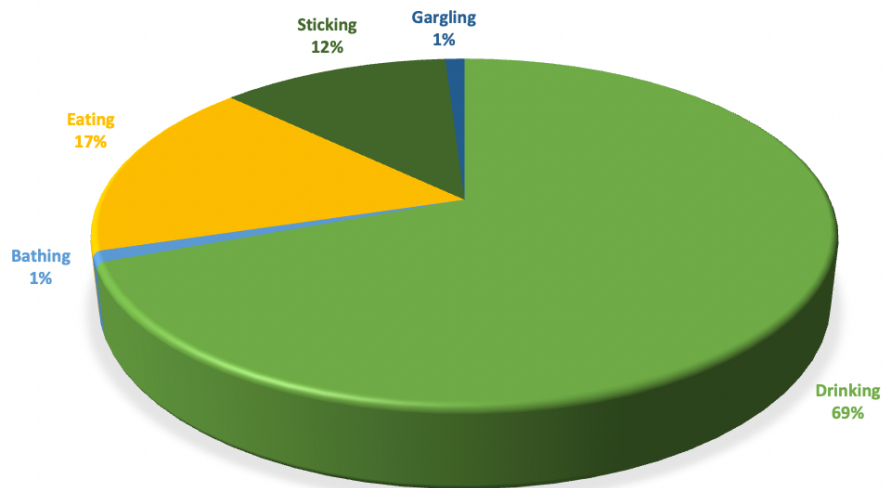


Figure 8. Percentage of methods to use medicinal plants

Diseases treated

From interviews conducted with the residents of Leuwiliang, information regarding 31 disease categories was gathered (Figure 9). Besides hypertension, diabetes stands out as another prevalent condition affecting the people of Leuwiliang. This illness is commonly seen among individuals over 40 due to unhealthy lifestyle habits, particularly concerning their diets.

The most frequently used plants for treating diabetes in Leuwiliang include *Smallanthus sonchifolius*, *Andrographis paniculata*, *Physalis angulate*, *Piper ornatum*, *Gymnanthemum amygdalinum*, *Phaleria macrocarpa*, *Zingiber zerumbet*, *Cinnamomum verum*, *Garcinia mangostana*, and *Catharanthus roseus*. *Smallanthus sonchifolius* is extensively utilized by the locals for diabetes treatment due to its cultivation in the area. This plant contains phenols, chlorogenic acid, caffeoylquinic acid, ferulic acid, fructooligosaccharides, and flavonoids; all is capable of reducing blood glucose levels. According to Baroni's research (2008), crude leaf extracts of insulin exhibit hypoglycemic activity by regulating gluconeogenesis and glycogenolysis, reducing glucose production, and breaking down glycogen into glucose. Additionally, Sugahara (2015) also reported that *Smallanthus sonchifolius* has been cultivated as a food source and locally used as a traditional remedy for diabetes and digestive or kidney disorders. The leaves possess antioxidant properties (Valentova *et al.* 2005), and hypoglycemic effects (Aybar *et al.* 2001). Bioactive compounds are found not only in the leaves but also in the roots. Further studies on insulin roots have revealed antioxidant effects (Yan *et al.* 1999), and anti-obesity effects in humans (Genta *et al.* 2009). Its pharmacological effects are associated with various phytochemical compounds, including polyphenols, phenolic acids, flavonoids, acetylenes, and triterpenes.

According to Susilawati *et al.* (2021), various plants are used to treat diabetes, including white turmeric, green chiretta, heart-leaved moonseed, chamber bitter, moringa, Indian pennywort, neem, insulin plant, lemongrass, red ginger, red betel, herbal fern, sappanwood, physalis, bitter melon, vegetable hummingbird, fishbone cactus, and cherries. The effective classes of metabolite compounds acting as antidiabetic agents are flavonoids, alkaloids, steroids, terpenoids, and proteins (Anjelina 2018).

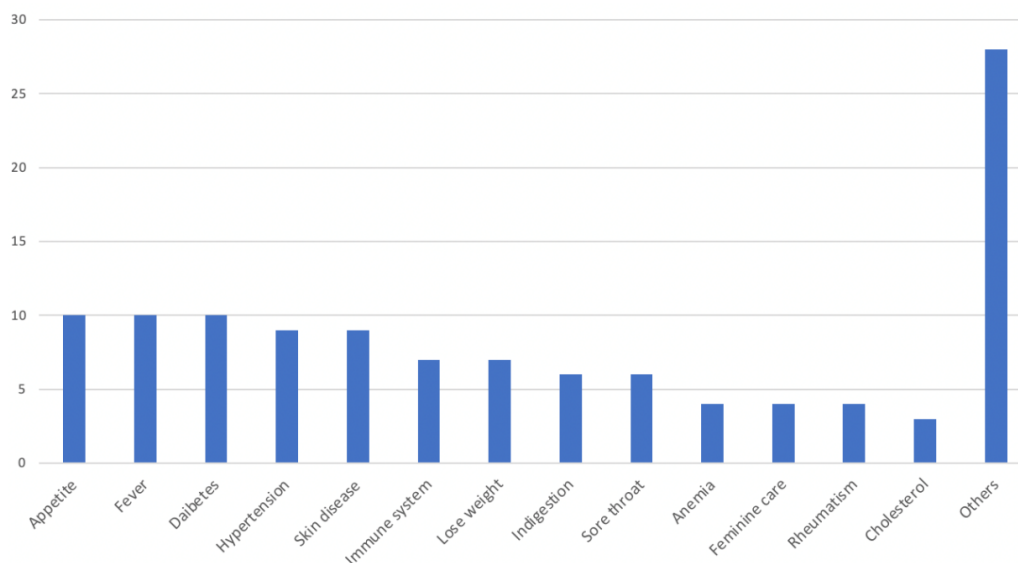


Figure 9. Groups of diseases cured

Floristic region

The most documented plants originate from the Malesian Region. The Malesian flora region encompasses Indonesia, Malaysia, Brunei, Timor Leste, the Philippines, and Papua New Guinea. It indicates that many people in Leuwiliang still utilize numerous native Indonesian plants, including *Archidendron pauciflorum*, *Myristica fragrans*, *Pandanus amaryllifolius*, and *Piper ornatum* (Figure 10).

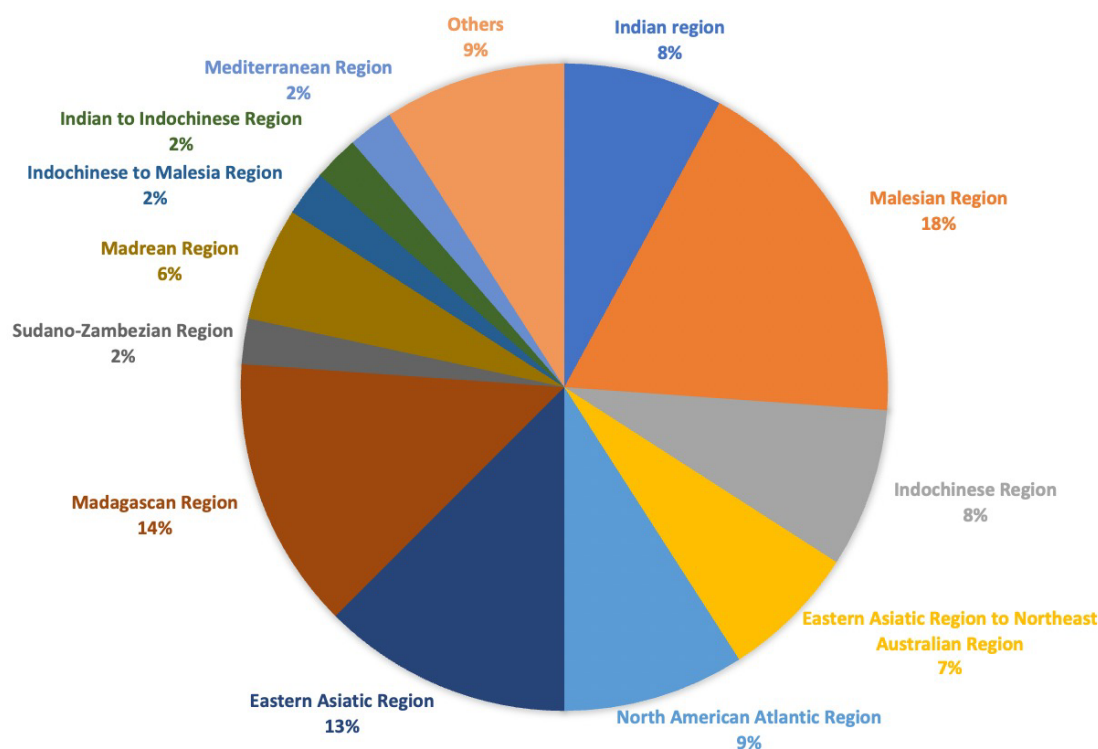


Figure 10. Floristic region of medicinal plants used in Leuwiliang

Conservation status and conservation efforts

The collected medicinal plants yielded 25 species listed on the IUCN (International Union for Conservation of Nature and Natural Resources) Red List, classified as Least Concern (LC), and Data Deficient (DD) (IUCN 2023) (Table 1). Twenty-five species fall under Least Concern (LC), while 76 species have a Data Deficient (DD) status. This data highlights that most of these medicinal plants possess a relatively low risk of rarity; however, conserving these species to ensure their continued

presence remains crucial. The conservation efforts carried out by the community in Leuwiliang involve cultivating medicinal plants in their home garden areas. Additionally, the cultivation of these medicinal plants aims to facilitate easy access for the community when they wish to use them as herbal remedies for treating ailments. Cultivation is a part of the conservation efforts for medicinal plants (Purwanto 1999). Nurhadi (2000) reported that the conservation of medicinal plants should be done collaboratively with the community.

Quantitative indices

Based on the calculations, five plant species show the highest use values: *Zingiber officinale* (2.07), *Curcuma longa* (1.80), *Moringa oleifera* (1.37), *Smallanthus sonchifolius* (1.23), and *Etlingera elatior* (0.97) (Figure 11). *Zingiber officinale*, commonly known as ginger, is utilized for its rhizome and extensively cultivated around households due to its numerous benefits, such as treating sore throats, boosting immunity, aiding digestion, and relieving muscle pain. *Curcuma longa* is also widely cultivated for its rhizome, used as an appetite enhancer, immunity booster, and menstrual pain reliever. *Moringa oleifera*, known for its leaves treats anemia and facilitates lactation. Moreover, moringa leaves (*Moringa oleifera*) are believed to ease the passing of someone in the throes of death by applying their stems and leaves to the individual's body. *Smallanthus sonchifolius*, particularly its leaves used by the Leuwiliang community, is believed to effectively lower blood sugar levels and hypertension, common ailments among the local elderly population. The fifth plant with the highest use value is *Etlingera elatior*, specifically its flowers and rhizomes. The flowers of *Etlingera elatior* are used to treat measles, anemia, and blood circulation. In contrast, its rhizome is used as a body odor eliminator due to its saponin and tannin content.

The highest Relative Frequency of Citation (RFC) or diversity value of plants utilized by the community in Leuwiliang ranges from 0.03 to 0.93 (Figure 12). The highest RFC values are associated with *Curcuma longa* (0.93), *Zingiber officinale* (0.93), *Allium cepa* (0.93), *Kaempferia galanga* (0.9), and *Moringa oleifera* (0.9). These high RFC values signify that these species are extensively used in treating various illnesses within the community. These plants are easily accessible and cultivated in Leuwiliang, showcasing their vital role in addressing many conditions, such as diabetes, hypertension, anemia, fever, low appetite, and sore throats.

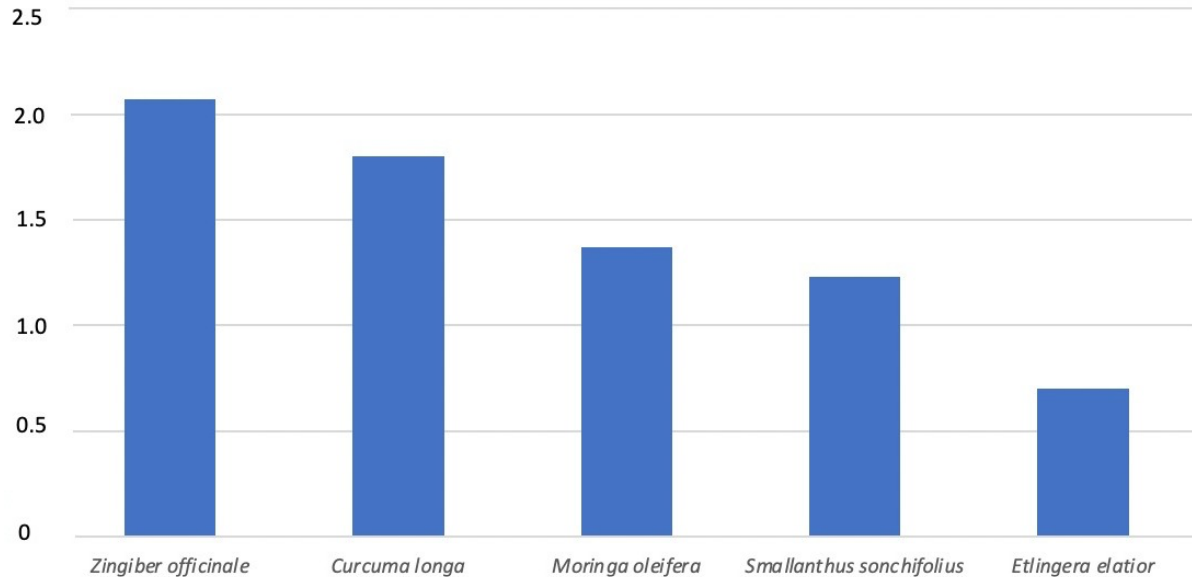


Figure 11. Highest use value

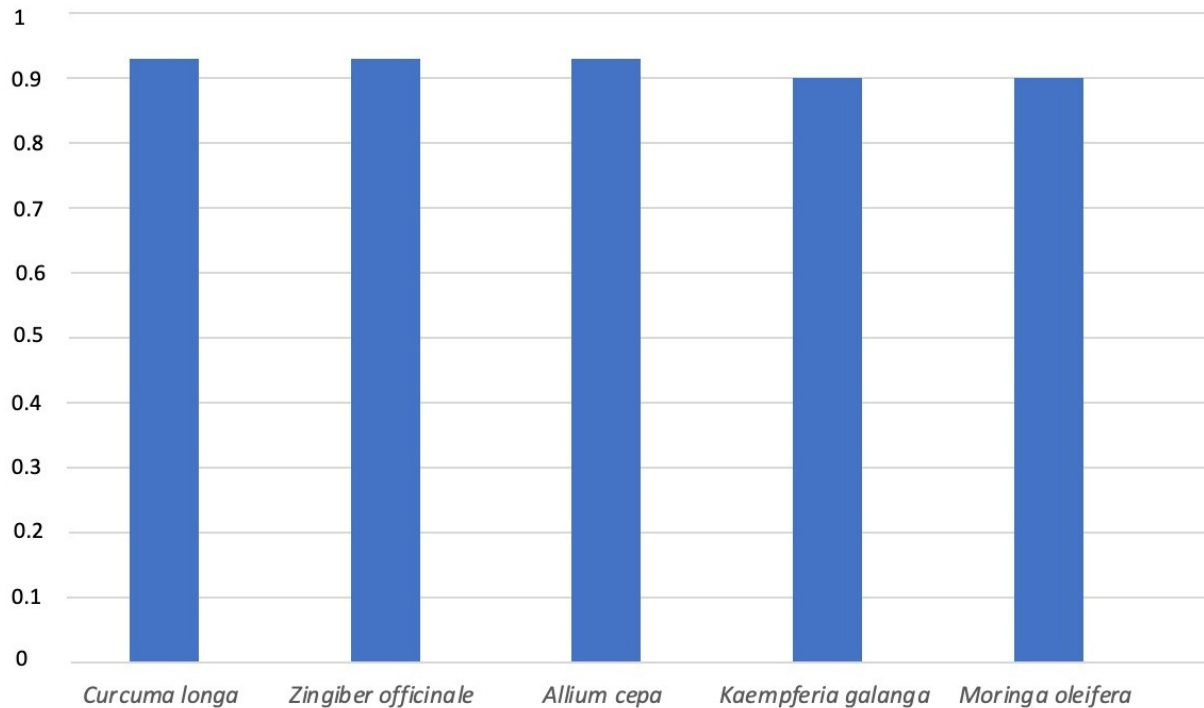


Figure 12. Plant RFC values

The calculation of the Index of Cultural Significance (ICS) based on the plant utilization among the Leuwiliang community revealed five plant species with notably high ICS values: *Curcuma aeruginosa*, *Piper betle*, *Etlingera elatior*, *Cymbopogon citratus*, and *Tradescantia spathacea*. The ICS value reflects the significance of these plants in the community's daily lives (Mirawati & Yulianti 2014).

Curcuma aeruginosa stands out with the highest use value due to its medicinal uses in treating common colds, alleviating menstrual pain, reducing cholesterol, and enhancing appetite. Beyond its medicinal purposes, *Curcuma aeruginosa* serves as a culinary spice and a natural dye. *Piper betle* is utilized medicinally to heal skin wounds, address vaginal discharge issues, and stop nosebleeds. *Etlingera elatior* is commonly used by the community to treat measles, anemia, and blood circulation. Additionally, its flowers are used in cooking as a *sambal* (chili sauce) ingredient. *Cymbopogon citratus* is employed for medicinal purposes to address digestive problems, aid in weight loss, and promote heart health. *Tradescantia spathacea* is known for treating coughs, throat problems, bruises, and tuberculosis. Apart from its medicinal properties, *Tradescantia spathacea* is often cultivated for ornamental purposes.

Treatment Practices in Leuwiliang

As of now, a large part of the Leuwiliang community resorts to modern medicine, readily available in pharmacies or health centers due to its easy accessibility. However, in Cibeber 1 and Cibeber 2 Villages, people still rely on plants as medicine, purchasing them from traditional healers. In Karacak Village, many residents cultivate medicinal plants in their home gardens. The use of medicinal plants in Leuwiliang has been declining alongside the rise of modernization. To counter this trend, village health workers are raising awareness among volunteers and patients, advocating for the use of medicinal plants known for their effectiveness, minimal side effects, cost-efficiency, and sporadic usage compared to modern pharmaceuticals.

Conclusions

In general, the use of medicinal plants in Leuwiliang demonstrates a relatively high level of species diversity and holds significant importance in the local community's healthcare practices. However, there has been a decline in knowledge regarding the use of these medicinal plants due to an increasing preference for modern medical treatments among some community members. So, the community cultivates these plants in their home gardens as a conservation effort. This study provides comprehensive documentation regarding the usage of medicinal plant species in Leuwiliang. Moreover, this study holds critical value in documenting and preserving biodiversity and associated ethnobotanical knowledge, particularly in this field.

Declarations

List of abbreviations: RISTOJA: *Riset Tumbuhan Obat dan Jamu*, PUSKESMAS: *Pusat Kesehatan Masyarakat*, UV: Use Value, RFC: Relative Frequency of Citation, ICS: Index of Cultural Significance, BPS: *Badan Pusat Statistik*.

Ethical approval and consent to participate: All the participants provided prior informed consent before the interviews. The participant shown in Figure 3 agreed to have her image published.

Data and material availability: The data is only stored by authors.

Disclosure statement: The authors declare that there is no competing interest.

Author's contributions: MPP: Conceptualization, Methodology, Data curation, Writing – original draft. AA: Review and editing. WS: Conceptualization, Methodology, Project administration, Writing – review and editing.

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