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Ethnomedical herb from Cikondang indigenous village, district Bandung West Java Indonesia

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Abstract

The research reported here is part of a comprehensive investigation of Cikondangs ethnobotany. The objective of this study was to determine the community knowledge in using plants for medicine and healing agent in Cikondang Indigenous Village, district Bandung. Emic and ethical approaches were used to describe the community knowledge along with the scientific explanations. The data of community knowledge in using plants for medicine and healing agent was collected from respondents as many as 87 families and 4 key informants through interview techniques. The medicinal plants were identified in Herbarium Bogoriense-LIPI Biology Research Centre. The Cikondang community uses as many as 68 species belong to 39 families for medicinal plants, and Zingiberaceae is the most widely family used. Eight plant parts ,that are used for the treatment, were root, tuber, rhizome, stem, bark, leaves, flowers, and fruit. Leaves are the most widely used plant parts for treatment (29 species). People use several methods to prepare herbs, by boiling, brewing, grinding, squeezing out, shredding, burning, and without proccessing. The most widely used method was boiling the materials (37 species). Based on the disease type, Cikondang community classified four groups of disease, i.e. external, internal, digestive, respiratory, reproductive and urogenital diseases. The external diseases used the most numerous herbs (25 species).

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Introduction

The high potential of biological resources in Indonesia integrated with ethnic group diversity and knowledge variety in using plant species create knowledge system in exploiting and managing plants resources. The knowledge system among each of ethnic groups was differed considering their different environment, tradition, manner and also behaviour (Waluyo, 2002). Many of researchers explained that rural community in Indonesia, especially those who live close to forest area, for example Sundanese Community of Cikondang Indigenous Village on Mt Tilu foot, often uses wild plants for medicine (Kusumawati *et al.,* 2003).

Cikondang Indigenous Village was determined as preserve culture based on Law of Indonesian Republic No. 5 year of 1992, and it is as one of eight indigenous villages in West Java. As indigenous community, they have a strong connection to their environment, especially the forest in Tilu Mountain, as stated in their ancestors' testament, Mt Tilu remains its preservation through the trees, inclined land is planted with bamboo, flat land becomes dwelling, sunken land is used for basin, valley is used for rice cultivation and maintaining water drain (Darsyah, interview 2012). By holding on to their ancestors' testament, Cikondang community organizes their daily life by creating knowledge of managing and preserving their environment and resources. Hence, in reality nowadays the knowledge undergoes many changes caused by overwhelmed information that affect pattern life of community drastically. The changes of community knowledge in managing and preserving resources, especially in making use of plants, draw the attention in making it as a means for etnobotany research. This article is trying to explain the status of Cikondang community knowledge in making use of plants resources for the needs of medicinal treatment.

Research in Indigenous Village Cikondang has been done by researchers, especially experts of the social sciences, but research was not been done is about ethnobotany. Research on the structure of the building in perspective Building Technology conducted by Triyadi *et al.* (2008), then the study of social and political communities of Indigenous Village Cikondang by Andriana (2011), and studies that raised about the wisdom of society and the environment was done by Sari (2012). If there ethnobotany research ever conducted by Oktaviana (2008), but only focus on traditional uses of medicinal plants by people around the nature reserve area of Mt Tilu West Java. This studies were not include Indigenous Village Cikondang. Therefore, research on medicinal plants in the village of Indigenous Cikondang becomes important.

Material and method

Field Research

Cikondang indigenous village lies between 6 43' 0" S, 107 13' 33" E, located at the foot of Mt. Tilu , in the altitude of 700 m asl. Administratively, it is a part of Lamajang village, Subdistrict Pangalengan, district Bandung Indonesia (Fig. 1). Total population inhabited the Village was 991 people, consisted of 290 families, and most of them work as farmer.

Data Sampling

The research was conducted by interviewing as many as 30% of total families (Waluyo, 2004), consisted of two traditional leaders, two community leaders, and 87 residents, to know their knowledge about medicinal plants. Data was collected by having *unstandardized interview,* and *casual interview* .

Data Analysis

All plant species known as medicine materials were collected for identification. Plants were identified based on the book of *Flora of Java* (Backer and Van den Brink, 1963, 1965, 1968), and the scientific name was validated using IPNI (*Internatioal Plant Name Index*) .

Result and discussion

Cikondang indigenous village is one of villages in West Java, Indonesia. Cikondang village is bordered

in the south by Mt. Tilu , in the east by river Cisangkuy, in the west by river Cilaki, and in the north by estuary of Cilaki-Cisangkuy to the north (Fig. 1). The existence of sacred forest in the village, which is believed by the community as the miniature of Tilu Mountain, makes it unique. Most of the vegetation in the sacred forest represents plant species of Mt. Tilu

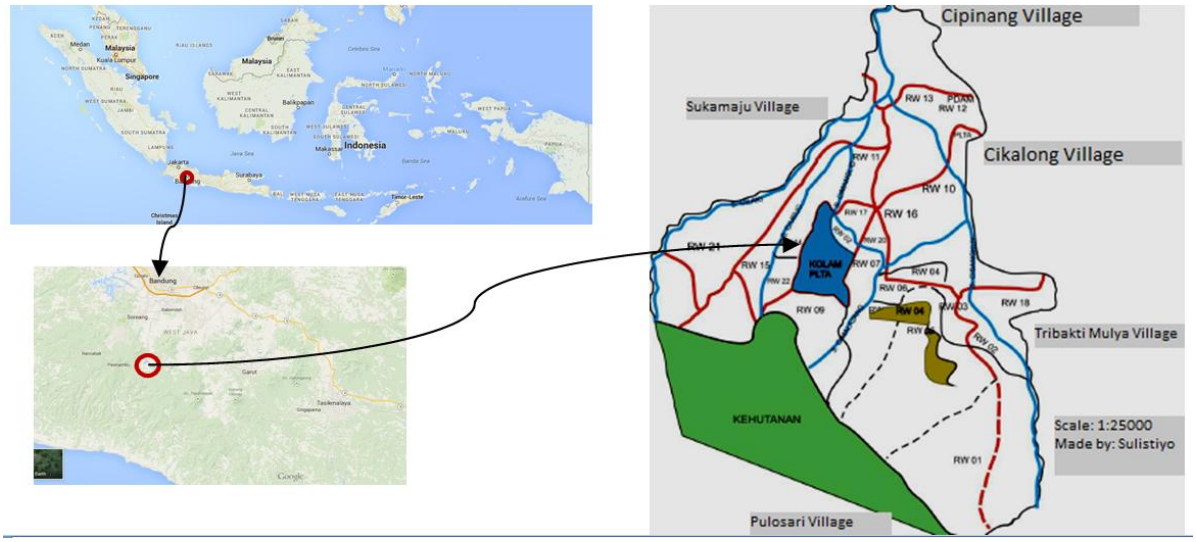

Fig. 1. Lamajang Village Map.

Diversity of medicinal Plant Species

Knowledge about plant utilization for food or medicines is a strong connection of communities in dealing with environment. People in Cikondang Community use 68 spesies belong to 61 genus and 39 families as traditional medicines (Table 1). Based on the number of species that are used, the most numerous species used is belong to Zingiberaceae (8 species), followed by Rubiaceae (6 species), (fig. 2).

Table 1. The Diversity of Medicinal Plant Species Used by Cikondang Indigenous Community and Parts that Being Used.

No	Family	Scientific Name	Local Name	Plant Parts Used
1	Acanthaceae	*Graptophyllum pictum* (L.) Griff.	Handeuleum	Leaves
2	Anacardiaceae	*Mangifera indica* L.	Buah	Leaves
3	Annonaceae	*Annona muricata* L.	Sirsak	Leaves
4	Apocynaceae	*Alstonia scholaris* (L.) R. Br.	Lame	Leaves
5	Araceae	*Schismatoglottis calyptrata* (Roxb.) Zoll. & Moritzi	Ciriwuh	Leaves
6	Arecaceae	*Areca catechu* L.	Jambe	Root
		Cocos nucifera L.	Kalapa	root, fruit
		Arenga pinnata (Wurmb) Merr.	Kawung	Root
		Salacca zalacca (Gaertn.) Voss	Salak	Fruit
7	Asteraceae	*Ageratum conyzoides* L.	Babadotan Leuweung	Leaves
8	Bombacaceae	*Ceiba pentandra* (L.) Gaertn.	Randu	leaves
9	Bromeliaceae	*Ananas bracteatus* (Lindl.) Schult. & Schult. f.	Ganas pager	fruit
10	Caprifoliaceae	*Sambucus javanica* Reinw. ex Blume	Bubukuan	leaves, stem
11	Caricaceae	*Carica papaya* L.	Gedang	leaves, fruit
12	Clusiaceae	*Garcinia mangostana* L.	Manggu	bark
13	Commelinaceae	*Commelina benghalensis* L.	Jukut tali said	stem, leaves
14	Costaceae	*Costus* sp	Pacing	leaves

No	Family	Scientific Name	Local Name	Plant Parts Used
15	Crassulaceae	*Kalanchoe pinnata* (Lam.) Pers.	Buntiris	leaves
16	Cucurbitaceae	*Momordica charantia* L	Paria	fruit
17	Cunoniaceae	*Weinmannia blumei* Planch.	Ki Papatong	stem
18	Cyperaceae	*Cyperus rotundus* L	Teki	rhizome
19	Dioscoreaceae	*Dioscorea hispida* Dennst.	Gadung	tuber
20	Euphorbiaceae	*Manihot utilissima* Pohl.	Sampeu	tuber
21	Fabaceae	*Erythrina lithosperma* Miq.	Dadap	stem, leaves
		Leucaena leucocephala (Lam.) de Wit	Peuetuy selong	leaves
22	Lamiaceae	*Tectona grandis* L.f.	Jati	leaves
		Coleus atropurpureus Benth.	Jawer Kotok	leaves
		Ocimum sp	Surawung leuweung	leaves
		Orthosiphon stamineus Benth.	Kumis kucing	leaves
23	Lauraceae	*Persea americana* Mill.	Alpuket	leaves
24	Liliaceae	*Allium sativum* L.	Bawang bodas	tuber
		Allium cepa L.	Bawang merah	tuber
25	Magnoliaceae	*Michelia champaca* L.	Campaka	flower
26	Meliaceae	*Swietenia mahagoni* (L.) Jack	Mahoni	fruit
27	Moraceae	*Artocarpus integra* (Thunb.) Merr.	Nangka	bark
28	Musaceae	*Musa acuminata* Colla	Cau kole	leaves
		Musa balbisiana Colla	Cau mangala	fruit
29	Myristicaceae	*Horsfieldia glabra* (Reinw. ex Blume) Warb.	Kalapa Ciung	stem
		Myristica fragrans Houtt.	Pala	fruit
30	Myrtacaea	*Eugenia aromatica* (L.) Baill.	Cengkeh	fruit
31	Oxalidaceae	*Oxalis corniculata* L.	Calincing	leaves, fruit
32	Phyllanthaceae	*Antidesma bunius* (L.) Spreng.	Huni	leaves
33	Piperaceae	*Piper nigrum* L.	Pedes	fruit
		Piper aduncum L.	Seureuh Leuweung/ Bay	leaves
34	Poaceae	*Gigantochloa pseudoarundinacea* (Steud.) Widjaja.	Awi Gombong	stem (young)
		Dinochloa scandens (Blume) Kuntze	Cangkore	stem
		Imperata cylindrica (L.) P. Beauv.	Eurih	root, stem, leaves
		Oryza glutinosa Lour.	Ketan hideung	fruit
		Andropogon nardus var ceriferus (Hack.) Hack.	Sereh	stem
35	Rubiaceae	*Uncaria gambir* (W. Hunter) Roxb.	Gambir	leaves
		Coffea sp	Kopi	leaves
36	Rutaceae	*Citrus aurantiifolia* (Christm.) Swingle	Jeruk nipis	fruit
		Citrus hystrix DC.	Jeruk Purut	fruit
		Murraya paniculata (L.) Jack	Kamuning	stem, leaves, fruit
37	Solanaceae	*Physalis angulata* L.	Cecenetan	fruit, stem, leaves
		Capsicum frutescens L.	Cengek	fruit
		Solanum nigrum L.	Leunca	fruit
		Solanum torvum SW.	Takokak Leuweung	fruit
		Solanum lycopersicum L.	Tomat	fruit
38	Urticaceae	*Laportea stimulans* Miq.	Pulus	stem
39	Zingiberaceae	*Nicolaia speciosa* (Blume) Horan.	Honje Leuweung	stem
		Zingiber officinale Roscoe	Jahe	rhizome
		Amomum cardamomum L.	Kapol domba	fruit
		Elettaria cardamomum L.	Kapolaga	fruit
		Curcuma domestica Valeton	Koneng	rhizome
		Curcuma mangga Valeton & Zijp	Koneng Bodas	rhizome
		Alpinia galanga (L.) Willd.	Laja	rhizome
		Achasma walang (Blume) Valeton	Walang	leaves

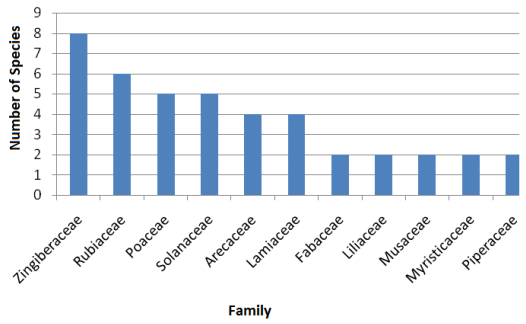

Fig. 2. Number of herb species from each of the families.

In Indonesia, which has tropical climate, many species of Zingiberaceae are easy to grow, and widely distributed. It is not surprising that many species are used as ingredients for traditional medicine in this area (Suganda and Ozaki, 1996).

Most medicinal plant species used are indigenous plants, but some species used are introduced from other area (Fig. 3), such as Buntiris (*Kalanchoe pinnata* (Lam.) Pers.), Jati (*Tectona grandis* L.f.), Bawang bodas/Garlic (*Allium sativum* L.), Bawang merah/Shallot (*Allium cepa* L.), Pala (*Myristica fragrans* Houtt.), Cengkeh (*Eugenia aromatica* (L.) *Baill.*), Kopi (*Coffea* sp), Kapol domba (*Amomum cardamomum* L.), Kapolaga (*Elettaria cardamomum* L.), Pedes (*Piper nigrum* L.), and Koneng Bodas (*Curcuma mangga* Valeton & Zijp).

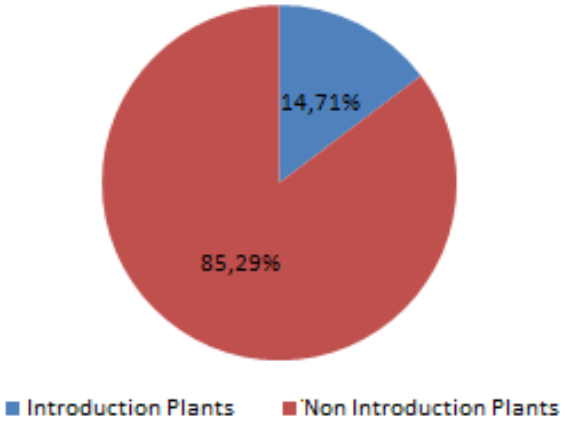

Fig. 3. The ratio between introduced and non-introduced medicinal plants in Cikondang indigenous Village.

(a)

(b)

(c)

Fig. 4. Rare plants used for medicine in Cikondang Indigenous Village, Lame (*Alstonia scholaris* (L.) R. Br.) (a), Walang (*Achasma walang* (Blume) Valeton) (b) dan Kalapa Ciung (*Horsfieldia glabra* (Reinw. ex Blume) Warb.) (c).

Most of the introduced species are important species for the community for increasing their income, but some species are categorized as rare and scarce, for example Lame (*Alstonia scholaris* (L.) R. Br.) categorized as the rare one (Sulistiarini, 1992), hence based on *IUCN Red List* categorized in *lower risk*. Kalapa Ciung (*Horsfieldia glabra* (Reinw. ex Blume) Warb.), and Walang (*Achasma walang* (Blume) Valeton) were rarely found in the village. (Fig. 4).

Cikondang community grows Lame (*Alstonia scholaris* (L.) R. Br.) for medicinal plants as well as area borders to the south. Kalapa Ciung (*Horsfieldia glabra* (Reinw. ex Blume) Warb.) is a special wood tree in Cikondang and Lamajang sacred forests. Walang (*Achasma walang* (Blume) Valeton) is a species member of Zingiberaceae family, Cikondang community grows them in the area of Cikondang sacred forest and uses them in customs ceremony as a part of cooking spices. Since Cikondang community considers that plant is a valuable material, they grow them inside or outside indigenous land to maintain their sustainibility.

Not all parts of plants are used for medicinal substances or simplicia. Root, stem, bark, leaves, flower, fruit and seed are believed to have specific efficacy (Smita and Patil, 2010). Based on previous research, each part has different chemical compounds that will give different effect of pharmacology. There are also several active chemical compounds found only on one part of the plants (Saroya, 2011). Paria (*Momordica charantia* L.) can be used as anti HIV/ AIDS because it contains *alpha-momorcorin, beta-momorchorin*, and MAP30 (*momordica antiviral protein 30*), whilst its seeds contain *triterpenoid* as an anti spermatozoa that cause infertility in men (Nwachi and McEwen, 2009).

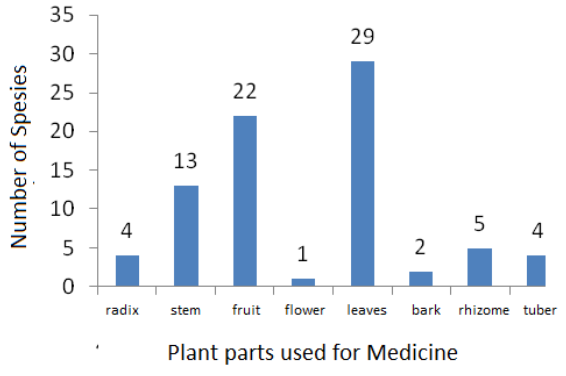

Fig. 5. Distribution of Plant Parts used for Medicine.

Based on empirical experience, the local community knows that every part of the plants is only used for healing a specific disease. So does the Cikondang Community, they often use medicinal plants by sorting out parts of the plants for the purpose of particular treatment. Of the 68 species of medicinal plants that are used, leaves are plant part that most widely used for medicine (29 species), whilst flowers are the most rarely used (1 species) (Fig. 5).

Among 68 species noted and known to have potential as medicines, there are only several species which its root, stem, leaves, and fruits can be used simultaneously. Those species are, eurih (*Imperata cylindrica* (L.) P. Beauv.), kamuning (*Murraya paniculata* (L.) Jack), cecenet (*Physalis angulata* L.), kalapa/coconut (*Cocos nucifera* L.), bubukuan (*Sambucus javanica* Reinw. ex Blume), gedang/papaya (*Carica papaya* L.), jukut tali said (*Commelina benghalensis* L.), dadap (*Erythrina lithosperma* Miq.), and calingcing (*Oxalis corniculata* L.). However, other species are only used for their certain parts (Table 1).

Based on previous studies, leaves were the most widely used for simplicia and traded by community as part of traditional medicine. For example, Lame (*Alstonia scholaris* (L.) R. Br.) which is believed by Cikondang Community can be used to cure intestine disease, dysentery and diabetics. Lame leaves are also known for curing fever, hypertension, skin disease, puncture, syphilis, beriberi, and malaria in many areas.

Lame leaves contain of *pikrinin* compound. According to Pratyush *et al.* (2011), pharmacological effects of lame leaves are as anti-tussive, anti-asthmatic and expectorant properties and hence serve as a valuable lead material for respiratory disorders drug development. in contrast to the leaves, Lame bark actually contains pretty much active compound, *alstonidine, O-methylmacralstonine, macralstonine, O-acetylmacralstonine, alstonine, ditamine, echicaoutchin, corialstonidine, corialstonine, chlorogenine, villalstonine, pleiocarpamine, villalstonine, macrocarpamine,* and *triterpenoids which have been reported are alpha-amyrin linoleate, lupeol palmitate* and *lupeol linoleate*

Fruit is also important plant organ for medicine. Cikondang community uses seed of a very bitter mahogany fruit (*Swietenia mahagoni* (L.) Jack) to heal fever, and colds. *mahoganin, 7-deactyl-7-oxogedunin, cyclomahogenol* and *6-hydroxymethyl angolensate* are also present (Khare, 2007), so that, in several places, it is also known to cure eczema, rheumatism, hypertension and diabetics (Hariana, 2007; Eid *et.al*, 2013).

For increasing fitness, the Cikondang community use several plants. They boils stem of eurih (Imperata cylindrica (L.) P. Beauv.) as a tonic. They also boils the rhizome and stem of eurih added coconut root (*Cocos nucifera* L.), papaya root (*Carica papaya* L.), jambe root (*Areca catechu* L.), and ginger rhizome (*Zingiber officinale* Roscoe). According to Li (2009), eurih (Imperata cylindrica (L.) P. Beauv.) contains of *terpenoid iso-arborinol or B-arborinol* compounds which specifically also contains of *mannitol, glucose, sucrose, malic acid, citric acid, coixol, cylindrin, fernenol, simiarenol* and *anemonin*.

While, coconut root (*Cocos nucifera* L.) pharmacologically contains of *carbohydrates, proteins, lipids, lauric acid, myristic,* and *coprylic* so that it has a function for increasing fitness. *Lauric* acid is easy to be digested as a source of energy dan shows as antimicrobial lipids monolourin that can enhance human immunity (DabMandal and Mandal, 2011). Coconut root used in urinary and uterine and disorders (Khare, 2007).

In contrast to other plant parts, flower is used less. The result of this research informed that campaka flower (*Michelia champaca* L.) is better known as cosmetics ingredients, primarily to eliminate body odor by boiling the flower then used it for bathing.

How to use the medicinal plants

Simplicia preparation is an important step to get best result from medicinal plants. Uncorrect processing and preparation of Simplicia may eliminate the plant efficacy or poisson the patient (Sukmono, 2009). The Cikondang community uses several method in preparing simplicia, such as .

by grinding, shredding, squeezing out (taking the water), boiling, brewing, or burning the plant root, leaf, or stem. Boiling the materials is the most widely used method by Cikondang community. They believed that it is very effective way to get better plant efficacy. The result of this research showed that there were 37 plants species used for medicines through boiling, 19 species through grinding, 9 species eaten straightly, 7 species by brewing, 2 species of each by shredding and squeezing out, and 1 species of each through burning, drinking, smearing and dripping directly (Fig. 6). According to Muhlisah (2007), boiling plant materials makes the active chemical compounds in plants dissolved well .

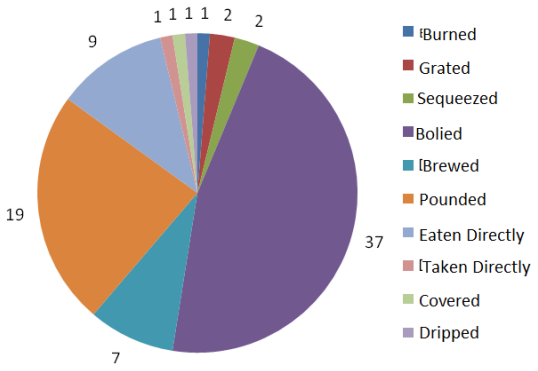

Fig. 6. Method preparation of medicinal plants before used.

The Cikondang community sometimes combined several ways in preparing medicinal plants for health treatment (Table 2). *Muraya Paniculata* (L.) Jack. is used by burning, boiling, and eaten immediately. The water of green coconut (*Cocos nucifera* L.) is drunk directly. Another way of using the medicinal plants is making ointment by boiling Handeleum leaves (*Graptophyllum pictum* (L.) Griff.) in coconut oil as media of the ointment base. Brewed sereh stem (*Andropogon nardus* var ceriferus (Hack.) Hack.) is used to cure digestive diseases; bwered randu leaves (*Ceiba pentandra* (L.) Gaertn.) is used for increasing breast milk and dry grass rhizome (*Cyperus rotundus*

L.) is used to cure stiff and sore. Brewing method will not damage the plant active compound (Preedy, 2014).

Table 2. Method of preparation and use of medicinal plants that cured disease type.

No	Scientific Name	To Use		Diseases				
		Process	Direct	External Diseases	Digestive	Internal Diseases	Respi-ratory	Reproduction dan Urogenital
1	*Graptophyllum pictum* (L.) Griff.	Boiled		Woud				
2	*Mangifera indica* L.	Boiled				Fever		
3	*Annona muricata* L.	Boiled				Cancer		
4	*Alstonia scholaris* (L.) R. Br.	Boiled				Internal Diseases		
5	*Schismatoglottis calyptrata* (Roxb.) Zoll. & Moritzi	Boiled				Stiff		
6	*Areca catechu* L.	Boiled						Aprodisiak
7	*Cocos nucifera* L.	Boiled	Drunk		Stomachache			Aprodisiak
8	*Arenga pinnata* (Wurmb) Merr.	Boiled						Repr. Disease, urinaria
9	*Salacca zalacca* (Gaertn.) Voss		Eaten	Eye				
10	*Ageratum conyzoides* L.	Boiled, Pounded		Woud		Cancer		
11	*Ceiba pentandra* (L.) Gaertn.	Brewed, Pounded			Stomachache			Increased Breast Milk
12	*Ananas bracteatus* (Lindl.) Schult. & Schult. f.		Eaten					Contraseption
13	*Sambucus javanica* Reinw. ex Blume	Boiled		Woud,Bruises		Stiff		
14	*Carica papaya* L.	Grated, Boiled		Woud	Appetite, Heatiness, Stomachache			
15	*Garcinia mangostana* L.	Boiled				Internal Diseases lain		
16	*Commelina benghalensis* L.	Pounded		Skin Diseases				
17	*Costus* sp	Pounded		Animal attack		Fever		
18	*Kalanchoe pinnata* (Lam.) Pers.	Pounded						
19	*Momordica charantia* L	Boiled			Appetite	Fever		
20	*Weinmannia blumei* Planch.	Boiled		Woud				
21	*Cyperus rotundus* L	Brewed				Internal Diseases		
22	*Dioscorea hispida* Dennst.	Boiled					Tuberc-ulosis	
23	*Manihot utilissima* Pohl.	Pounded			Heatiness	Fever		
24	*Erythrina lithosperma* Miq. non Bl	Pounded				Fracture		
25	*Leucaena leucocephala* (Lam.) de Wit	Brewed				Internal Diseases		
26	*Tectona grandis* L.f.	Boiled			Diet			
27	*Coleus atropurpureus* Benth.	Boiled, Pounded		Woud			Cough	
28	*Ocimum* sp	Pounded		Woud				
29	*Orthosiphon stamineus* Benth.	Boiled						Urinaria
30	*Persea americana* Mill.	Boiled				Stomachache		
31	*Allium sativum* L.		Eaten		Appetite			
32	*Allium cepa* L.	Pounded				Fever		
33	*Michelia champaca* L.	Boiled		Cosmetic				
34	*Swietenia mahagoni* (L.) Jack	Brewed			Appetite	Internal Diseases		
35	*Artocarpus integra* (Thunb.) Merr.	Boiled				Fever		
36	*Musa acuminata* Colla		Smeared	Woud				
37	*Musa balbisiana* Colla	Boiled				Internal Diseases		
38	*Horsfieldia glabra* (Reinw. ex Blume) Warb.	Boiled			Stomachache			
39	Myristica fragrans Houtt.	Brewed		Bruises				
40	*Eugenia aromatica* (L.) Baill.	Boiled				Internal Diseases		

No	Scientific Name	To Use		Diseases				
		Process	Direct	External Diseases	Digestive	Internal Diseases	Respi-ratory	Reproduction dan Urogenital
41	*Oxalis corniculata* L.	Pounded		Cosmetic				
42	*Antidesma bunius* (L.) Spreng.	Boiled				Stiff		
43	*Piper nigrum* L.	Brewed						Contraseption
44	*Piper aduncum* L.	Boiled		Cosmetic				
45	*Gigantochloa pseudoarundinacea* (Steud.) Widjaja.	Boiled					Cough	
46	*Dinochloa scandens* (Blume) Kuntze		Dripped	Eye				
47	*Imperata cylindrica* (L.) P. Beauv.	Boiled			Heatiness			Aprodisiak
48	*Oryza glutinosa* Lour.	Pounded		Bruises				
49	*Andropogon nardus* var ceriferus (Hack.) Hack.	Brewed, Pounded			Appetite			
50	*Uncaria gambir* (W. Hunter) Roxb.	Boiled			Stomachache			
51	*Coffea* sp	Boiled			Stomachache			
52	*Citrus aurantiifolia* (Christm.) Swingle	diperas			Heatiness		Cough	
53	*Citrus hystrix* DC.	diperas			Heatiness			
54	*Murraya paniculata* (L.) Jack	dibakar, Boiled	Eaten		Toothache		Cough	
55	*Physalis angulata* L.	Boiled			Appetite			Urinaria
56	*Capsicum frutescens* L.	Pounded		Skin Diseases, Woud				
57	*Solanum nigrum* L.		Eaten					Aprodisiak
58	*Solanum torvum* SW.		Eaten					Aprodisiak
59	*Solanum lycopersicum* L.	Grated			Appetite			
60	*Laportea stimulans* Miq.		Eaten		Appetite			
61	*Nicolaia speciosa* (Blume) Horan.	Pounded				Fever		
62	*Zingiber officinale* Roscoe	Pounded				Fever		
63	*Amomum cardamomum* L.		Eaten				Cough	
64	*Elettaria cardamomum* L		Eaten				Cough	
65	*Curcuma domestica* Valeton	Boiled			Stomachache			
66	*Curcuma mangga* Valeton & Zijp	Pounded		Skin Diseases				
67	*Alpinia galanga* (L.) Willd.	Boiled, Pounded		Skin Diseases		Internal Diseases		
68	*Achasma walang* (Blume) Valeton	Boiled				Stomachache		

Grinding is intended to get fresh condition of plant active compound. Several treatments were prepared using this way. For example *umbi sampeu* rough extract (*Manihot utilissima* Pohl.), *buntiris* (*Kalanchoe pinnata* (Lam.) Pers.) and ginger (*Zingiber officinale* Roscoe) to cure fever. In addition, water of *sampeu* tuber (*Manihot utilissima* Pohl.) is used to cure heatiness. Another way for preparing medicinal ingredients is through shredding plant materials to get the finer extract compared to by grinding process. Some shredded herbs are young papaya fruit (*Carica papaya* L.) to cure wounds by covering it on the wound, and the ripe tomato (*Solanum lycopersicum* L.) to cure sprue.

The Cikondang community also uses medicinal plants without processing the plant materials, such as coconut water (*Cocos nucifera* L.) taken immediately to treat food poisoning, garlic (*Allium sativum* L.) is directly swallowed for curing digestion problem, and *cangkore* (*Dinochloa scandens* (Blume) Kuntze) which is water in bamboo shoots directly dripped into the eye for eye treatment. From all preparation methods, burning is preparation method used less. People burn kamuning bark (*Murraya paniculata* (L.) Jack) to obtain oil for toothache medicine.

Disease types

Based on the physical imbalance condition, the Cikondang community distinguished 5 disease types,

external, digestive, internal, respiratory, and reproductive and urogenital diseases (Fig. 7)

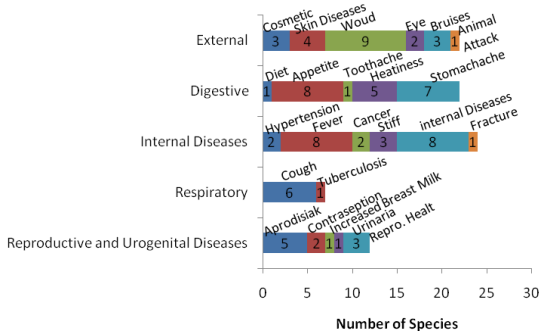

Fig. 7. Number of plant species used for each disease.

The community considers external diseases as a disease or physical upset that affect their skin, hair, nails, and sense organs. To overcome these problems, several plant species, campaka (*Michelia champaca* L.), calingcing (*Oxalis corniculata* L.), and seueruh leuweung (*Piper aduncum* L.), are used for cosmetics and beauty treatments. Some skin diseases, itchi, wounds, bruises, and injuries due to animal attacks, are cured using different plant species that are easily found around their neighborhood. Digestive diseases include heatiness, stomachache,and loss appetite. They used 20 plant species to cure these diseases, for example sereh (*Andropogon nardus var ceriferus* (Hack.) Hack.), cecenetan (*Physalis angulata* L.), and eurih (*Imperata cylindrica* (L.) P. Beauv.). Internal diseases are not associated to digestive system including hypertension, fever, cancer, stiff, and fractures. To treat these diseases, the community uses 24 species, for example avocado (*Persea americana* Mill.) to treat hypertension, buntiris (*Kalanchoe pinnata* (Lam.) Pers.) to treat fever, soursop (*Annona muricata* L.) to treat cancer, huni (*Antidesma bunius* (L.) Spreng.) to treat stiff, and dadap (*Erythrina lithosperma* Miq.) for treating fractures. The next category is reproductive and urogenital disease that considered by the community as a disease associated to the disposal of urine and reproductive process, such as urinaria and aphrodisiacs. To cure these diseases, Cikondang community uses 12 plants species such as coconut (*Cocos nucifera* L.) to cure aphrodisiac and, kawung (*Arenga pinnata* (Wurmb) Merr.) for maintaining health of the male reproductive tract, and kumis ucing (*Orthosiphon stamineus* Benth.) to facilitate urine output.

Conclusion

Cikondang community has unique knowledge in using plant resources for medicinal purposes. A total of 68 plant species are known by indigenous Cikondang community for health treatment. Most species of the medicinal plants used by Cikondang indigenous community are already exist in their areas and preserved by the community. The community in Cikondang village preserves medicinal plants as the activities of their customs. They use various ways in preparing herbs, and various plant organs for medicine. Cikondang community has fully awared that every part and certain treatment will provide appropriate efficacy. The knowledge of the community is inherited from a generation to the next generation.

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