Media Konservasi Vol.27 No.3 Desember 2022: 140-146 **ISSN: 0215-1677**
DOI: 10.29244/medkon.27.3.140-146 **E-ISSN: 2502-6313**

ETHNOMEDICINAL EXPLORATION OF MEDICINAL PLANT IN CIHANJUANG VILLAGE, PANDEGLANG-BANTEN FOR CURING STOMACACHE

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Accepted August 23, 2022 / Approved November 29, 2022

ABSTRACT

Biodiversity in Indonesia is the second highest in the world, the medicinal plants are included in it that must be preserved because of their great benefits for a human being life. Ethnomedicine exploration is a bright way that can be done to record and preserve the biodiversity of medicinal plants in Indonesia. The society in Cihanjuang Village still use medicinal plants to treat digestive disorders, but the lack of documentation will eliminate this knowledge in the future. This ethnomedicine study aims to determine plants which used as diarrhea and ulcer drugs in Cihanjuang Village, consisting of the name, the plant part used, the research method used, and identification of the secondary metabolites. The research methodology used are interview methods with questionnaires, observation, documentation, calculation of Use Value (UV) analysis and phytochemical screening. The informant selection technique used purposive and snowball sampling. The result of this study was the discovery of 24 species of medicinal plants to treat digestive disorders in Cihanjuang Village, most of which belonged to the family of Zingiberaceae and the leaves were the most widely used. The highest of UV's value for diarrhea is Salak plants (Salacca zalacca) and for ulcers is Hanjuang (Dracaena sanderiana). Some of the species tested for phytochemical screening showed various secondary metabolites that were efficacious in treating digestive disorders. Areuy tulungpung is one of the species that can be studied further due to lack of information as a medicinal plant for digestive disorders.

Key words: antidiarrheal, banten, ethnomedicine, ulcer, use value

INTRODUCTION

Ethnomedicine is a branch of medical anthropology that discusses the origin of disease, the causes and methods of treatment according to certain community groups (Purwadi et al. 2015). Exploration is going to the field with the aim of increasing the knowledge of the natural resources contained in a place/location. This research covering a knowledge about exploration, ethnobotany, and ethnomedicine which aims to maintain or conserve the biodiversity of medicinal plants around the research location, as well as to preserve and document the culture of using medicinal plants.

Medicinal plants are still widely used traditionally in various ethnic groups and communities. In Tamanjaya Village, Ujung Kulon National Park, the people mostly use the plants there as medicinal plants, covering 32 species and 27 families (Asmemare et al. 2015). The use of medicinal plants as traditional medicine is one of Indonesia's cultural heritage from ancestors that is important to be preserved (Oknarida et al. 2015). This is supported by the high potential of natural ingredients in Indonesia, but it is still not well documented so that ethnomedicine research is a possible solution. With the more exploration of ethnomedicine in an ethnic or village, knowledge about the use of traditional medicine will not be lost and can be used to develop medicines in Indonesia.

Various diseases can be cured or alleviated by using medicinal plants that grow around rural communities. One of the disease that is often experienced by rural communities is digestive disorders, because it is related to the cleanliness level in the village (Silalahi et al. 2018). There are so many digestive problems in Indonesia, one of which is diarrhea. Diarrhea is a decreasing of the consistency of defecate and increasing in the frequency of bowel movements compared to the usual pattern of bowel movements. Mostly this is a symptom of a systemic disease (Wells et al. 2015). In addition to diarrhea, there is a problem of gastric irritation which is an inflammatory process caused by irritation and infection factors in the gastric mucosa and submucosa. Factors that affect gastric irritation are stress and diet (Tussakinah et al. 2018). Medicinal plants to treat gastric irritation, usually use a drink from the juice of kapok leaves. According to the survey results, plants used to treat diarrhea are guava leaves, turmeric rhizomes, jackfruit leaves, and many more. In addition to its use from generation to generation, this traditional medicine is also used because going through to a health facility is very far, reach 17 km of the distance.

Exploration of secondary metabolites found in medicinal plants can use qualitative methods, namely by phytochemical screening. Although some types of medicinal plants have been known and their secondary metabolite content studied, abiotic factors supporting medicinal plants can affect their levels. For example, in the research of Rindita et al. (2020), rane fern (*Selaginella willdenowii*) growing in open forest areas had higher phenolic levels than those grown in closed forest areas. Considering that traditional medicine is usually still associated with mystical beliefs or myths

that are non-scientific (Oknarida et al. 2015), a knowledge of the content of secondary metabolites from medicinal plants used by the community as traditional medicine, it becomes scientific information that can be published.

Nowadays, many ethnomedicinal studies have been carried out in the Banten area, but not comprehensively. Most of them focus in Baduy ethnic group in Lebak Regency. Meanwhile in Pandeglang Regency, there is still very little research on ethnomedicine. Therefore, the research was conducted in Cihanjuang Village, Pandeglang Regency to identify medicinal plants efficacious to cure diarrhea and ulcers (digestive disorders) with surveys and explorations to find out how to obtain and process these plants by the people of Cihanjuang Village.

Ethnomedicine research has urgency to be carried out because it can be record the data of medicinal plants in Indonesia. The data research can be processed into scientific publications and can prevent the extinction of information on the use of traditional medicines, and prevent biospiration (germplasm piracy) due to the illegal use of biodiversity by other parties. In addition, this research can also be a way to find new medicinal ingredients that can be used in the pharmaceutical field (Purwadi et al. 2015).

RESEARCH METHOD

To determine the area where is this ethnomedicine research will be carried out, there are several criterias. Cihanjuang Village (Figure 1) has a criteria including lack of access to health services and the community still believes in and uses medicinal plants as traditional medicine (survey results). Informants was selected as research objects are people who have a knowledge and expertise in healing and treating diseases using medicinal plants in their ingredients that are recognized by the community (Purwadi et al. 2015). This research was conducted through surveys, interviews with the questionnaires, and observation.

Pandeglang Regency is one of the four regencies located in Banten Province, which has 35 sub-districts. The sub-districts in the Pandeglang area consist of several villages. Some village areas in Pandeglang still use medicinal plants as a solution to cure a diseases. Cihanjuang Village which is located in one of the sub-districts in Pandeglang Regency, namely Cibaliung District. Based on Village Profile Data, Cihanjuang Village is very far from urban civilization, about 76 km from Pandeglang City. Cihanjuang Village consists of several small villages, which include Cipinang Village, Limpas Village, Mekarsari Village, Kibodas Village, Dahu 1 Village, Dahu 2 Village, Cipinang Girang Village, Cikembang Village, Simpang Village, Dam Village, Sempur Village, Pematang Buah Village, and Cihanjuang Village.

According to the Village Profile, Cihanjuang Village has a population of 1876 men and 1652 women in 2021 (Cihanjuang Village Profile 2021). Within total 1107 of family members, with 978 are a males and 129 are female. Most of the people of Cihanjuang Village have a livelihood as a farmers, because Cihanjuang Village is also surrounded by rice fields of local villagers.

General informants to be interviewed were selected by using a purposive sampling and snowball sampling method according to the required criteria. Snowball sampling is a technique of collecting data from two respondents to a large number based on recommendations from previous respondents (Sugiyono 2013).

In order to ensure that the plant species that were interviewed with their scientific identity, roaming/field observations were carried out to observe and document the habitus, morphology, and ecology of plants. The identification of plants in the field was carried out independently, then confirmed by a botanist.

Figure 1 Shows the research location in Cihanjuang Village

Data analysis was carried out descriptively on the results of interviews using obtained questionnaires. The data on medicinal plants needed which are the percentage of plant parts used, how to prepare and how to use them for treatment (Purwadi et al. 2015), other data that will be calculated is Use Value/UV (Silalahi et al. 2018). Through of UV calculations, it can be seen which plant species are most often used to those that are least used, so that the potential use of plants can be investigated further as medicinal plants (Gazzaneo *et al*. 2015).

Use Value Formula is:

$$UV = \frac{\sum u}{n}$$

Notes :

UV : *Use Value*

∑U : Number of informants who know/use medicinal plants

N : Total number of informants.

Based on the results of UV calculations then the samples for further analysis of secondary metabolites were determined. Phytochemical screening was carried out in the Pharmacognosy Laboratory, Faculty of Pharmacy and Science, UHAMKA. Standard methods of screening follow the method of Hanani (2015) to measure the content of alkaloids, terpenoids, flavonoids, tannins, and saponins.

RESULT AND DISCUSSION

In this study, 4 key informants were obtained which with the snowball sampling technique continued to 35 general informants for data sources of medicinal plants to treat ulcers and 37 general informants for diarrhea. Most of the informants make a living as farmers. Based on the results of interviews, the types of medicinal plants used by residents to treat digestive disorders including ulcers and diarrhea are listed in Table 1.

Table 1 List of Plant Used to Treat Digestive Disorder in Cihanjuang Village.

No.	Local Name	Species Name	Family	Indication	Plant Part of Used
1.	Areuy Palungpung	*Decalobanthus peltatus*	Concolvulaceae	Diarrhea	Tuak/water
2.	Nangka lawanda	*Annona muricata*	Annonaceae	Diarrhea & Ulcer	Leaves
3.	Cape	*Blumea balsamifera*	Asteraceae	Diarrhea & Ulcer	Leaves
4.	Hanjuang	*Dracaena sanderiana*	Asparagaceae	Diarrhea & Ulcer	Leaves
5.	Dadap	*Eythrina subumbrans*	Fabaceae	Diarrhea & Ulcer	Leaves
6.	Capetuher	*Centella asiatica*	Apiaceae	Diarrhea & Ulcer	Leaves
7.	Kaju	*Anacardium occidentale*	Anacardiaceae	Diarrhea & Ulcer	Bark
8.	Salak	*Salacca zalaca*	Arecaceae	Diarrhea	Leaves
9.	Jawer Kotok	*Solenostemon scutellarioides*	Lamiaceae	Diarrhea	Leaves
10.	Pungpulutan	*Urena lobata*	Malvaceae	Diarrhea	Leaves
11.	Salam	*Syzygium polyanthum*	Myrtaceae	Diarrhea	Leaves
12.	Bidara arab (sidr)	*Ziziphus mauritiana*	Rhamnaceae	Diarrhea & Ulcer	Leaves
13.	Lame	*Alstonia scholaris*	Apocynaceae	Diarrhea & Ulcer	Bark
14.	Lempuyang	*Zingiber zerumbet*	Zingiberaceae	Diarrhea & Ulcer	Rhizome
15.	Koneng	*Curcuma longa*	Zingiberaceae	Diarrhea & Ulcer	Rhizome
16.	Jambu Biji	*Psidium guajava*	Myrtaceae	Diarrhea	Leaves
17.	Takokak	*Solanum torvum*	Solanaceae	Diarrhea	Leaves
18.	Mangkokan	*Polyscias scutellaria*	Araliaceae	Diarrhea	Leaves
19.	Pacar cina	*Aglaia odorata*	Meliaceae	Ulcer	Leaves
20.	Temu Hitam	*Curcuma aeruginosa*	Zingiberaceae	Ulcer	Rhizome
21.	Ki urat	*Plantago major*	Plantaginaceae	Ulcer	Leaves
22.	Laja goah	*Alpinia galanga*	Zingiberaceae	Ulcer	Rhizome
23.	Koneng Gede	*Curcuma xanthorrhiza*	Zingiberaceae	Ulcer	Rhizome
24.	Randu	*Ceiba pentandra*	Bombacaceae	Ulcer	Leaves

From Table 1 it can be seen that there are 24 plant species in Cihanjuang Village that are used by the community to treat digestive disorders such as ulcers and diarrhea. Of these 24 species, most belong to the Zingiberaceae family. The most widely used part of the plant is the leaf. According to Pelokang et al. (2018), leaves are the part that is known to have more healing effects than the others. The processing of the leaves is only boiled using water for a few minutes, but before that it is washed first, then the leaves are boiled as much as 7 strands. Especially salak leaves, which are boiled, the part is looked like fan (buds) of the leaves and boiled with water.

Use Value analysis of medicinal plants used by the people of Cihanjuang Village is shown separately in Tables 2 and 3, which are for their use in curing diarrhea and ulcers, respectively. From Table 2 showed the species most widely used by residents to treat ulcers are hanjuang (*Dracaena sanderiana*) and kapok (*Ceiba pentandra*), while the least used are arabic bidara (*Ziziphus mauritiana*) and dadap (*Erythrina subumbrans*). Meanwhile, to treat diarrhea, the people mostly used salak leaves (*Salacca zalaca*) and jawer kotok leaves (*Solenostemon scutellarioides*), the least used were bay leaves (*Syzygium polyanthum*) (Table 3).

The hanjuang plant (*Dracaena sanderiana* Sander ex Mast) is the plant most often used by the people of Cihanjuang Village to treat ulcers and diarrhea. The part that is often used is the leaves, which are 7 strands which are then boiled using clean water to boil, then separate the leaves from the water so that they can be consumed. Kapok leaves, cape leaves, dadap leaves are also consumed in this way to cure ulcers. If you use a rhizome such as lempuyang (*Zingiber zerumbet* L.), use as many as 3 segments then wash it clean and then boil it using clean water until it boils, then separate the water for consumption.

Table 2 Use Value of Plant Listed to Treat Ulcer.

No.	Plant Names and Part Used	∑u	N	UV
1	*Dracaena sanderiana* leaves	20	35	0,571
2	*Ceiba pentandra* leaves	18	35	0,514
3	*Anacardium occidentale* bark	16	35	0,457
4	*Curcuma longa* rhizome	15	35	0,428
5	*Centella asiatica* herb	14	35	0,4
6	*Zingiber zerumbet* rhizome	12	35	0,342
7	*Alstonia scholaris* bark	12	35	0,342
8	*Blumea balsamifera* leaves	11	35	0,314
9	*Annona muricata* leaves	10	35	0,285
10	*Curcuma xanthorrhiza* rhizome	9	35	0,257
11	*Alpinia galanga* rhizome	8	35	0,228
12	*Aglaia odorata* leaves	7	35	0,2
13	*Curcuma aeruginosa* rhizome	5	35	0,142
14	*Plantago major* leaves	3	35	0,085
15	*Ziziphus mauritiana* leaves	3	35	0,085
16	*Erythrina subumbrans* leaves	3	35	0,085

Notes : UV : *Use Value*, ∑U : Number of informants who know/use medicinal plants, N : Total number of informants

Table 3 Use Value of Plant Listed to Treat Diarrhea

No	The Name of Plants	Σu	N	UV
1	*Salacca zalaca* leaves	27	41	0,65
2	*Solenostemon scutellarioides* leaves	21	41	0,51
3	*Psidium guajava* leaves	17	41	0,41
4	*Decalobanthus peltatus* water	17	41	0,41
5	*Curcuma longa* rhizome	16	41	0,39
6	*Zingiber zerumbet* rhizome	15	41	0.36
7	*Annona muricata* leaves	14	41	0,34
8	*Erythrina subumbrans* leaves	14	41	0,34
9	*Solanum torvum* leaves	13	41	0,31
10	*Dracaena sanderiana* leaves	13	41	0,31
11	*Blumea balsamifera* leaves	12	41	0,29

12	*Anacardium occidentale* bark	11	41	0,26
13	*Polyscias scutellaria* leaves	10	41	0,24
14	*Centella asiatica* herb	10	41	0,24
15	*Ziziphus mauritiana* leaves	8	41	0,19
16	*Urena lobata* leaves	7	41	0,17
17	*Alstonia scholaris* bark	6	41	0,14
18	*Syzygium polyanthum* leaves	6	41	0,14

Notes : UV : *Use Value*, ∑U : Number of informants who know/use medicinal plants, N : Total number of informants

Figure 2. Areuy tulungpung, a liana plant used by residents as anti-diarrhea medicine.

To treat diarrhea, salak is a plant that is often used by the people of Cihanjuang Village. The part of used is the salak fan (leaf buds). The Processed was started from cleaned the leaves and then boiled with a clean water, after that separated the leaves and the water, after that it can be consumed. Besides salak, the people of Cihanjuang Village believe in the use of the jawer kotok plant to treat diarrhea. According to Kusumawati et al. (2014), miana/ jawer kotok (*Coleus scutellariodes* [L.] Benth.) is a medicinal plant that contains antidiarrheal and antimicrobial compounds. The part used by the people of Cihanjuang Village is the leaves. The processed was started from cleaned the leaves and then boiled with a clean water. The number of boiled leaves is 7, because they belief number 7 is a good number according to the number of days in 1 week. The leaves are boiled until boiling after that separate the leaves and the water can be consumed. Takokak leaves are also consumed in the same way.

Areuy tulungpung (Figure 2) is also used by residents to treat diarrhea. Areuy tulungpung is found in the forest in Cihanjuang Village, the Momolo Forest. In its use, the liana from areuy tulungpung is broken/cut so that flowing water (tuak) will come out, then the palm wine can be consumed immediately. Not much literature has revealed the efficacy of tuak tulungpung as an antidiarrheal.

From all of medicinal plant species that are claimed to cure ulcers and diarrhea, several species were selected to be tested for phytochemical screening in the laboratory. Species selection was based on high, medium, and low UV representation, and literature study. The species sampled from Cihanjuang Village and tested for phytochemical screening, along with the results, are listed in Table 4.

From Table 4, alkaloid compounds were found in lempuyang rhizome, arabic bidara leaf, dadap leaf, black ginger rhizome, tuak tulungpung and lame bark. Alkaloids are believed to have analgesic and anti-inflammatory effects (Rochma et al., 2022). Flavonoid compounds were found in hanjuang leaves, arabic bidara leaves, dadap leaves, jawer kotok leaves, lempuyang rhizomes, black temu rhizomes, and lame bark. Flavonoid compounds are one of the ingredients that can stabilize gastric mucous cell membranes (Bintari et al., 2014). Phenol compounds were found in kapok leaves, hanjuang leaves, arabic bidara leaves, salak leaves, jawer kotok leaves, dadap leaves, and tuak tulungpung. Phenol compounds according to pharmacology can protect the gastric mucosa (Alwi et al., 2021).

Table 4 The Types of Efficacious Plants to Treat Digestive Disorders Tested by Phytochemical Screening in the Laboratory

No.	Species Name	Alka-loid	Flavo-noid	Tanin	Fenol	Steroid	Sapo-nin	Terpe-noid
1.	*Ceiba pentandra*	-	-	+	+	+	+	+
2.	*Dracaena sanderiana*	-	+	-	+	+	+	+
3.	*Zingiber zerumbet*	+	+	-	-	-	-	+
4.	*Blumea balsamifera*	-	-	-	-	+	+	+
5.	*Ziziphus mauritiana*	+	+	+	+	+	+	+
6.	*Erythrina subumbrans*	+	+	-	+	+	+	+
7.	*Curcuma aeruginosa*	+	+	-	-	-	-	+
8.	*Salacca zalaca*	-	-	+	+	+	+	+
9.	*Solenostemon scutellarioides*	-	+	-	+	+	+	+
10.	*Decaloban-thus peltatus*	+	-	-	+	-	-	+
11.	*Solanum torvum*	-	-	-	-	+	+	+
12.	*Alstonia scholaris*	+	+	+	-	-	+	-

Information: (+) : positive contains compound, (-) : negative does not contain compounds

Saponin compounds were found in hanjuang leaves, kapok leaves, arabic bidara leaves, dadap leaves, salak leaves, jawer kotok leaves, takokak leaves, cape leaves, and lame bark. Saponin compounds are believed to be analgesic and anti-inflammatory (Rochma et al., 2022). Steroid compounds were found in hanjuang leaves, kapok leaves, arabic bidara leaves, dadap leaves, cape leaves, salak leaves, takokak leaves, and jawer kotok leaves. Steroid compounds can reduce mucosal damage (Asaduddin, 2018). Tannin compounds were found in kapok leaves, arabic bidara leaves, salak leaves, and lame bark. Tannin compounds are one of the ingredients that can protect the gastric mucosa (Islamiah and Sukohar, 2017). Terpenoid compounds were found in all samples that were screened for phytochemicals, except the bark of lame stems. Terpenoid compounds play a role in the digestive process (Hasiib et al., 2015).

According to Amin & Maham (2014) and Labu et al. (2015), the compounds such as flavonoids, tannins, terpenoids, saponins and sterols are known for their antidiarrheal activity either as transit inhibitors or as antisecretory agents. In addition, according to Otshudi et al. (2000), compounds such as tannins, flavonoids and saponins have antidiarrheal effects as antimotility, antisecretory and antibacterial. Every plant of the same type, the content of secondary metabolites can vary because it can be caused by several factors such as environment, light, temperature, pH, altitude and temperature (Sholekah, 2017).

CONCLUSION

The ethnomedicine exploration in Cihanjuang Village, Pandeglang-Banten, 24 species of medicinal plants were found that were used by residents to treat digestive disorders. All were obtained after interviewing 4 key informants, 35 general informants for ulcers, and 37 general informants for diarrhea. Most species belong to the Zingiberaceae family and the most widely used plant part is the leaf. Hanjuang (*Dracaena sanderiana*) has the highest use value for ulcer medicinal plants and salak (*Salacca zalaca*) medicinal plants for diarrhea. Of the 24 species, 12 species were taken for phytochemical screening and found various secondary metabolites that play a role in treating digestive disorders, namely alkaloids, flavonoids, tannins, steroids, saponins, terpenoids, and phenols. Areuy tulungpung is one type of antidiarrheal plant that has not been widely studied.

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