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Ethnobotanical Study of Medicinal Plants in Karangwangi, District of Cianjur, West Java

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Abstract

The knowledge and usage of plant as medicinal remedy by current generation are not as extensive as previous; therefore, many rural communities with restricted modern medical access still rely on traditional medicine. This paper provides significant ethnobotanical information on medicinal plants in Karangwangi Village of Cianjur District, West Java Indonesia. This study aimed to identify plants collected for medical purposes by the local people as well as to document the local names, uses, preparation, and location of these plants. Ethno botanical data was recorded by opting people participation and key informant approach involving semi-structured interviews, group discussions and filling of questionnaires. The results showed a total of 114 medicinal plants belonging to 50 families were identified. Zingiberaceae was the most-frequently cited (nine species), followed by Asteraceae, Euphorbiaceae, and Fabaceae (seven species each). The most-used plant parts were leaves (51.8%), followed by stems (22.9%) and the most common preparations were decoction, poultice and squeezed. Most of the plants were obtained from the house-yard and total of 30 medicinal uses were recorded. The ethnobotanical result documented in this study showed that this area is rich in medicinal plants and these plants are still commonly used for medicinal purposes among the people in their daily lives. Ethnobotanical heritage should be preserved, however, there is a gradual loss of traditional knowledge about these plants in new generation. Further, the findings can be used as baseline information for further scientific investigation for analyzing phytochemical, pharmaceutical and other biological activities for future drug discovery.

How to Cite

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INTRODUCTION

Many kinds of medicinal plants have been used worldwide, especially in rural communities of developing countries. The using of plants as medicine has been done for generations and was passed on from one generation to the next (Kumalasari, 2006). The World Health Organization or WHO was recommend the use of traditional medicine, including herbs in the maintenance of public health, prevention and treatment of disease, especially for chronic diseases degenerative diseases and cancer (Patwardhan, 2005). The WHO also acknowledges the value of traditional medicine and the preservation and protection of this knowledge is one of their objectives (WHO, 2002). This traditional knowledge, however, is documented only to a limited extent, and is in danger of being lost. This is largely due to social changes within the communities, such as dislocation and westernization, and the death of the elders with this knowledge (Smith, 1991) as well as deforestation and environmental degradation (Giday et al., 2009). This trend in loss of traditional knowledge is being seen worldwide (Brouwer et al., 2005).

Indonesian society have long been familiar with and used plants as medicine in tackling health problems, including in rural communities. The local people of the rural areas have good knowledge about the uses of plants and they prefer medicinal plants due to their easy availability and cheap therapy as compared to costly pharmaceuticals. Data from Basic Medical Research (Riskesdas) on 2013 showed 35.2 % Indonesian society still retain and use traditional medicine for remedies (Shanthi et al., 2014). Inhabitants of the remote areas have discovered the therapeutic activity of medicinal plants against certain diseases through their indigenous experiences (Bibi et al., 2014).

Karangwangi village of Cianjur Regency, West Java, based on the classification Schmidt and Ferguson (1951), is included in type B with an average rainfall of 1840 mm/year. The type of vegetation in climate of type B (wet) is tropical rainforest. While the topography of the village has a height between 0 to 250 meters above the sea level (masl). The Karangwangi is a village that directly adjacent to the Bojonglarang Jayanti nature reserve area. The existence of this natural reserve affects the diversity of flora and fauna in the Karangwangi village, including the plant that used as herbal medicine. Karangwangi village was administratively about 27 years old and was a separation of the Cidaun village, but there was no health center. Otherwise, in rural communities of Sundanese, who inhabit West Java and are the second largest ethnic group in Indonesia, traditional herbal medicine has still played an important role in treatment of illnesses (Roosita et al., 2008). The advantages of traditional medicines include its widespread accessibility and relative cheapness, when most people in Indonesia pay for medicines out of their own pocket.

Therefore, it is necessary to inventory the kind of medicinal plants and their utilization by the community so that traditional knowledge of the medicinal plants can be documented and preserved. This study aimed (1) to identify plants collected for medical purposes by the local people as well as to document the local names, uses and preparation, as well as the location of these plants, (2) to characterize the plant by which them categorized as medicinal herbal; (3) to identify the transfer knowledge of medicinal plants to the younger generation, and (4) to count the enthusiasm of people to preserve their knowledge and skills to produce of herbal medicine. The results of this study are expected to document first hand traditional and contemporary knowledge as well as to provide information to communities that can be used for their cultural or educational purposes.

METHODS

This research was conducted in Karangwangi village, located in Cidaun subdistrict, Cianjur district, West Java Province, Indonesia. Geographically, this village is situated about 200-275 m above sea level. Temperature scarcely fluctuates in the year; with the mean monthly was 35^{O}C, and annual rainfall reaches 3500 mm/year. The village was bordered by Cimaragang village in the north, Indian Ocean in the south, Sindangbarang village in the west, and Ciringin village of Garut district in the east (Figure 1). Karangwangi Village, the land area of which is 2300 ha, was inhabited by 5587 people or 1817 households (Iskandar and Iskandar, 2016). The majority occupations of the Villagers were farming. In Karangwangi Village, there was limited access to a modern health center. Commercials drugs, however, were available to the Villagers at many retailers. On the other hand, there were "dukun" (traditional or herbalist healer) who recognized by the local people.

The method used in this research is qualitative approach with descriptive analysis and based on ethnobotanical approach (Martin, 1995; Cunningham, 2001; Newing et at, 2011).

Data was collected by semi-structured interviews with informants (local leader, "dukun") and direct observation in the field. Determination of the respondents used the snowball method (Bernard, 2004) and each respondent were requested information about medicinal plants, local name, utilization and processing method which has been used by communities in Karangwangi. Interview results were analyzed by cross-checking, summarizing and synthesizing from sources in order to build up a narrative account (Newing et al., 2011).

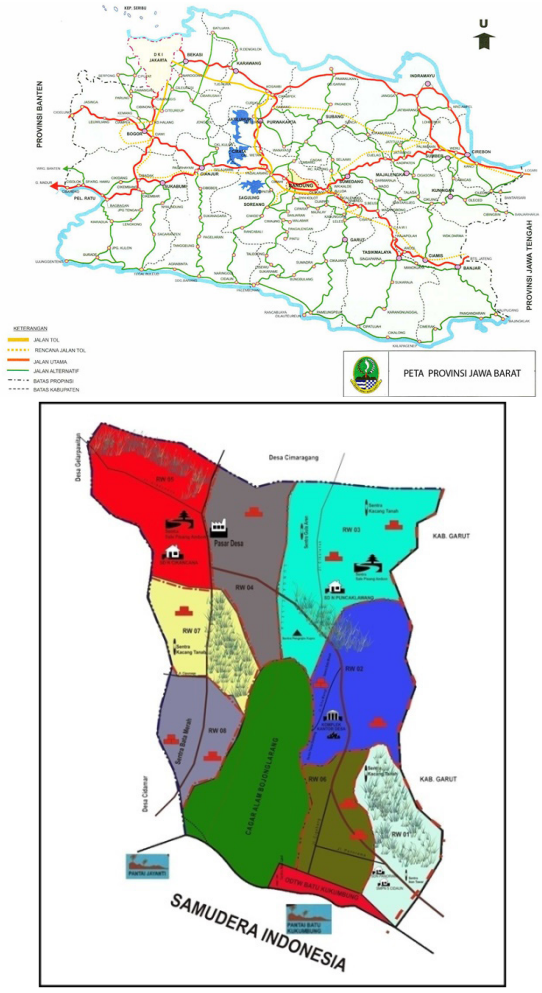

Figure 1. The Location of Karangwangi Village in Cidaun Subdistrict, Cianjur District, West Java Indonesia

On direct observation, each plant samples were found in Karangwangi village was collected, herbarium materials were prepared and the specimens were entitled. Plant identification process carried out directly in the field and a complete identification was carried out in the Laboratory of Botanical Taxonomy of Biology Department, Faculty of Mathematics and Natural Sciences, Padjadjaran University. Plant identification process was based on morphological characteristics of the plant (roots, stems, leaves, flowers, seeds and fruit) and was using *Buku Tumbuhan Obat Komersial* (Siswanto, 2004), *Atlas Tumbuhan Obat Indonesia, Jilid 6* (Dalimartha, 2009) and the book of Flora (Van Steenis, 2005). Ethno botanical data was descriptive analyzed.

RESULTS AND DISCUSSION

Medicinal Plants Reported

A total of 114 species belonging to 50 families were recorded from the study area, which categorized into herbs, shrubs, and trees (Table 1). The Family Zingiberaceae (7.9%) contributes the highest number of medicinal plants (nine species), followed by Asteraceae, Euphorbiaceae, and Fabaceae (seven species each). It was found that *Erythrina variegata, Annona muricata, Morinda citrifolia, Physialis angulata,* and *Artocarpus altilis* were the most commonly used species.

The families Zingiberaceae, Asteraceae, Euphorbiaceae, and Fabaceae have accounted for the highest number of Karangwangi medicinal plants which could probably be due to their high species and the compositions of secondary metabolites, for instance Zingeberaceae contained alkaloid, saponin, tannin, and flavonoid (Hartanto et al., 2014); Asteraceae contained triterpenoid, saponin, and steroid (Bhom et al., 2001); Euphorbiaceae contained diterpenes, triterpenes, flavonoids, saponin, and tannin (Mwine and Vam Damme, 2011), and Fabaceae contained flavonoid, alkaloid, terpenoid, steroid (Wink. 2013). Antioxidant properties from such secondary metabolites were not reduced when the plant was prepared using two traditional culinary and medicinal recipes (Tilak et al., 2004). The components of secondary metabolites correspond to the characteristic of the plants that usually categorized as medicinal herbal. High versatility of medicinal plants could also indicate higher diversity of active compounds contained by the species (Giday et al., 2009).

Most of the respondent said that Zingiberaceae was the most commonly used as medicinal plants because they were easily cultivated in the home garden and alternatively could be used as food spicy. The study that conducted by Roosita et al. (2008) showed that Zingiberaceae and Euphorbiaceae were the most common medicinal plants family that used by the villagers and herbalist healer in Sukajadi village located in Bogor district. Zingiberaceae was also commonly used by local people in Pangea, District

Table 1. Medicinal Plants Used by Karangwangi Villagers.

Family	Botanical name / latin name	Local name	Use	Parts of plants
Acanthaceae	*Graptophyllum pictum* (L.) Griff.	Handeuleum	Hemorrhoids	Leaves
	Sericocalyx crispus (L.) Bremek.	*Ki beling*	Low back pain	Leaves
Acoraceae	*Calamus* sp.	*Hoe*	Cough	Shoot
Amaranthaceae	*Amaranthus viridis* L.	*Bayem*	Anemia	Leaves
Anacardiaceae	*Anacardium occidentale* L.	*Jambu monyet*	Mouth sores	Leaves
Annonaceae	*Annona muricata* L.	*Manalika*	Low back pain, Fever, High blood pressure,	Leaves
Apiaceae	*Centella asiatica* (L.) Urb.	*Antanan*	Wounds, Gastritis	Leaves
	Apium graveolens L.	*Saledri*	High blood pressure	Leaves
Apocynaceae	*Alstonia scholaris* (L.) R. Br.	*Lame*	Toothache	Stem
Araceae	*Colocasia gigantea* (Blume)	*Kajar-kajar*	Cough	Stem
	Colocasia esculenta (L.) Schott	*Teleus lempong*	Cough	Shoot
Araliaceae	*Polyscias fruticosa* (L.) Harms	*Gordah*	Urinary disease	Leaves
	Polyscias scutellaria (Burm.f.) Fosberg	*Mamangkokan*	Low back pain	Leaves
Arecaceae	*Uncaria gambir* (Hunter) Roxb.	*Gambir*	Intestinal inflammation	Leaves
	Areca catechu L.	*Jambe*	Low back pain, Intestinal inflammation	Leaves
	Arenga pinnata (Wurmb) Merr.	*Kawung*	Low back pain	Root
	Cocos nucifera L.	*Kelapa hijau*	Low back pain, Diarrhea	Root
	Salacca zalacca (Gaertn.) Voss	*Salak*	Urinary disease	Shoot
Asparagaceae	*Cordyline fruticosa* (L.) A.Chev	*Hanjuang*	Cough	Shoot
Asteraceae	*Ageratum conyzoides* (L.) L.	*Babadotan*	Fever	Leaves
	Mikania scandens (L.) Willd.	*Capituheur*	Wounds	Leaves
	Erigeron linifolius Willd.	*Jalantir*	Eyes infection	Stem
	Chromolaena odorata (L.) R.M.King & H.Rob.	*Jatong / Nampong*	Wounds, Eyes infection	Leaves
	Eupatorium inulifolium Kunth	*Kirinyuh*	Wounds, Gastritis	Leaves
	Blumea balsamifera (L.) DC	*Sembung*	Low back pain	Leaves
	Elephantopus scaber L.	*Tapak liman*	Uric acid	Leaves
Athyriaceae	*Diplazium esculentum* (Retz.) Sw.	*Taruk paku*	Low back pain, Intestinal disorders	Leaves
Caricaceae	*Carica papaya* L.	*Gedang karayunan*	Malaria, Kidney disorder, Breastfeeding	Root
Clusiaceae	*Garcinia* x *mangostana* L.	*Manggu*	High blood pressure	Fruit peel
Convolvulaceae	*Ipomoea batatas* (L.) Lam.	*Hui boled*	High blood pressure	Leaves
Costaceae	*Cheilocostus speciosus* (J.Koenig) C.D.Specht	*Pacing*	High blood pressure, Wounds	Stem
Crassulaceae	*Bryophyllum pinnatum* (Lam.) Oken	*Buntiris*	Fever	Leaves
Cucurbitaceae	*Momordica charantia* L.	*Paria*	Fever, Diabetes	Leaves
	Sechium edule (Jacq.) Sw.	*Waluh*	Fever, Gastritis	Leaves

Dioscoreaceae	*Dioscorea hispida* Dennst.	*Gadung*	Labor-related condition	Leaves
Euphorbiaceae	*Abelmoschus manihot* (L.) Medik.	*Edi*	Fever	Leaves
	Jatropha curcas L.	*Jarak pager*	Toothache, Wounds	Leaves
	Ricinus communis L.	*Kaliki*	Labor-related condition	Leaves
	Euphorbia tirucalli L.	*Ki tulang*	Toothache	Stem
	Euphorbia hirta L.	*Nanangkaan*	Low back pain, Wounds	Stem
	Jatropha multifida L.	*Penisilin*	Wounds	Stem
	Manihot esculenta Crantz	*Sampeu*	Anemia, Gastritis	Leaves
Fabaceae	*Mucuna gigantea (Willd.) DC.*	*Areuy gongseng*	Cough	Stem
	Erythrina variegata L.	*Dadap minyak*	Cough, Low back pain, Fever, Eyes infection, Hookworm	Leaves
	Archidendron pauciflorum (Benth.) I.C.Nielsen	*Jengkol*	Diabetes	Fruit peel
	Vigna radiata (L.) R.Wilczek	*Kacang hejo*	Gastritis	Seed
	Glycine max (L.) Merr.	*Kacang kedelai*	Gastritis	Seed
	Albizia saman (Jacq.) Merr.	*Ki hujan*	Eyes infection	Stem
	Senna alata (L.) Roxb.	*Ki manila*	Skin infections	Leaves
	Le.ucaena leucocephala(Lam.) de Wi.t	*Petai selong (Lamtoro)*	Diabetes	Seed
Lamiaceae	*Tectona grandis* L.f.	*Jati*	Eye infections	Stem
	Plectranthus scutellarioides (L.) R.Br.	*Jawer kotok*	Eye infections, Bruised	Leaves
	Orthosiphon stamineus Benth.	*Kumis ucing*	Low back pain, Diabetes	Leaves
	Ocimum basilicum L.	*Surawung*	Itching	Leaves
Lauraceae	*Persea americana*	*Alpukat*	High blood pressure, Gastritis	Leaves
Lecythidaceae	*Barringtonia macrocarpa* Hassk.	*Songgom*	Labor-related condition	Leaves
Liliaceae	*Allium cepa* L.	*Bawang Beureum*	Fever	Bulb
	Allium sativum L.	*Bawang bodas*	High blood pressure	Bulb
Loranthaceae	*Scurrula atropurpurea* (Blume) Danser	*Mangandeuh*	Hemorrhoid	Leaves
Malvaceae	*Melochia umbellata* (Houtt.) Stapf	*Bintinu*	Toothache	Stem
	Hibiscus rosa-sinensis L.	*Kembang Gumatu*	Low back pain	Leaves
	Urena lobata L.	*Pungpurutan*	Low back pain, Dysentery	Leaves
	Ceiba pentandra (L.) Gaertn.	*Randu*	Fever, Urinary disease	Leaves
Marantaceae	*Donax canniformis* (G.Forst.) K.Schum.	*Bangban*	Eyes infection	Stem
Melastomaceae	*Melastoma polyanthum* Burm. f.	*Harendong*	Accelerate the loosening of umbilical cord	Leaves
Meliaceae	*Swietenia mahagoni* (L.) Jacq.	*Mahoni*	Diabetes	Seed

Menispermaceae	*Tinospora crispa* (L.) Hook. f. & Thomson	*Batrawali*	Gastritis, bronchitis	Stem
	Cyclea barbata Miers	*Cincau*	Supplement, Common cold	Leaves
	Arcangelisia flava (L.) Merr.	*Ki koneng*	Low back pain, Hepatitis	Stem
Moraceae	*Morus alba* L.	*Babasaran*	High blood pressure	Leaves
	Ficus septica Burm. f.	*Kuciat*	Itching	Leaves
	Artocarpus heterophyllus Lam.	*Nangka*	Gastritis, Cough	Leaves
	Artocarpus altilis (Parkinson ex F.A.Zorn)	*Sukun*	High blood pressure, Gastritis	Leaves
Muntingiaceae	*Muntingia calabura* L.	*Kersen*	Gastritis	Leaves
Musaceae	*Musa* x *paradisiaca* L.	*Cau ambon*	Wounds	Stem
	Musa x *paradisiaca* L.	*Cau beureum, Cau gembor, Cau mas*	Fever	Stem
	Musa x *paradisiaca* L.	*Cau raja siem*	Gastritis	Fruit
Myrtaceae	*Syzygium malaccense* (L.) Merr. & L.M.Perry	*Gulampo*	Headache	Leaves
	Psidium guajava L.	*Jambu batu*	Diarrhea	Leaves
	Syzygium polyanthum (Wight) Walp.	*Salam*	High blood pressure	Leaves
Oxalidaceae	*Averrhoa carambola* L.	*Balingbing*	High blood pressure	Fruit
Phyllanthaceae	*Sauropus androgynus* (L.) Merr.	*Katuk*	Eye infections	Stem
Piperaceae	*Piper aduncum* L.	*Ki seureuh*	Eye infections	Stem
	Piper nigrum L.	*Pedes*	Labor-related condition	Leaves
	Piper betle L.	*Seureuh*	Wounds	Leaves
Plantaginaceae	*Plantago major* L.	*Ki urat*	Wounds	Leaves
Poaceae	*Gigantochloa pseudoarundinacea* (Steud.) *Widjadja.*	*Awi gombong*	Cough	Stem
	Gigantochloa atroviolacea Widjadja.	*Awi hideung*	Cough	Stem
	Oryza sativa L.	*Beras*	Bruised	Seed
	Dinochloa scandens (Blume ex Nees) Kuntze	*Cangkoreh*	Eyes infection, Cough	Stem
	Imperata cylindrica (L.) Raeusch.	*Eurih*	Low back pain, Fever, Wounds	Root
	Bambusa vulgaris Schard.Ex var *striata*	*Haur koneng*	Cough	Stem
Rubiaceae	*Morinda citrifolia* L.	*Cangkudu*	Cough, Gastritis, High blood pressure	Fruit
	Gardenia jasminoides J.Ellis	*Kaca piring*	Low back pain	Leaves
Rutaceae	*Citrus aurantiifolia* (Christm.) Swingle	*Jeruk nipis*	Cough, Toothache	Fruit
	Clausena indica (Dalzell) Oliv.	*Ki baceta*	Cough, Fever , Asthma	Leaves
Gumotaceae	*Manilkara zapota* (L.) P.Royen	*Sawo*	Diarrhea	Leaves
Simaroubaceae	*Eurycoma longifolia* Jack	*Pasak bumi*	Anti-malaria	Rhizome

Solanaceae	*Capsicum annum* L.	*Cabe*	Wounds	Fruit
	Physalis angulata L.	*Cecendet*	Low back pain Diabetes, Anti-malaria	Root
	Solanum torvum Sw.	*Takokak*	High blood pressure	Fruit
	Solanum betaceum Cav.	*Terong walanda*	Toothache	Stem
Thymelaeaceae	*Phaleria macrocarpa* (Scheff.) Boerl.	*Mahkota dewa*	High blood pressure	Peel
Urticaceae	*Dendrocnide stimulans* (L.f.) Chew	*Pulus*	Cough	Stem
Vitaceae	*Tetrastigma lanceolarium* (Roxb.) Planch.	*Ki barela*	Cough, Wounds	Stem
Zingiberaceae	*Kaempferia galanga* L.	*Cikur*	Bruised	Rhizome
	Amomum maximum Roxb.	*Hangasa*	Eye infections, Diabetes	Stem
	Etlingera elatior (Jack) R.M.Sm.	*Honje*	Fever	Flower
	Zingiber officinale Roscoe	*Jahe*	Supplement	Rhizome
	Curcuma zanthorrhiza Roxb.	*Koneng gede*	Hepatitis, Gastritis	Rhizome
	Curcuma domestica Valeton	*Koneng temen*	Gastritis, Intestinal disorder	Rhizome
	Alpinia galanga (L.) Willd.	*Laja*	Cough	Rhizome
	Zingiber cassumunar Roxb.	*Panglay*	Itching	Leaves
	Amomum aculeatum Roxb.	*Parahulu*	Headaches	Stem

of Kuantan Senggigi Riau as traditional medicinal herbal, especially to cure diseases associated with pregnancy and heredity problem, that used individually or in combination (Hartanto et al., 2014). Ethnobotanical study on traditional treatment for women in the Surakarta Hadiningrat Royal Palace Community by Shanthi et al. (2014) showed that Zingiberaceae and Fabaceae were used mostly families that utilized as traditional medicine. Silalahi et al. (2015) reported that Zingiberaceae was the most commonly medicinal plants which have been traded in the Kabanjahe traditional market Karo Regency, North Sumatra Indonesia. Sukenti et al. (2016) also presented that Fabaceae contributed the highest number of species in ethnobotanical study on local cuisine of Sasak tribe in Lombok Island. Asteraceae is the largest medicinal plant family used by local people in district Mastung of Balochistan Province-Pakistan (Bibi et al., 2014). Asteraceae, Euphorbiaceae, and Fabaceae also contributed the highest number of medicinal plants of the Meinit ethnic group of Ethiopia (Giday et al., 2009).

Ailments treated

The reported of medicinal plants, most were used to treat human ailments and some for livestock ailments. Concerning human ailments, a total of 30 medicinal uses (remedies) were recorded, with the highest proportions of medicinal plants were used to treat cough (34.2%), gastritis (21%), high blood pressure (14%), low back pain (12.3%), wound (11.4%), as well as eyes infection (8.7%). Some were used against diabetes, malaria, anemia, skin-related disease, tooth ache, postpartum remedy, urinary disease, anti-hookworm and as food supplement. Eighteen species of medicinal plants were used to treat cough, whereas gastritis was treated using fifteen species of medicinal plants.

The most common ailments that suffer by Karangwangi people were respiratory disease (cough, asthma, common cold) and gastrointestinal diseases (gastritis, diarrhea, intestinal disesase), could be attributed to the major health problem in communities. Ethnopharmaecological studies have shown that in some parts of the world, the respiratory and gastrointestinal disorder is the first use category (Bibi et al., 2014). Due to poor dietary conditions and unsafe drinking water, this ailment is one of the most common problems in the areas studied and infecting other parts of the world (Nasab and Khosravi, 2014).

Plant parts used and modes of remedy preparation

The study showed that the medicinal plants frequently used of fresh materials, for example leaves, and with modes of preparation was decoction. Leaves and stems were the most frequently sought plant parts accounting for 51.8 and 22.9 % of claimed medicinal plants, respectively. Few were harvested for their roots, shoots, fruits, seeds, bulbs, rhizomes, fruit peels and gums. The majority of remedies were harvested for immediate uses with the modes of preparation included decoction (84%), poultice (6%), "dicincau" (5%; the leaves were squeezed and the filtrate was drink directly), directly eaten (2%), "dituak" (1%; the stem was cut and the water droplet was drink directly), and 2% with another mode ("dipopo"-the sample was grinded and attached into the wounded skin; "dikopi"-the sample was dry-fried, grinded, and added some hot water; "dibuhbui"- the sample put into hot ashes until wilted before eaten). This result showed that local people performed frequently used of leaves decoction as medicine for various ailments, thus agree with the result of Bibi et al. (2014), de Boer and Cotingting (2014).

Leaves was the botanical parts that most commonly used, because the villagers usually believe that leaves contained the highest medicinal properties and parts of plants that most easily harvested. A very high proportion of leaves was also observed in an ethnobotanical survey either in Sukajadi village, located in Tamansari subdistrict, Bogor district, Jawa Barat province (Roosita et al., 2008) or in Riau Province, Sumatra, Indonesia (Mahyar et al., 1991). The remedies are mostly prepared from newly harvested plant part could indicate the availability of copious plant materials in the vicinity to be picked at any time (Giday et al., 2009), for example in the house yard where the medicinal plants are cultivated or planted by the villagers or harvested freely from the immediate environment in which they are abundantly found. In otherwise, there was prohibition to enter the nature reserves for the villagers, so the location to obtain the medicinal plants was limited.

Route of administration and dosage

The most frequent routes of administration herbal preparations were oral (92%), while 6% were taken topical application, and for 2% with other modes, for examples to treat eyes infection, the stems gum was dropped directly to the eyes. More than half of the daily doses were administered once. In many cases, amounts of plant part/parts to be processed and doses to be used were roughly estimated and therefore, lacked precision. If patients did not show any sign of improvement over the treatment period, they were used commercial drugs or referred to nearby modern health centers. It was noted that dosage was influenced, among others, by the type of ailment, seriousness of the illness and age of the patient. According to few informants the dosage depends on the age and physical appearance of the individual and children are given less than adults. Same sort of conclusions have been observed in another studies (Roosita et al., 2008; Giday et al., 2009)

Location of medicinal plants

Great majority of medicinal plants were located in the house yard (55%) and fewer were located in the crop fields and paddy fields, as well as in the Bojong Larang Jayanti Nature reserve. The villagers raised medicinal plants, either cultivars or transplanted wild species, in their home gardens or in the fields. If they get some illness, usually they collected the plants from the home garden firstly, not only on their own but also from the neighbors, and then they were search in the fields or the nature reserve. Some of this medicinal plants reported to be occasionally cultivated primarily for its medicinal value. This result supported by Roosita et al. (2008) that in rural communities of Sundanese, many villagers raised and collected medicinal plant in their home garden. Therefore, the remedies were freely harvested from the immediate environment by those who needed them.

Characteristics of plant by which categorized as herbal medicines

Most of the respondent did not know how to categorize the plants as herbal medicines, but a number of respondent assumed that the plants usually have characteristics as watery, sticky, bitter, and abrasive. The watery plants could use as remedy for cough, cold, and fever; the sticky plants could use as remedy for infections because the gum was believed would kill the bacteria; otherwise the bitter and abrasive plants could use as remedy for internal diseases, such as gastrointestinal diseases, high blood pressure, diabetes, malaria, and etc.

Transfer of medicinal plants knowledge

Most of the respondent said that the knowledge of the using medicinal plant was obtained from parents (57%), or by directly observation from the community (30%), and fewer said from

1. Kajar-kajar (*Alocasia macrorrhiza*)

2. Taleus lempong (*Colocasia esculenta*)

3. Hoe (*Calamus* sp.)

4. Hanjuang (*Cordyline fruticosa*)

5. Areuy gongseng (*Mucuna gigantea*)

6. Dadap minyak (*Erythrina variegata*)

7. Awi gombong (*Gigantochloa verticillata*)

8. Awi hideung (*Gigantochloa atroviolaceae*)

9. Haur koneng (*Bambusa vulgaris*)

10. Cangkudu (*Morinda citrifolia*)

11. Jeruk nipis (*Citrus aurantiifolia*)

12. Ki baceta (*Clausena indica*)

13. Pulus (*Dendrocnide stimulans*)

14. Ki barela (*Tetrasigma Lanceolarium*)

15. Laja (*Alpinia galanga*)

16.Kalapa (*Cocos nucifera*)

17. Jambe (*Areca catechu*)

18. Kawung (*Arenga pinnata*)

19. Gedang karayunan (*Carica papaya*)

20. Manggu *Garcinia mangostana*)

21. Paria (*Momordica charantia*)

22. Jengkol (*Archidendron pauciflorum*)

23. Selong (*Leucaena leucocephala*)

24. Kumis ucing (*Orthosiphon stamineus*)

another information media, i.e. books, television, or health educator that came into the area. The heritage of medicinals plant relies on an oral tradition between parents and their children. Most of the informant described memories of being treated with herbs for illness as a child and said that they subsequently continued to learn from parents or knowledgeable elders. It was revealed that many ailments are diagnosed and treated at household or family level. The majority of the informants agreed that they kept their medicinal plant knowledge secret. This way of sharing knowledge has resulted in the loss of many drugs and prescriptions.


25. Mahoni (*Swietenia mahagoni*)


26. Cecendet (*Physalis angulata*)


27. Hangasa (*Amomum*

The enthusiasm of people to preserve their knowledge and skills to produce of herbal medicine.

More than 80% of the respondent villagers still used the medicinal plants to cure their illnesses, however, the skill to produce herbal medicines was obtained by hit and trial methods, or get directly from their parents. In young generation, however, the enthusiasm to used herbal medicine was decreasing.

This study revealed that herbal medicine has played a significant role in treatment of illnesses in the study village. Some of the reasons of their high dependence on herbal medicine came from easily harvested and preparation, low cost expended, natural and low side effect, no expired time as well as more powerful that commercial drugs and closer location of the healer's house than the health center or hospital.

CONCLUSION

A total of 114 medicinal plants belonging to 50 families were identified in the region. The most common families were Zingiberaceae, Asteraceae, Euphorbiaceae, and Fabaceae. Various plant parts were used and the most common preparations were decoction, poultice and squeezed. A total of 30 medicinal uses (remedies) were recorded. Most of the plants were obtained from the home garden and usually characterized by watery, sticky, bitter, and abrasive surface of the plants. The knowledge of the using medicinal plant was mostly obtained from parents and the use of herbal medicine was still widespread among the people. In young generation, however, the enthusiasm to used herbal medicine was decreasing.

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