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# Ethnobotanical Knowledge of Plant Ingredients Among Sellers of *Jamu* Ngadirgo Semarang

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## Abstract

Traditional medicine is a medical resource that can be accessed easily by communities. Utilization of plants as herbal concoction such as jamu is one of the medical resource. There are some variations of plants species utilized in herbal medicine of jamu. Therefore, it is necessary to do a lot of studies on knowledge of jamu types and the variety of plants used in it. The research was conducted in Ngadirgo, Semarang City, where many residents work as jamu seller. By using qualitative research method and applying interview and observation technique, this research examines the ethnobotanical knowledge of jamu as herbal medicine and identifies various of plant species used in the concoction. The findings of this research show that the ethnobotanical knowledge of jamu sellers is generally obtained from older family. There are 17 types of jamu usually produced which can be distinguished as daily jamu and special jamu made by adjusting to customer order. In producing various types of jamu, the sellers use about 50 plants species as ingredients in jamu concoction. They obtain the plants by buying from the local market, and taking from their house yard or garden. This research can contribute in the conservation of community knowledge on herbal jamu and the plants used in it, as a unique identity of Javanese traditional medicine.

## Keywords

ethnobotany; jamu; ngadirgo; traditional medicine

## INTRODUCTION

Traditional medicine is one of the treatment resources that can easily be accessed by the community. In Indonesia, traditional medicine is very diverse following the many variations of ethnic groups that live in it. Variations in traditional treatment methods can be grouped based on differences in illness. For example, the problem of broken bones (fracture) will be cured using massage techniques, connecting bones, and wound treatment using oil ingredients for external treatment. In the case of illnesses due to weather changes where people will get a lot of flu and cough, the treatment can be applied by consuming various medicinal herbs and of course with prayers from the healer. This grouping of treatment methods (especially in Java) can be found in Geertz's writing in a classic book by Landi (1977). In addition, many researches on this theme

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have been published either in the form of books or articles in journals in the country and abroad. Atkinson's (1987) research into healing rituals in the Wana Community in Central Sulawesi, Jay's (1989) in Dayak Ngaju, Hunter's (2002), Grace's (1996), Hay's (2001) and Husain's and Wahidah's (2018) in Lombok and Sumbawa, as well as other researchers, have conducted research in several regions and ethnicities in Indonesia.

One important theme in anthropology, especially those that study traditional medicine, is the use of biological resources as part of the treatment method. Indonesia has become a paradise for herbal medicine because it has tens of thousands of flora species with more than a thousand species of plants having medicinal potential (Hariana 2004) that can be used either as a cure for disease or consumed as a preventative measure.

For comparison, several places of the world also have healthy drinks that are popular in the community. For example in Ecuador, a drink called horchata drink is made from 71 types of plants (Rios et al. 2017). Likewise, herbal tea drinks that are very popular in China are made from mixed herbs which are believed to provide healing and prevention. The herbs are made from various plant flowers such as roses, white jasmine, orange flowers, and lily flowers (Fu et al. 2018). In southern China, there is an herbal drink called Liáng chà that is made specifically for treating heartburn (Liu, Ahmed & Long 2013). In Indonesia, especially in Java, plants that are used as medicine can be found in herbal drinks called *jamu*. *Jamu* is a drink of herbal ingredients to treat certain diseases or maintain a healthy body. Beers (2001) called it an art of Javanese ancestors in maintaining a healthy body. In this herbal drink, there is a mixture of various ingredients of medicinal plants such as ginger, cinnamon, Javanese tamarind and other plants. The use of materials can differ based on manufacturing habits and place. Laplante (2015) reported in his research on herbal medicine in the city of Yogyakarta that pepper (*Piper nigrum*) is one ingredient of herbal medicine. It is different from the research of Husain et al. (2019) in Semarang City which found that adding a spicy taste and medicinal properties in herbal concoctions can be done simply by adding Javanese chili (*Piper retrofractum*). Generally, there are several types of herbal drinks in Java which can be distinguished from the plants used as the mixture. For example in the herbal drink *kunyit asem,* as the name suggests, the main plants in this drink are *kunyit* or turmeric (*Curcuma domestica*) and *asem* or tamarind (*Tamarindus indica*). Meanwhile in the herbal drink *beras kencur,* the main ingredients are *kencur* or galangal (Kaempferia galanga) added with water extracts of *beras* or rice.

This research is based on a study called ethnobotany. Ethnobotany was first put forward by John W Harsberger, a plant archeologist who researched a lot about aborigines (Nolan & Turner 2011). Harsberger stated that as a science, ethnobotany studies the traditional use of plants by primitive ethnic groups (Abbasi et al. 2012). In terminology, ethnobotany is the study of the relationship between humans and plants. So, ethnobotany is a study that analyzes the results of manipulation of native plant material with a cultural context in the use of plants. Ethnobotany is a study of interactions between local communities and their natural environment, especially regarding the use of plants in everyday life (Martin 1995). Traditional knowledge possessed by each tribe or ethnicity from generation to generation includes the use of plants as medicine (Bodeker 2000; McFoy 2013). This article focuses on the knowledge of plant ethnobotany used by herbal medicine sellers as herbs in herbal drinks (*jamu*).

## METHODS

This research was conducted in April-October 2019 in the Ngadirgo Village, Mijen, Semarang, Central Java. Tools and materials used in this study include: camera, and voice recorder. Researchers used interview guides to facilitate the semi-structured interview process. Primary data were obtained from research fields through interviews

with informants, and observations of medicinal plants used or planted by informants. Primary data includes knowledge of medicinal plants, ethnobotany data such as local names of plants, types and the uses of the plants, parts of plants used, methods used in the utilization of medicinal plants, how to obtain them, knowledge, and conservation actions by the community (Cotton 1997). Secondary data includes data on the general condition of research location, socio-economic and cultural data of the community.

Data collection is done with interview and observation methods. The informants were determined by a purposive sampling technique consisting of 15 people who work as herbal medicine sellers. Interviews are conducted with semi-structural interview techniques guided with interview grid. Every plant used as traditional medicinal material will be documented. In addition to the interviews, this study also used focus group discussion (FGD) to obtain data. This group discussion involved the herbal medicine sellers with the focus of the discussion in particular is to dig out knowledge about medicinal plants used as medicinal ingredients. Data analysis was carried out descriptively to obtain information about the types of plants, groups of uses, parts of plants used, how to obtain the plants, and conservation actions undertaken by the community.

# RESULTS AND DISCUSSION

## Profile of Research Location

Administratively, the Ngadirgo Village is under the Mijen District area, Semarang City. Previously this village was under the Kendal Regency. It is bordered by Ngaliyan District in the north, Wonolopo Mijen in the South, Pesantrean Village in the East, Wonoplumbon village in the West.

Ngadirgo Village has a land area of 4.91 km2 which is divided into 6 neighborhood units (*RW*) and 23 neighboring neighborhoods (*RT*). In 1976, Ngadirgo underwent a change of status from *desa* (rural village) to *kelurahan* (urban village), which at that time coincided with the integration of several Kendal Regency government areas into the Semarang City area, one of which the Ngadirgo village.

According to Central Bureau of Statistics BPS Kota Semarang (2018) data, the land distribution of most of the Ngadirgo village is 389.660 ha of dry land. This dry land is a residential and garden location. While the rice field area has an area of 109.000 ha. This land area is used by the community as a place to grow rice or vegetables. From this land area, the residents who work as herbal medicine sellers use it as a place to plant various medicinal plants in addition to plants that have other economic values.

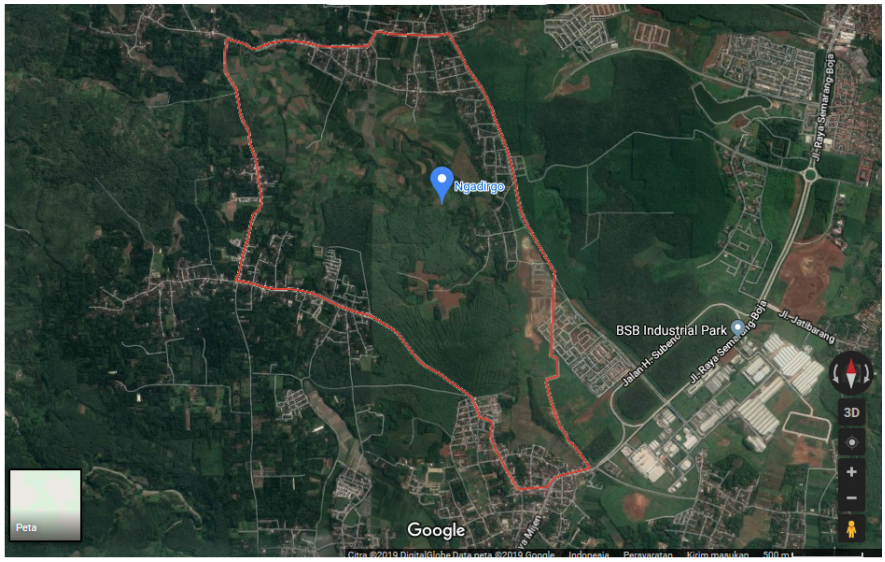


**Figure 1.** Map of Ngadirgo Village (modified from Google Map).

## Demographic Condition

According to BPS of Mijen Subdistrict (2018), Ngadirgo Village has a population of 5749 with a population of 3065 males, and 2684 females. This population is divided into 1565 households. In terms of education, the majority of Ngadirgo residents recorded only completing their formal education in primary and secondary schools, which were 3476 people. The livelihoods of the population are more varied, namely farmers, industrial workers, construction workers, traders and other types of formal jobs such as civil servants (PNS). Even so there were a thousand residents of Ngadirgo depending on their lives by working in factories around the village.

In order to support the development of household industry, also small and medium enterprises, the city government identifies the village's local potentials. Among them is the potential of woven bamboo and *jamu gendong* (herbal drinks peddled around). But the city government decided to develop the potential of woven bamboo because in other villages it had not been raised yet as the village's theme. Kampong of *jamu* was not chosen because this theme had been developed earlier in the neighboring villages such as Wonolopo Village, and Sumbersari Village. The two villages are proclaimed as Jamu Tourism Village in Mijen District. Nevertheless, the home-based herbal medicine business in Ngadirgo continues to produce and even remains known as a potent herbal medicine in several markets in the City of Semarang

## Profile of Jamu Mugi Waras Pandean Group

In the 90s, the sellers of *jamu gendong* in the Ngadirgo Village made a community of herbal medicine sellers who were then named the Ngadirgo Herbal Medicine Association Society. This association was established precisely on January 20, 1990. At that time the chairman was first entrusted to an herbalist named Mrs. Suhanah. She has been selling herbal medicine since 1984.

Previously, Mrs. Suhanah joined the association of herbal medicine sellers in the neighboring village, namely in Sumbersari Village. He joined this group because at that time Mrs. Suhanah worked an apprenticeship at the place of one of the successful herbal medicine entrepreneurs in Sumbersari. Being able to build her own herbal medicine business, Mrs. Suhanah initiated the making of a community in her neighborhood in Kelurahan Ngadirgo. For the making of this community, Mrs. Suhanah and other herbal medicine sellers received a little money from the village chief at that time.

There are several reasons why Mrs. Suhanah and her friends established the community. First is the importance of herbal medicine sellers to keep socializing with each other for the development of their herbal medicine business. The members of the community at that time was as many as ten people.

Currently the Ngadirgo herbal medicine sellers association is chaired by Mrs. Wusono who has been assigned since 1994. She is the wife of the head of RW 5 in the village. Some informants said that although Mrs. Wusono was not a salesperson of herbs, members of the association chose her as chairperson on the grounds that she could protect the members especially if there was a problem. The problem that often occurs in the organization is the problem of savings and loans which is one of the activities in the group.

Until a few years ago, the number of members increased by 25 people. But currently the number of people who are active in various community activities is reduced to 15 people. There are various reasons that members are no longer active. The main one is related to disputes in savings and loan activities. Besides, there are personal reasons such as not being able to participate in community activities such as social gathering, and not having enough time.

The Paguyuban routine activities are carried out every month on the 20th. There are various activities carried out at each meeting such as social gathering, savings and loans, outreach from the village, subdistrict and puskesmas (public health centre). Several activities were also carried out in

collaboration with the Jamu Jago company both by the socialization activities in Ngadirgo and by inviting herbal medicine vendors to visit the Jamu Jago factory or office.

At the end of each meeting, a name lottery will be held to determine the host for the next meeting. This host will prepare a place and food or snacks for the members later.

Since July 20, 2019 the Paguyuban Jamu Gendong (Herbal Medicine Association) in Ngadirgo Village has a new name, Mugi Waras Pandean. The research team and members formulated a new name to give a unique identity to the community. This name contains the meaning of a hope or prayer to always be healthy for people who consume herbal medicine of Ngadirgo. In addition, Mugi means continuous effort and plead to the Almighty for health blessings. While the word Pandean is the name of the place that is currently called Ngadirgo.

## Ethnobotanical Knowledge of Medicinal Herbs for *Jamu* Ingredients

### Types of Jamu Produced

The Ngadirgo sellers of *jamu gendong* produce two types of *jamu*, namely *jamu* produced daily and *jamu* produced according to customer orders. Daily *jamu* are types of herbal medicine that are made and sold every day. It is usually sold in markets, residential neighborhoods, and around factories.

The daily *jamu* generally consists of eight types of jamu, that is, *beras kencur* (a

**Table 1.** List of Jamu and Medicinal Herbs Used in Jamu

| Name of Jamu | Herbs used (vernacular and scientific name) | Ailments | Internal/ External | Consumed by | Time of Production |
|---|---|---|---|---|---|
| Beras kencur | Beras (Oryza sativa), kencur (Kaempferia galangal) Tambahan: Jahe (Zingiber officinale) | Cough Bloated Increasing appetite | Internal/ Oral | Child, adult | Daily |
| Kunir kentel | Kunyit (Curcuma domestica) | Gastritic Woman's period problem | Internal/ Oral | adult | Daily |
| Kunir asem | Kunyit (Curcuma domestica), asam jawa (Tamarindus indica) | Reducing colesterol Woman's period problem Overcoming tired and achy body | Internal/ Oral | adult | Daily |
| Temulawak | Temulawak (Curcuma xanthorrihiza) | Liver Increasing appetite | Internal/ Oral | adult | Daily |
| Cabe puyang | Puyang/lempuyang (Zingiber zerumbet Smith), cabai jawa (Capsicum frutescen L) Tambahan: Jahe (Zingiber officinale) | Overcoming tired and achy body | Internal/ Oral | adult | Daily |
| Suroh | Sirih (Piper betle L), luntas (Pluchea indica Less), ceplikan (Eucalyptus alba reinw), jambu (Psidium guajava Linn), cengkeh (Syzygium aromaticum) Majaan/manjakan (Quercus infectoria Gall), jahe (Zingiber officinale), adas (Foeniculum vulgare), temu kunci (Curcuma rotunda), kunyit (Curcuma domestica), delima putih (Punica granatum), sari rapet/ kayu pepet (Kaempferia rotunda) | Leucorrhoea Eliminating body odor Antiseptic | Internal/ Oral | adult | Daily |

| | | | | | |
|---|---|---|---|---|---|
| Wejahan | Papaya (Carica papaya), katuk (Sauropus androgynus), ketupuk, dadap serep (Erythrina variegate), widosari (Ipomea Mauritiana), luntas (Pluchea indica)<br>Tambahan:<br>Temulawak (Curcuma xanthorrihiza), kunir (Curcuma domestica), jambu (Psidium guajava), puyang (Zingiber zerumbet), gagan-gagan (Centela asiatica), tapak liman (Elephantopus scaber), nanas (petete/ daun muda), daun muda asam jawa. | Mother's breast milk problem<br>Diseases of the Women's Reproductive System | Internal/ Oral | adult | Daily |
| Paitan | Sambiroto (Andrographis paniculata Ness)<br>Tambahan:<br>Brotowali (Tinospora crispa L), kunyit (Curcuma domestica), puyang/ lempuyang (Zingiber zerumbet Smith) | Skin disease<br>Increasing appetite<br>Uric acid<br>Diabetes<br>Reducing colesterol | Internal/ Oral | adult | Daily |
| Daun papaya | Pepaya (Carica papaya) | Increasing appetite<br>Trombosit | Internal/ Oral | adult | Not daily/ request |
| Kunir putih | Kunyit putih (Curcuma domestica) | Breast cancer | Internal/ Oral | adult | Not daily/ request |
| Cekok | Tempe (Glicine soja), temu ireng (Curcuma aeruginosa), kencur (Campferia galangal), simbukan (Paederia foetida), pace (Morinda citrifolia), brambang merah (Allium cepa L.) | Increasing appetite<br>Intestinal worms | Internal/ Oral | child | Not daily/ request |
| Tapel | Sirih (Piper betle L), kemukus (Piper cubeba L), dringo (Acorus calamus), bengkle (Zingiber casumounar), asem (Tamarindus indicus) | Postpartum pain (but surgery is not allowed)<br>Cold intestine<br>Vaginal iritation | Eksternal | adult | Not daily/ request |
| Daun sirsak | Sirsak (Annona muricate), salam (Syzygium polyanthum) | Diabetes<br>Uric acid | Internal/ Oral | adult | Not daily/ request |
| Diabetes/ Kencing batu | Ciplukan (Physalis angulata), kencibeling (Strobilanthes crispa), imbo (Azadirachta indica), brotowali (Tinospora crispa L), bringos kucing (Orthosiphon aristatus) | Diabetes<br>Headache | Internal/ Oral | adult | Not daily/ request |
| Suroh | Sirih (Piper betle L), kunyit manga (Curcuma manga) | Leucorrhoea<br>Stomach cramps | Internal/ Oral | adult | Not daily/ request |
| Batu Ginjal | Meniran (Phyllanthus urinaria), oyot alang-alang (Imperata cylindrica), kencibeling (Strobilanthes crispa), bringos kucing (Orthosiphon aristatus) | Kidney problem | Internal/ Oral | adult | Not daily/ request |
| Suroh sereh | Sirih (Piper betle L), sereh (Cymbopogon citratus) | Breast cancer | Internal/ | adult | Not daily/ request |

mixture of galangal and mashed-rice extract water), *kunir kentel* (thick turmeric extract water), *kunir asem* (extract water of turmeric and tamarind), *temulawak* (curcuma), *cabe puyang* (Javanese chili), *suroh* (betel), *wejahan,* and *paitan* (bitter *jamu*). The main plants ingredients for these types of *jamu* is 18 plants such as ginger (*Zingiber officinale*), galangal (*Kaempferia galanga*), turmeric (*Curcuma longa),* tamarind (*Tamarindus indica*), curcuma (*Curcuma zanthorrhiza),* betel leaf (*Piper betle), katuk* leaf (*Sauropus androgynus*), *dadap* leaf (*Erythrina variegate*), *widosari* (*Ipomoea mauritiana*), guava leaf (*Psidium guajava*), *ketupuk* leaf, *ceplikan* (*Eucalyptus alba reinw*), *lempuyang* (*Zingiber zerumbet),* Javanese chili (*Piper retrofractum), beluntas* leaf (*Pluchea indica*), papaya leaf (*Carica papaya),* and bitter (*Andrographis paniculata).*

The second type of *jamu* produced by Ngadirgo herbal sellers is *jamu* by order. It is an herbal medicine made at the request of consumers to cure certain diseases. There are nine types of herbal medicine that are produced according to customer requests. They are papaya leaves, white turmeric, *cekok*, *tapel*, soursop leaves, diabetes, betel, kidney stones, and betel and lemongrass.

## Source of Knowledge of Medicinal Herbs

Knowledge about herbal medicine and plant material for *jamu* is obtained from generation to generation through the process of transfer of knowledge from parents who have traditionally worked as herbal medicine sellers. The process of sharing this knowledge is done by teaching directly to children and other family members about the method of processing ingredients into herbs, starting from how to select materials, choose and prepare equipment, to the techniques of concocting medicinal plants into herbs. The following is an excerpt from an interview with one of the herbal medicine informants who gained knowledge about how to process herbal medicine from parents who did work as herbal medicine sellers:

> *"previously I learned from my mother since she is also an herbal medicine seller. Later, my sister is also willing to be an herbal medicine seller, so that I taught her. Then my younger sister, Dian, also started to be an herbal medicine seller since 2 years ago. And the last one is my son in law, Probo, who is also an herbal medicine seller. So, a number of herbal medicine sellers here learned from my mother and me, since most of us are relatives." (Bu Rianti).*

As with other communities, some people in the Ngadirgo herbal medicine community still have close kinship. A mother named Mrs. Ngajiah (who died several years ago) is known by residents as a senior herbalist in the village. Mrs. Ngajiah is the one who lowers the knowledge of making herbal medicine not only to her children, but also to other families in the village. The method used by Mrs. Ngajiah in transmitting her knowledge is by directly involving her children in every herbal medicine processing. Starting from preparing and cleaning herbal medicinal plants and production tools in the afternoon, preparing places for herbal medicine containers at night, as well as the process of making herbal medicine composition at dawn. To get fresh herbal concoctions for consumers, herbal medicine is made around 3:00 in the morning. The process of transferring knowledge directly can take a week until the trainees can do their own processing of herbal medicine.

Another experience told by *Mbah* Suhana telling that before making herbal medicine independently, she had lived in the home of a family selling herbal medicine in the neighboring village, Wonolopo. Every day she was tasked with helping the family prepare plant material and process the ingredients into herbs. Bu Suhana was involved in all processes of making herbal medicine. From that experience and learning process, she then decided to make her own herbal medicine at her home. The sale of this herbal medicine can meet the needs of the household until now.

*Mbah* Suhanah also handed down her knowledge of the making of herbal medicine to several residents in Ngadirgo village. The

villagers come every day to Mbah Suhanah's house to learn to make herbal medicine and recognize the medicinal herbs used. At first Mbah Suhanah helped make the herbal medicine, until then the villagers can make and sell it themselves. Using this system, both Mbah Suhanah as a mentor and villagers get 50 percent each from the sale. After deemed to understand both manufacturing and selling processes, these villagers then independently produced and sold the herbal medicine.

## Knowledge about Ngadirgo Medicinal Herbs

There are 50 plants commonly used by Ngadirgo herbal medicine sellers in making herbs, both as a main ingredient and as an additional ingredient. The main ingredients of herbal medicine from plants are plants that must be present in herbal concoctions. While the additional ingredients is plant species used in herbal remedies, but can be selected or added to all or just one. Parts of plant used in herbal medicine includes leaves, rhizomes, stems, fruits, roots, and seeds. The following are medicinal herbs:

Galangal (Kaempferia galanga). This plant is the main ingredient in making herbal medicine named *beras kencur*. This plant can be boughte in the market, or planted in the yard. Galangal is believed by herbal makers to be very effective in curing children's illnesses such as coughing, colds and even to increase appetite. However, adults are also good at consuming this plant.

Ginger (Zingiber officinale)**.** This plant is used in the rhizome. In herbal medicine, ginger is not the main ingredient, but the additional one. Even so, ginger is used as a warm flavor on some herbal medicines such as *beras kencur*, *cabe puyang* and *suroh*. Because of its warmth, it can treat flatulence.

Turmeric (Curcuma longa)**.** Like ginger, turmeric is used in the rhizome. This plant is the main plant material in *jamu kunyit asem*. According to herbal medicine sellers in Ngadirgo, turmeric is a powerful medicine for treating various health problems inside the human body. Diseases like colic and gastritis can be cured using it. Turmeric which is made rather thick, and consumed regularly for three months will provide a faster healing effect.

Curcuma (Curcuma zanthorrhiza). This plant is believed to be able to cure liver disease or jaundice in the emic perspective of Ngadirgo people. By consuming ginger regularly, liver disease will be cured. Same with ginger, turmeric and galangal, the part that is used from ginger is the rhizome.

Lempuyang (Zingiber zerumbet). This plant is the main ingredient for *jamu cabe puyang* by utilizing the rhizome. For the sellers of herbal medicine in Ngadirgo, aches and pains in the body is a disease that must also be cured. Plant that is effective in healing it is *lempuyang*. Although the taste is very bitter, consuming one glass per day after it is processed is felt to provide healing for aches and pains in the body. This herb is especially widely consumed by adult men.

Betel (Piper betle). In the Ngadirgo community, this plant is called *suroh*. This plant species is also one of the types of herbal medicine produced by the seller of herbal medicine in this village. In Indonesian society in general, this plant is widely used as medicine. The part that is utilized is the leaves. The sellers of herbal medicine said that betel leaf is widely used to treat organs in women's stomachs. When mixed with mango turmeric, this herb can treat stomach cramps or even postoperative pain.

Tamarind (Tamarindus indica). This plant is used in parts of ripe fruit and has become a major part in *jamu kunyit asem*. The mixture of this fruit mixed with turmeric will reduce fat in the body and overcome body odor. Tamarind is also beneficial for women who are menstruating because it can reduce pain during menstruation.

Javanese chili (Piper retrofractum)**.** It's called chili but it's not like ordinary chili consumed daily by the public. The color is blackish brown. In some societies, this plant is specifically consumed as a medicinal ingredient or a mixture of food seasonings. This plant is used in the fruit. But this chili must first be dried before being used, to get the maximum benefit. The spicy taste is the main ingredient in making *jamu cabe pu-*

*yang*. Some informants acknowledged that the benefits of this plant were to improve blood flow and provide warmth to the body.

Sambiloto (Andrographis paniculata). In many variants of herbal medicine, Sambiloto is a type of herbal medicine that tastes very bitter. Because of its bitter taste, it is called *jamu paitan*. To become a medicinal herb, it needs some additional ingredients such as *brotowali* (Tinospora crispa) plants which also taste bitter. Before utilizing this plant, herbal medicine sellers usually dry the parts that will be used, namely leaves and roots. After being processed with other ingredients, the Sambiloto decoction provides benefits to cure various diseases such as skin problems (itching), gout, diabetes, and also increase appetite.

Papaya (Carica papaya). This plant is one of the main ingredients in *jamu wejahan* which is made daily by Ngadirgo herbal medicine sellers. In addition, this plant is also made herbal medicine specially ordered by the customer. The part used from the plant is the leaves. Initially this papaya herb is used for mothers who are breastfeeding because it can expedite the production of breast milk (ASI).

Luntas or beluntas (Pluchea indica). Like papaya leaves, this plant is also used in the type of *jamu wejahan*. Besides, the *luntas* plant is used as an additional ingredient in *jamu suroh*. Generally, part of plants that is considered to have efficacy are leaves. The benefits of this plant are to improve the quality of the immune system and facilitate breast milk. The sellers of herbal medicine usually get *luntas* that grow in the garden, but some people plant them in the yard of the house.

Dadap serep (Erythrina variegate). This plant is one of the plants that must exist in the *jamu wejahan*. The sellers of herbal medicine use the leaves to be mixed in herbs. In addition to expediting breast milk, this dadap serep plant can also relieve headaches. Because dadap serep is very rarely sold in the market, a number of herbalist sellers grow it in the yard of the house.

Brotowali (Tinospora crispa). This plant is an additional ingredient in *jamu paitan*, which is a type of daily *jamu* of Ngadirgo, but it is also used as additional ingredient in the type of *jamu* produced by customers' order. Usually customers order this special herbal medicine if they suffer from diabetes or kidney stones. According to the seller, diabetics must consume herbal medicine containing this *brotowali* plant every day, otherwise, the feet will swell. The taste of this plant is very bitter, especially when mixed in *jamu paitan* which uses the main ingredient of Sambiloto which is also bitter. Many sellers buy this material on the market because they don't have a lot of land at home to cultivate it.

Widosari (Ipomoea mauritiana). This plant is not widely used in making herbal medicine in Ngadirgo. Widosari is only found in *jamu wejahan* as the main ingredient. This type of plant is vines and the plant parts used are leaves.

Gagan-gagan or pegagan (Centella asiatica). In some communities, this plant is used as a source of nutrition by making it as a vegetable ingredient. But generally in Java, especially in Ngadirgo, this plant is part of *jamu wejahan* that has benefits for expediting breast milk. Some sellers suggest that during late pregnancy the mother consume *jamu wejahan* with a mixture of gotu kola to facilitate ASI production after giving birth.

Tapak liman (Elephantopus scaber). This plant is a type of wild plants that can be found in the yard and in the fields. By using leaves to the roots, this plant is mixed with various plant ingredients in *jamu wejahan*.

Ceplikan or ceplik sari (Eucalyptus alba reinw). In the making of *jamu* Ngadirgo, *ceplikan* can be found in the *jamu suroh*. The main part that is used is the fruit. Because *ceplikan* is part of *jamu suroh*, the benefits are mostly for women because it can overcome several female health problems. *Cepliksari* in *jamu suroh* is effective in treating vaginal discharge. Part of *cepliksari* used is the fruit, and can only be bought in the market.

Pineapple (Ananas comosus). This plant is known to the public as a fruit that has a good vitamin content. But in the herbal concoction, part of the plant used is the

young leaves. The leaves (called pineapple *petetet*) is used in *jamu wejahan*. However, during the discussion among herbal medicine seller group, the additional ingredient of pineapple leaves was still being debated, whether it could be applied or not.

Guava (Psidium guajava). This plant is categorized as additional ingredient for *jamu wejahan*. Parts of plants used are the leaves. Although the leaves can be used as medicinal ingredients, their use is limited or not too much. In Ngadirgo, to get guava leaves is very easy because some people plant it in their yards and gardens.

Bay leaf (Syzygium polyanthum). Bay leaf is widely used for food seasonings. Most traditional dishes in Indonesia use bay leaves to get a specific taste in food. In Ngadirgo, bay leaves not only function for food seasoning but also for additional herbal ingredients, but it is not always necessarily used. Some sellers add it to *jamu paitan*, but some others add it to special *jamu* ordered by patients, namely soursop leaf herbs which specifically treat cancer and reduce blood sugar levels.

White turmeric (Curcuma zedoaria). This plant is not widely used in herbal medicine. White turmeric is only used when there are requests from customers who suffer from cancer. Same with plants from the same family, the parts used are rhizomes.

Temu ireng (Curcuma aeruginosa). This plant can be found in *jamu cekok*. *Cekok* is an herbal medicine made according to the customer's request. The ingredients are useful for increasing a child's appetite. *Temu ireng* in the concoction of *jamu cekok* is one way to maintain the health of children since long time ago.

Kemukus (Piper cubeba). This plant is an important part of *jamu tapel*. This herbal medicine is widely used by women after childbirth. This type of herbal medicine is not for oral treatment but for external medicine. This herb is placed on the female sex organs to prevent itching problems on the skin.

Dlingo (Acorus calamus). In Javanese society, this plant is known as a medicine to cure diseases caused by spirits such as *sawan* in children. But in making herbal medicine, the leaves of this plant are used in herbal medicine for *jamu tapel* for the health of female sex organs.

Bengle (Zingiber casumounar). This plant is usually used together with *dlingo* to be crushed and placed on the forehead, ears, crown, hands and feet of newborn children to avoid the disturbance of spirits. As part of the *jamu tapel*, the part that is utilized is the rhizome part.

Temu kunci (Curcuma rotunda). This plant is an additional ingredient in *jamu suroh*. *Temu kunci* is widely used to cure female problems.

Ciplukan (Physalis angulata). This plant is used in herbal medicine for diabetes which can be ordered at any time by the customer. Plant parts used in this diabetic herbal medicine are leaves to roots. The ready-made concoction can be consumed by diabetics as much as a 600 ml bottle when just waking up in the morning and before going to bed. One bottle must be used up in a day.

Soursop (Annona muricata). Other plants that can be consumed to treat diabetes are soursop. Plant parts that are used are the leaves. This herbal concoction is not made daily but is made by request.

Imbo (Azadirachta indica A. Juss.). *Imbo* is a plant with large stems which leaves are used for the treatment of diabetes.

Keji beling (Strobilanthes crispa). This plant is still part of the herbal medicine for diabetes specially ordered by customers. Parts of the plant which are used are the leaves. *Keji beling* belongs to the bush category. This plant species is found in the village of Ngadirgo which is planted in houseyards. This is because these plants cannot be bought in the market.

Meniran (Phyllanthus urinaria). For herbal medicine sellers in Ngadirgo, this plant is one of the herbs that can be used as herbal medicine to cure kidney disease. This herbal medicine is only made by request, not produced daily.

Dawung or kedaung (Parkia roxburghii). Seeds are the main part that is used from this plant. *Dawung* seeds are usu-

ally mixed in *jamu cabe puyang*. Even so, not many herbal medicine sellers add them. The concoction of *dawung* and other ingredients in *jamu cabe puyang* is believed to treat fatigue and aches in the body. Another benefit is to increase appetite. Even so, the amount of seeds is not too much given in the concoction because it will taste bitter. If the dose of seeds added is just right, it will taste delicious.

Fennel (Foeniculum vulgare). This plant is used both as ingredients for food and medicine. In Ngadirgo, fennel is usually added to the concoction of *jamu suroh*. However, not many herbal medicine sellers use it as an additional ingredient because of its bitter taste. Fennel added to the *jamu suroh* is very good for women having female problems such as vaginal discharge.

Katuk (Sauropus androgynus). Katuk plant is also one of the types of plants that are widely used by Indonesia societies. Part of the plant used is the leaves. *Katuk* leaf is the main ingredient in *jamu wejahan*. *Katuk* leaf is widely known to have efficacies for launching breast milk for nursing mothers.

Cinnamon (Cinnamomum verum). This plant is widely known as a mixture of ingredients in snacks. Although not many herbal makers use it, some use it in *jamu paitan*. Part of the plant used is the bark. This material can only be bought in the market because it does not grow around the home.

Reeds (Imperata cylindrica). This type of plant is found in the wild around the house. The part used is the root which is usually called *oyot alang-alang*. It is added into *jamu* for kidney disease that is made by order.

Rice (Oryza sativa). This plant is the staple food of Indonesian people. But in jamu making, it is used as the main ingredient in *jamu beras kencur*. Mashed-rice is then mixed with rhizome of galangal. This herb is good for increasing appetite, overcoming the problem of bloating and even treating coughs.

White pomegranate (Punica granatum). In the making of *jamu suroh*, this plant is used as an additional ingredient. It can be used or not. White pomegranate is considered to be able to cure vaginal discharge in women, the same as other plant ingredients in the *jamu suroh*.

Gedang (banana) sobo (Musa paradisiaca). In Indonesian society, banana trees are plants that have many benefits from fruits, stems to leaves. In making *jamu wejahan*, one of the additional ingredients is young leaves of *gedang sobo*. It is believed to be able to fertilize the womb. However not many people use it in *jamu wejahan*.

Majaan or manjakani (Quercus infectoria gall). This plant can be found in *jamu suroh*. It is an additional ingredient, so that not many sellers use it.

Kumis kucing (Orthosophon aristatus). This plant has long been a popular medicinal plant in society. In herbal medicine, *kumis kucing* is herbal ingredient for special-ordered herbal ingredients for diabetes and kidney disease. The part of the plant used is the leaves. Some sellers plant it on their yard. But the challenge for this plant is dry season.

Ketupuk. This plant is also commonly called *dupuk* or *dupuk* leaves. Dupuk leaf is one of the additional ingredients for *jamu wejahan* which has the efficacy of female problems.

Lemongrass (Cymbopogan citares). In Ngadirgo, this plant is easily found in the house yard. Lemongrass can grow wild or intentionally planted. Lemongrass is used in special herbs mixed with betel leaves. This is why this herb is usually called *suroh sereh* (betel and lemongrass). According to the informant, the betel and lemongrass herbs can treat breast cancer.

Shallot (Allium cepa). This plant is actually included as a food seasoning. But in the practice of making herbal medicine, especially *jamu cekok*, it is usually added. *Jamu cekok* has the efficacy to increase appetite and also treat intestinal worms.

Cloves (Syzygium aromaticum). In *jamu suroh* which is produced every day, cloves are usually added as a flavor enhancer. Clove is one of the ingredients that must be present in *jamu suroh*.

Noni (Morinda citrifolia). The part that is used in this plant is the fruit or com-

monly called *pentil pace*. This plant is an additional material for making *jamu cekok*.

Sari rapet / pepet (Kaempferia rotunda). Just like cloves, *rapet* wood is also an ingredient for *jamu suroh*. However, rapet wood is additional, not necessarily exist in herbal concoctions. This material is usually bought at markets around Ngadirgo.

Simbukan (Paederia foetida). Like shallot, *pentil pace* and soy, *simbukan* leaf is also the main ingredient in *jamu cekok*. *Simbukan* leaf is bought at the markets around Ngadirgo.

Tempe soybean (Glycine soja). In *jamu cekok* produced by herbal medicine sellers in Ngadirgo, stale tempe is the main ingredient. This tempe is produced from fermented soybean seeds. The stale tempe is considered a panacea for children's health problems.

Binahong (Anredera cordifolia) is a plant that is commonly used in special herbs according to customers' requests. Although not all sellers use this plant, but the researchers found a seller who intentionally planted this plant in front of his house as a backup material if at any time the customer ordered the herbal medicine.

The herbal medicinal plants used in making Ngadirgo herbal concoctions are very diverse. This can be seen in the diversity of species or types of plants and parts used. In addition, the findings also show that knowledge of plants that have good efficacies and are useful for health is also a lot. It includes the knowledge about how to use it, or in the science of medicinal plants, ethnobotany, is commonly referred to as a route of administration. In the context of this research, this concept can explain the knowledge about the classification of locations or methods / ways the plants are consumed or applied. If referring to table 1, it is referred to as an external or internal use. The use of herbs in concoction also regulates who can consume the herbs, whether the herbs are suitable for adults or children. The diversity of these plants makes sellers and customers have many choices of ingredients of herbs that will be consumed.

The diversity of medicinal plants can also be seen from the source from which Ngadirgo herbalist sellers access these plants. Most of these plants are bought from the local market. There are many stalls in the market that sell medicinal ingredients both fresh and dried and sold in packages.

**Figure 2.** Herbal ingredients sold at local market stalls

**Figure 3.** Bu Suhana showed *binahong* plant planted in front of her house.

In addition, there are several species of plants that are deliberately planted in the yard and in the garden, such as ginger, turmeric, lemongrass, papaya and others. Even so, this plant species is also insufficient in number for the daily production needs of herbal medicine groups, so that the rest still have to be bought from the market. The plants that are usually cultivated at home

are types of plants as medicinal ingredients ordered by consumers. Such as kumis kucing and binahong for kidney and diabetes sufferers.

## CONCLUSION

Local knowledge about medicinal plants used in *jamu* Ngadirgo is obtained from generation to generation from their parents. There are 50 plants commonly used in making herbal medicine in Ngadirgo both as the main ingredient and the additional one. The main ingredients of herbal medicine from plants are plants that must be present in herbal concoctions, while the additional ingredients is plant species used in herbal remedies, but can be selected or added to all or just one. Plant parts used in herbal medicine are leaves, rhizomes, stems, fruits, roots, and seeds. Of the 50 medicinal herbs used, these are then processed into 17 kinds of herbs with various stages. This research can be a contribution in preventing the loss of local knowledge related to plants and medicine. This reason is the basis of efforts in writing knowledge of herbal medicine as a traditional Javanese medical identity.

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