





Preventing COVID-19 with Natural Ingredients: Community Knowledge to Increase Endurance During the Pandemic in Central Java

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Abstract. One of the world's challenges in the health sector is the COVID-19 pandemic. Although this pandemic has passed, no one can be sure that a pandemic like COVID-19 will not happen again. The most important thing is to learn from the pandemic for the next health challenge. During a global pandemic, maintaining and sustaining immunity is very important. This study aims to understand, especially the knowledge of the community, the necessity of utilizing natural ingredients in the form of drinks and food to maintain health during the COVID-19 pandemic. This research used qualitative methods for two months in 2021 in 14 districts/cities in Central Java, Indonesia. Interviews, observation, and documentation were used to obtain data related to knowledge about food and beverages from natural ingredients consumed during the pandemic. This technique was carried out strictly concerning the health procedures in force then. The results showed that the community prevented exposure to COVID-19 disease by returning to their local knowledge by utilizing natural ingredients available in the vicinity. Mini-natural ingredients are made into drinks and food concoctions that increase endurance. It can be concluded that, especially at the beginning of the pandemic, when people still had minimal information about the COVID-19 disease, they utilized various kinds of natural ingredients in the framework of local knowledge obtained from generation to generation to deal with it.

Keywords: COVID-19, medicinal plant, natural ingredients.

1 Introduction

One of the world's challenges in the health sector is the COVID-19 pandemic. Although this pandemic has passed, no one can ensure that a pandemic like COVID-19 will not happen again. The most important thing is to learn from the pandemic for the next health challenge during the global pandemic; maintaining endurance is very important for preventing the body from being infected with the disease [1]. One of the

cheap and affordable ways is the use of natural ingredients in traditional medicine, which is a practice that has existed since the ancestors were passed down from generation to generation. These natural ingredients may include using medicinal plants or plant extracts to achieve the required health, including the immune system [2]. During the pandemic, traditional medicine is also considered to be able to prevent and treat COVID-19 symptoms in addition to modern treatment provided by government health services. Traditional medicine is considered to provide efficacy, in addition to the assumption that biomedicine has shortcomings in offering rapid solutions to diseases and the limited availability of medicinal materials [3]. One of the most effective drugs is the use of medicinal plants.

The utilization of medicinal plants increased during the COVID-19 pandemic. In research, Khadka et al. [4] mentioned that Nepalese people use 60 types of plants. These plants are taken from home yards and consumed during lockdown at home. In Nepalese society, the most widely consumed plant associated with the potential to prevent COVID-19 is *Zingiber officinale*.

According to Pieroni et al. [5], in China, plants or plant extracts that are sought after and consumed by the public are banlangen roots (*Isatis tinctoria* L. or *Strobilanthes cusia* (Nees) Kuntze). In addition, plant-based foods and drinks such as hot tea (*Camellia sinensis* (L.) Kuntze), and porridge important, made with yam (*Dioscorea oppositifolia* L.), longan (*Dimocarpus longan* Lour.), date (*Ziziphus jujuba* Mill.), or wolfberry (*Lycium barbarum* L.) were consumed during the pandemic.

Pieroni continued that in European societies during lockdown, people are advised by medical professionals to regularly consume vegetables, fruits, and foods that have a mixture of spices such as cinnamon and ginger, as is the case in Italy. While in Spain, people consume a lot of fruit juice and tea. This article explores how the community's response to the COVID-19 pandemic and the community's knowledge of this medicinal plant is traditionally used to increase endurance during the pandemic. The community believes it can strengthen endurance and increase immunity to disease by intensively consuming the herb from this plant

2 Methods

The method used in this research is qualitative research method. Qualitative methods are used to understand the natural setting of social phenomena. It answers the research subject's meaning, experience, concept, and thoughts about a social phenomenon

This research was conducted from May to June 2021 in 14 regencies/cities in Central Java in both rural and urban areas. These districts include Semarang City, Semarang Regency, Batang Regency, Pekalongan Regency, Brebes Regency, Demak Regency, Wonosobo Regency, Kebumen Regency, Banjarnegara Regency, Sukoharjo Regency, Klaten Regency, Tegal Regency, Pemalang Regency, Kudus Regency. At the beginning

of 2021, Central Java is the third-highest province in Indonesia, whose citizens are infected with COVID-19, with the number of confirmed positive coronavirus 141,514 cases at the beginning of February 2021.

This research focuses on community knowledge and responses to COVID-19, including community knowledge in increasing immunity by utilizing natural ingredients in concoctions and food. The subject of this research is the people of Central Java. The number of informants who participated in this study was 68, with 27 people exposed to the coronavirus. Participants consisted of various age groups, education levels, occupations, and genders. Informants can be people who have relatives who have cases of COVID-19 infection or the general public, including community leaders.

In qualitative research, it is common to use interview, observation, and documentation techniques to obtain data. The interview technique is particularly used to reveal knowledge about how people's knowledge and responses to COVID-19. The research applied two forms of interviews: offline and online. Online interviews had to be conducted because, during the research period in June-July 2021, the government implemented the PPKM Level 4 period in various city districts in Central Java, so it was not possible to travel and interview in person.

The observation technique is used to understand the situation and conditions of the community during the pandemic, especially observing patient care patterns at home. The documentation technique is to obtain data from other sources, such as books, research results issued by the government, and researchers, including sources from the internet.

This process involved 14 students and alums from various places in Central Java as enumerators in their respective locations. They conducted research activities while following strict health protocols.

3 Results and Discussion

3.1 COVID-19 is a supernatural disease that has no form: Community knowledge about COVID-19

People still cannot understand that diseases can shake the world in this sophisticated and modern era, and humans cannot anticipate them. Evidence of the world's unpreparedness and failure to anticipate the emergence of COVID-19 is that humans took a long time to find a vaccine. Until then, victims from various countries fell. The public views the difficulty of handling COVID-19 as almost the same as the European Spanish flu pandemic in 1918, even though the time difference is more than 100 years. Pandemics will happen again, but it cannot be predicted when and how severe it will be, just like COVID-19 and the Spanish flu [6].

However, there are still people who do not believe that this virus exists. There are still people who have doubts that the danger of this virus is real. People in society will believe an event if they feel it directly (DNW., 17 years old. Gunungpati Semarang, June 21, 2021). Another informant also admitted that people still think this virus does not exist (NIA., 21 years old. Pemalang June 28, 2021). This sense of uncertainty about the existence of this virus is because COVID-19 is considered a supernatural disease that is not visible to the naked eye, has no form, has no shape, and also has no color, which is different from other diseases such as chickenpox and other diseases (NS, 51 years old. and VWK., 20 years old. Paningggaran Pekalongan).

“The problem is that if you have never felt the symptoms of orange, you must not be confident, if you have felt it and then you have a positive result, you will be more confident. Maybe, people have different opinions. I want to believe in the existence of Covid, (SS, 29 years old. Gebog Kudus)”.

The above understanding also occurs in other societies in the world. At the pandemic's beginning, many understood that COVID-19 was a conspiracy carried out by certain parties for economic and political purposes [7]. People are more concerned with understanding the pandemic as part of political and economic practices. Such misinformation is described as impacting public adherence to preventive measures [8], [9], [10].

About three or four months after the new coronavirus began to spread in Wuhan, China, it entered Indonesia. At that time, people began to gain knowledge about COVID-19 from information conveyed by the government. People are asked to be aware of its spread because it is a deadly disease. Although this virus is considered dangerous, there is no need to fear it. As long as a person has a good immune system, they will avoid it. If someone has been exposed but their immune system is good, they will recover faster.

3.2 Natural ingredients for fighting COVID-19

The people of Central Java consume various drinks and foods to prevent exposure to the coronavirus. However, many people also consume these various drinks to cure COVID-19.

Herbal drinks consumed by the community come from local knowledge in the form of commonly sold herbs and concoctions from plants commonly consumed in the family.

"In the past, when I first started covid, I ordered from the herbalist that had elements of ginger, kunir, then what, lemongrass, basically 4 kinds. Every 2 days I asked for 1 bottle, 1 bottle of it. He said it was for power, for the body's immunity, for health. I used to consume it often. But now I rarely consume it anymore, just once in a while".

It is cheap and easily accessible and provides immunity to the body:

“We buy it but we have a subscription. If we make it ourselves, sometimes we don't make it, Mba. We're tired, we want to rest when we get home. It's also cheap to buy, only one bottle of aqua is 5000 rupiah. It's affordable. Yes, ginger, kencur, lemongrass, kunir. That, that's reportedly good for power, what for health, to maintain immunity, yes for health lah. It's also fresh, it's not expensive. It's also affordable for us, only 5000, two glasses is not bad”.

The family prepares independently and varies:

“It's like boiling water and then adding ginger, lemongrass, and honey. Same with lemon. The water is boiled, then the lemongrass and ginger are crushed and the lemon is sliced. No (squeezed). Sliced, he'em (sliced and then put into the herb). No (not herbal medicine). I rarely do it, but my mom does it every day, and my brother does it every day. Simbah is just hot water and honey”.

Ginger concoction is considered very good for people with COVID-19 because ginger's warm nature will reduce nasal congestion symptoms, give a warm effect on the body, and make the throat more pleasant.

Beverages include bay flower tea, sweet tea, water, honey, cow's milk, and herbal drinks. How can you make food more with the boiled process? Alternatively, if you do not get the desired herbal concoction, it is usually replaced by warm tea water mixed with antangan candy and ginger candy. This tea is also believed to increase endurance.

Coconut water drink has properties as an electrolyte that can be consumed if it lacks fluids or drinking. However, it must be noted that the drinking intensity does not need to be too high because it will result in less efficacy and ineffectiveness.

Table 1. Natural ingredients concoction

Natural ingredient concoction	Processing method	Expected efficacy
Lemongrass, ginger,	crushed, boiled until boiling, added palm sugar (<i>gula aren</i>)	keep your body fit and not weak
Honey		
Ginger, lemongrass, <i>secang</i>	Boiled, added with palm sugar. Consumed at night before bedtime	Enhances the body's immunity
Ginger	Ginger is ground, boiled and honey is added. Consumed while still warm. Although not consumed every day	Increases body resistance
<i>Secang</i> , ginger, tamarind, cloves	Boiled	Increases body resistance
Water	Warm, consumed warm in the morning and at night.	Drink plenty of water

		Avoid drinking cold water and ice to avoid coughing and colds. In addition, because ice lowers the ph and covid, according to my father, can live in a low ph like ice.	
<i>Wedang jahe</i> (ginger stew)		Grilled, boiled	
Temulawak drink		<i>Laos, kamijara</i> , ginger, temulawak, coffee, jamu-jamu pokonya traditional powders have been made into powders so that they are ready when you want to just mix them. which one is suitable.	
<i>Wedang jahe, temulawak, temuireng</i>		For the ingredients themselves, it is from nature how to prepare it powdered or ground for daily drinking	
Lemongrass ginger herb			
Turmeric ginger herb		Blended with lemongrass, ginger, turmeric, garlic, lemon, washed and boiled.	Maintain body resistance
Jamu concoction)	(various)	<i>kunir</i> herb, <i>temulawak</i> , <i>temuireng</i> , <i>kencur</i> , boiled	
Serbad Concotion	Concotion	brown sugar is the same Javanese tamarind. given hot water, then stir	
Ginger concotion	concoction	ginger boiled with kamijara (lemongrass) and coconut sugar until it boils after that we pour it into a glass and then drink it, every 2 days	Provides healing and avoids disease
Ginger concotion	concoction	A concoction of ginger, and turmeric. Ginger boiled with brown sugar	
Ginger concotion	concoction	Ginger is burned, peeled and crushed, then boiled and added with lemongrass leaves.	

Ginger concoc- tion	The ingredients are ginger, turmeric, and <i>kamijara</i> , and they are boiled until they boil, add a little brown sugar and drink	
Lemon juice	Oranges are cut into pieces and then we pour water and precipitate. for a while. breakfast lunch dinner	
Coconut water	coconut shredded, lime added, honey one spoon, half salt Spoon. Before drinking it, you must recite prayers and sholawat. It can also be water young coconut with lime with honey	So if the head water Young people have their own properties, as electrolytes, right, if for example they are lacking in electrolytes. I don't drink enough liquid, I drink young coconut water. But don't keep taking medicine drinking young coconut water doesn't have that effect.
Red ginger herb	Ginger is ground and boiled, can be consumed 1 to 2 times a day in the morning and evening.	Good for people affected by COVID-19
Red ginger herb	It is crushed by blending, then the water is taken by filtering. But it can also be boiled.	
<i>Mpon-mpon</i>	The <i>mpon mpon</i> concoction can consist of ginger, lemongrass turmeric, mixed with coconut sugar as a sweetener, and then boiled in a rather large container so that it can be drunk at any time.	
<i>Wedang jahe, wedang uwuh</i> concoction	A concoction that is a mixture of ginger, lime, and honey as a sweetener	
No-sugar warm tea	Sometimes added and ginger <i>antangan</i> candy	Keeps blood sugar from getting high
Ginger	Ginger is added with sugar and milk. It is made by boiling ginger, after which ginger water is taken.	increase the body's power to avoid viruses

	It is mixed with sugar and milk	
<i>Wedang sirih</i>	Boiled	antibiotics
Garlic	Grated lemon juice added	boosts our immunity
Drinks such as bay flower tea with the addition of water, honey, and cow's milk.		Consuming during self-isolation
<i>Alang-alang</i> and ginger	Ginger, reeds just boiled and filtered I usually drink it when my body feels unwell.	
<i>Kunir</i> Concoction	<i>kunir, temulawak, temu ireng, kencur</i> are boiled	

From the table above, it can be understood that people use various natural materials available in their environment to prevent exposure to COVID-19 disease. These materials can increase the body's resistance as the main prevention source. There are 19 plants used, namely lemongrass (*Cymbopogon citratus*), ginger (*Zingiber officinale*), secang (*Biancaea sappan*), tamarind (*Tamarindus indica*), cloves (*Syzygium aromaticum*), temulawak (*Curcuma zanthorrhiza*), temu ireng (*Curcuma aeruginosa*), tea (*Camellia sinensis*), betel (*Piper betle*), garlic (*Allium sativum*), bunga telang (*Clitoria ternatea*), alang-alang (*Imperata cylindrica*), kunir (*Curcuma longa*), kencur (*Kaempferia galanga*), lime (*Citrus × aurantiifolia*), laos (*Alpinia galanga*), coffee (*Coffea*), coconut (*Cocos nucifera*) and kamijara (*Cymbopogon nardus*). These plants are also widely used as traditional medicinal ingredients in Javanese society. According to the table above, these plants are consumed separately or mixed with other plants or ingredients in various concoctions.

The community widely practices efforts to increase endurance by using natural ingredients such as plants during the COVID-19 pandemic. These efforts are considered effective for preventing and treating symptoms related to COVID-19 [11], [12], [13].

In the table above, it can be seen that various types of plants and herbs that are considered medicinal are consumed by the community to prevent and cure COVID-19. The ginger plant (*Zingiber officinale*) was widely consumed during the pandemic in Central Java. Ginger plants have anti-inflammatory and immunomodulatory effects, so they effectively prevent and treat COVID-19 symptoms [14], [15].

3.3 Eat everything: food consumption during the pandemic

The foods consumed are also easily obtained and available around the house. The point is to maintain a diet. Eat nutritious food with adequate portion size three times a day. Self-prepared food must be guaranteed to be of good hygiene, and fast food must be

avoided. Changing food consumption patterns also occurred in America during the pandemic, with a significant decrease in fast food consumption [16].

The food consumed is also based on the content contained in the food. Foods consumed are foods that contain carbohydrates (rice and noodles), protein (chicken, tempeh, and eggs), and vitamins (vegetables and fruits). In addition, it also reduces the consumption of oily foods such as fried foods. Ingredients are used according to the type of food/drink, plus seasonings (onion, garlic) and flavorings as usual. In a review, the previously mentioned foods were recommended for consumption because they have excellent nutritional value to prevent COVID-19 [17].

People arrange to eat three meals a day and avoid consuming oily foods that contain micin/flavoring, including junk food. As much as possible, the food consumed is boiled or even cooked.

Food while in the hospital is provided with higher protein foods, including meat, fish, two animal proteins, and one vegetable protein, namely tofu or tempeh, including vegetables. In addition, fruits and drinks of water, honey, date juice, vitamins, supplements, and medicines are provided.

Foods and drinks consumed by people who are in self-isolation are foods containing carbohydrates (rice and noodles), containing protein (chicken, tempeh, and eggs), and contain vitamins and fiber (vegetables and fruits). Meanwhile, drinks such as telang flower tea, sweet tea, water, honey, cow's milk, and herbal drinks.

People who are in self-isolation are also asked to consume their favorite foods that are considered delicious so that during the recovery period, their appetite is maintained. These foods can be self-prepared, prepared by the family, or bought at restaurants.

“I ate everything. He told me to eat something delicious, so I just ate everything. Satay, whatever I ate. The important thing is that I still want to eat even though there's no taste at that time. Already, I ate everything. The important thing is that there are vegetables, fruit, protein. I eat everything”.

Before consuming food and drinks intended to prevent and treat COVID-19, it is necessary to recite a prayer so that the healing effort can provide efficacy. People say sholawat 3 times, basmalah 3 times, shahada 5 while praying for healing.

Table 2. Various of food consumed during pandemi

Type of food	Consumption pattern	Benefits
Fruits	Consumed in the morning	
Apple fruit, mango, banana, orange, pear, mangosteen, guava		

Fruit juice, Guava juice, Avocado juice		
Cassava		
Bananas	eating food healthy, reduce oil, micin, junkfood, keep drinking spice water	
Eggs		Nutritious and high in protein
Vegetables (tamarind veg- etables, broccoli mustard soup vegetables)	Every day and served warm	
Fish, meat	Consumed in alternating intervals.	
	If eating fried, the oil used should not be too much.	
<i>Tempe</i>		high protein
Foods containing carbo- hydrates (rice and noodles), containing protein (chicken, tempeh, and eggs), and vitamins (veg- etables and fruits).		Consuming dur- ing self-isolation

The table above shows that the community consumes various foods to increase endurance during the pandemic. These foods include fruits such as bananas, apples, pears, mangosteen, and guava. In addition, vegetables such as broccoli and cassava are consumed. High protein is also applied to fish, beef, chicken, eggs, and *tempe*.

Other materials used or consumed by the community in prevention and treatment are salt by gargling and eucalyptus oil added to warm water. If you are not used to adding it to water, it can be dripped onto a tissue and inserted into the nose. All that is done is part of the endeavor.

People who are old and have other diseases believe that consumption of these herbal ingredients is more effective than conventional medicine. Consumption of drugs will have side effects on kidney function, and it is feared that congenital diseases will worsen.

4 Conclusion

People in Central Java consume several medicinal plants through drinks and food to increase endurance during the COVID-19 pandemic. Regularly consuming herbs, either in the form of food or drinks based on natural ingredients, will provide immunity and prevent exposure to COVID-19. It is also believed to cure the symptoms that accompany the disease. The results show that 19 plants are mixed in such a way with other plants or with other ingredients such as honey, cow's milk, and coconut sugar. Of the several herbs, ginger is a medicinal plant widely used in potions because it can provide a warm effect on the body and relieve nasal congestion so that oxygen intake into the body can run smoothly. Medicinal plants are used because they can be accessed easily in the garden around the house, so they will always be available whenever needed.

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