The Study of Jamu Plants Ethnobotany in Homegarden and its Implications to Medicinal Plant Conservation in Semarang

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Abstract. Herbal plants are ultimate ingredients for jamu. Most of the herbal medicinal plants are found in the market. However, there are also several types of plants cultivated around the house as a complement to the herbal ingredients. The research was conducted in Ngadirgo Village by using qualitative methods. The jamu sellers produce their jamu in small-family business. Although it is included in small industry, jamu is intensively produced every day. On certain days, the jamu seller makes special jamu for specific consumer's illnesses, so that they need other plant ingredients which is possible not available in the market. In fulfilling these ingredients, the producer utilizes the home yard and gardens around the house to plant the herbs. By planting these plants around the house, the jamu sellers not only obtain benefit economically and get fresh ingredients, but also have implications to the conservation of medicinal plants for the purpose of sustainable use.

Keywords: Conservation; Ethnobotany; Home garden; Jamu; medicinal plants; Semarang.

1. Introduction

In some literature, Indonesia is mentioned as one of countries with number of prodigious biodiversity [1][3]. According to Gaston and Spicer [4] that biodiversity is the variety of life and refers collectively to variation at all levels of biological organization, and this is including diversity of flora. Plants are used by people with various purposes such as medicine in herbal drink. In Indonesia particularly in Java, herbal drink is usually mentioned as jamu. Jamu is healthy drink that is made from various species of plants which is considered containing medicinal substance. The local knowledge of jamu and preparing method is culturally transmitted to the next generation. This herbal drinks are daily prepared by sellers and market it by carrying around village or to the determined location.

In many cultures in the world also have herbal drink culture as practiced in Java. In South America, Ecuador people are very familiar with a typical drink called *horchata*, that contains mixture from various endemic plants [5]. The use of tea leaves as traditional drink could be found and very popular in China. However, the tea drink with additional mixture of medicinal plant species is specially used as medicine as called with name *liáng chá* [6]. In contrast with the two countries earlier, in Pakistan, herbal drink could be distinguished by the preparation methods, such as herbal tea, herbal infusion, herbal decoction and herbal fruit juice [7].

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1.1 The jamu ethnobotany

For further study concerning of the traditional knowledge and utilization of plants as jamu ingredient could apply a special science as ethnobotany. In scientific matter, ethnobotany is interdisciplinary study from many perspectives such as anthropology and botany. Due to various scientific knowledge embedded in this study, therefore it is not only focusing on plant aspect, but also examining cultural aspect of people who utilize the plant. In other reference, Nolan & Turner [8] wrote that ethnobotany is the relationship between people and flora. In this ethnobotanical research of jamu, it is more focusing on how local people, the jamu seller, understand and utilize some various certain medicinal plant for making healthy decoction. Other concern is understanding of ways the sellers obtaining the plants or ingredients, whether they must purchase it in the market or plant it surrounding the house or in a special home garden.

1.2 Home garden

As mentioned above that in Java, some medicinal plants are planted in home garden. Home garden could be a space for subsistence economic purpose by planting useful plants or domesticating animals. Ninez [9] formulated concept of home garden as:

> *the household garden is a small-scale production system supplying plant and animal consumption and utilitarial items either not obtainable, affordable, or readily available through retail markets, field cultivation, hunting, gathering, fishing, and wage earning. Household gardens tend to be located close to dwellings for security, convenience, and special care. They occupy land marginal to field production and labor marginal to major household economic activities. Featuring ecologically adapted and complementary species, household gardens are marked by low capital input and simple technology*.

In Java, home garden is as also called ‘pekarangan’. According to Soemarwoto and Conway [10] that *pekarangan* has similar meaning with kitchen garden, dooryard or backyard. It is usually planted variety flora that can be used as kitchen herbs. There are also plants domesticated as source of popular/home medicine.

1.3 Conservation

In general, conservation is comprehended as effort to protect natural resources such as flora and fauna from damaged and endangered which is caused by human activities. This concept arose since the existence of concern among scientists toward biodiversity loss. The conservation of biodiversity aims to be effort utilizing sustainably natural resources both access and the use of relevant technology [4], [11]. Medicinal plants as one of the resources also need to implement conservation effort, so that direct value use of the plant could remain used by people in the future [12]. The result of conservation effort is not only protecting the plant species from extinction but also preventing of loss of traditional ecological or medical knowledge [13]. Plants and local knowledge are very related and mutual support. It is formulated by Maffi & Woodley [14] as biocultural diversity: all of its manifestations biological, cultural, and linguistic which are interrelated within a complex socio-ecological adaptive system.

2. Methods

Qualitative method was used to examine the research focus that is the traditional knowledge of medicinal plants as ingredients of jamu which planted in home garden by the sellers of jamu herbal drink. Interview and observation technique were applied to understand and observe various kinds of herbal drink produced and the location where the plants are domesticated. Another technique is freelisting that helps researcher in detailly writing the list of plant such as vernacular name of plants as well as ultimate and additional plants ingredients. The research was conducted in Ngadirgo Village, Mijen District, The City of Semarang. There were 15 informants took part in this research and they are all women and member of a group of jamu seller called Mugi Waras Pandean.

3. Result and Discussion

3.1 General overview of research location

Ngadirgo village is located in the southwest of Semarang City. It is administratively included in Mijen District area. This district is also known as one of ultimate industry area since the existence of some national and big factories. However, the Mijen still has extensive rice fields, garden and forest. According to the BPS Kota Semarang [15] specially in Ngadirgo, there are almost 500.000 hectare for rice fields and dry land by 4.9 km2 village area in total. These lands are utilized by people for planting various plant for subsistence and commercial purposes.

Another data from BPS 2019, number population in Ngadirgo is 5749 people, with the number of male population is 3065 and 2684 female. People works in various number of occupation categories both formal and informal sectors. Selling jamu is one of the business that run by the people of Ngadirgo. Even though selling jamu is a small household enterprise, this business contributes in obtaining income for fulfilling family needs.

3.2 The herbal drink of jamu

The jamu sellers in Ngadirgo produce the herbal drink traditionally in their house. There are two types of jamu in the aspect of time production and marketing. The first type of jamu is daily produced and selling it by carrying to the certain location. The selling location is determine in monthly meeting of the group. So that all jamu sellers will have specific area to sell their herbal drink. The selling area could be in the traditional market, factory, office, and residential area. The second type is jamu that produced by customer's request. It is also according to the specific illnesses or complaints.

Table 1. Name of jamu

Name of jamu decoction	Ultimate plant and additional plant as jamu ingredient	Time Production
Beras kencur	Beras (*Oryza sativa)*, kencur (*Kaempferia galangal)*	Daily

	Additional plant: Jahe (*Zingiber officinale)*	
Kunir kentel	Kunyit (*Curcuma domestica*)	Daily
Kunir asem	Kunyit (*Curcuma domestica*), asam jawa (*Tamarindus indica*)	Daily
Temulawak	Temulawak (*Curcuma xanthorrihiza*)	Daily
Cabe puyang	Puyang/lempuyang (*Zingiber zerumbet* Smith), cabai jawa (*Capsicum frutescen* L) Additional plant: Jahe (*Zingiber officinale)*	Daily
Suroh	Sirih (*Piper betle* L), luntas (*Pluchea indica* Less), ceplikan (*Eucalyptus alba reinw)*, jambu (*Psidium guajava* Linn), cengkeh (*Syzygium aromaticum)* Additional plants: Majaan/manjakan (*Quercus infectoria* Gall), kunyit (*Curcuma domestica*), jahe (*Zingiber officinale)*, adas (*Foeniculum vulgare*), temu kunci (*Curcuma rotunda*), , kunyit (*Curcuma domestica*), delima putih (*Punica granatum*), sari rapet/ kayu pepet (*Kaempferia rotunda)*	Daily
Wejahan	Papaya (*Carica papaya*), katuk (*Sauropus androgynus*), ketupuk (unidentified), dadap serep (*Erythrina variegate*), widosari (*Ipomea Mauritiana)*, luntas (*Pluchea indica*) Additional plants: Temulawak (*Curcuma xanthorrihiza*), kunir (*Curcuma domestica*), jambu (*Psidium guajava*), puyang (*Zingiber zerumbet)*, gagan-gagan (*Centela asiatica*), tapak liman (*Elephantopus scaber*)	Daily
Paitan	Sambiroto (*Andrographis paniculata* Ness) Additional plants: Brotowali (*Tinospora crispa* L), kunyit (*Curcuma domestica*), puyang/lempuyang (*Zingiber zerumbet* Smith)	Daily
Daun papaya	Pepaya (*Carica papaya)*	Request
Kunir putih	Kunyit putih (*Curcuma domestica*)	Request
Cekok	Tempe (*Glicine soja*), temu ireng (*Curcuma aeruginosa)*, kencur (*Campferia galangal*), simbukan (unidentified), pace (*Morinda citrifolia*), brambang merah (*Allium cepa* L.)	Request
Tapel	Sirih (*Piper betle* L), kemukus (*Piper cubeba* L), dringo (*Acorus calamus*), bengkle (*Zingiber casumounar*), asem (*Tamarindus indicus*)	Request
Daun sirsak	Sirsak (*Annona muricate)*, salam (*Syzygium polyanthum)*	Request
Diabetes / Kencing batu	Ciplukan (*Physalis angulata)*, kencibeling (*Strobilanthes crispa*), imbo (*Azadirachta indica*), brotowali (*Tinospora crispa* L), bringos kucing (*Orthosiphon aristatus*)	Request
Suroh	Sirih (*Piper betle* L), kunyit manga (*Curcuma manga)*	Request
Batu Ginjal	Meniran (*Phyllanthus urinaria)*, oyot alang-alang (*Imperata cylindrica)*, kencibeling (*Strobilanthes crispa*), bringos kucing (*Orthosiphon aristatus*)	Request
Suroh sereh	Sirih (*Piper betle* L), sereh (*Cymbopogon citratus)*	Request

Most of plants as ingredients of jamu are bought in the traditional markets. However, there are some of the plants are deliberately domesticated in the home garden as supplementary materials for jamu. The seller of jamu are usually planting the jamu plants in the house such as the dooryard and backyard. Furthermore, the plants are also cultivated in the garden, rice field, even in the pathways to the garden as local people call *galengan*. In the rice field, people usually use the free space in field house to cultivate aerial plants and also use the land of rice field boundaries some other plants. The following is the list of plants which are domesticated in surrounding the house.

Tabel 2. Name of jamu plants domesticated in home garden

Name of plants	Name of jamu	Homegarden	Planted / Wild plant
Sirih (*Piper betle* L)	Suroh, Wejahan	House yard	Planted
Sambiroto (*Andrographis paniculata* Ness)	Paitan	House yard	Planted
Dringo (*Acorus calamus*)	Tapel	House yard	Planted
Bengkle (*Zingiber casumounar*)	Tapel	House yard	Planted
Kecibeling (*Strobilanthes crispa*)	Jamu diabetes, jamu ginjal	House yard	Planted
Imbo (*Azadirachta indica)*	Jamu Diabetes and Jamu ginjal	House yard	Planted
Jahe (*Zingiber officinale)*	Beras Kencur, Cabe Puyang, Suroh, Wejahan	House yard	Planted
Puyang/Lempuyang (*Zingiber zerumbet* Smith)	Cabe Puyang	House yard	Planted
Ciplukan (*Physalis angulata)*	Jamu Diabetes	House yard	Planted
Luntas/Beluntas (*Pluchea indica* Less)	Suroh, Wejahan	House yard	Planted
Kunyit (*Curcuma domestica*)	Kunyit Asem, Kunyit Kentel, Suroh, Paitan	House yard	Planted
Ketupuk	Wejahan	House yard and *Galengan* (pathway in the field)	Planted
Binahong (*Basella alba*)	-	House yard	Planted
Kumis kucing / Brengos kucing (*Orthosiphon aristatus*)	Jamu untuk diabetes	House yard	Planted
Brotowali (*Tinospora crispa* L)	Jamu Paitan, Jamu Diabetes	House yard	Planted
Sirsak (*Annona muricate* L)	Jamu Daun Sirsak	House yard	Planted
Nanas (*Ananas comocus*)	Jamu Wejahan	House yard	Planted

Kates (*Carica papaya*)	Jamu wejahan	Field (*Galengan*)	Planted / Wild
Jambu batu (*Psidium guajava*)	Wejahan, Suroh	Field (*Galengan*)	Planted
Dadap serep (*Erythrina variegate*)	Jamu Wejahan	Pathway in rice field (*Galengan*)	Planted
Katu/Katuk (*Sauropus androgynus*)	Jamu Wejahan	Field	Planted / Wild
Widosari (*Ipomea Mauritiana)*	Jamu Wejahan	Field and *Galengan* (pathway in the field)	Wild
Temulawak (*Curcuma xanthorrihiz*a)	Jamu Wejahan, Jamu Temulawak	Field and House Yard	Planted
Serai/ Sereh (*Cymbopogon citratu*s)	Jamu Suroh Sereh	Pathway in rice field (*Galengan*)	Planted
Tapak Liman (*Elephantopus scaber*)	Jamu Wejahan	Field dan *Galengan*	Wild
Asam Jawa (*Tamarindus indica*)	Jamu Kunir Asem	Field (*Galengan*)	Planted
Pegagan (gagan-gagan) (*Centela asiatica*)	Jamu Wejahan	Field (*Galengan*)	Wild

The reasons why the seller of jamu cultivates the plants in their garden that some plants as ingredients of jamu are not available in the market so they have to plant it in the house. Another reason is planting in the house they do not have to spend more money for additional materials. They also can find the fresh plants. The key of jamu is in its taste (*rasa*) and efficacy (*mandhi*), and to obtain this best quality of jamu is using the best plants. The advantage of jamu plants in house is easy to access if there is a consumer requests a special jamu for his illness. Medicinal plant garden is a also learning source to new seller or other people who desire to know more about particular species of plants that could be produced as medicine and additional materials in making jamu.

3. Conclusion

Currently many conservation themes are discussed and studied. It is also included studies of medicinal plants and the utilization of home garden. The people of Ngadirgo still consider that biodiversity such as medicinal plants are important to the human life. While still utilizing the household garden as a place for cultivating medicinal plants makes an impact to the environmental and cultural conservation. It can contribute to protect the extinction of plants and the loss of traditional environmental and medical knowledge. The material plants of jamu still need to be recorded since it is one of Javanese healthy cultural identity.

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