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AN ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS WITH ANTIDIARRHEAL EFFECTS IN THE SETU REGION, BEKASI, WEST JAVA, INDONESIA

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ABSTRACT

The use of traditional medicinal plants in the management of diarrhea has long been practiced in Indonesia. Currently, researchers are starting to look for new antidiarrheal compound candidates derived from natural ingredients that have been empirically proven to have antidiarrheal effects. This research aims to document and preserve the use of ethnomedicine to treat diarrhea by people in the Setu Region, Bekasi, and West Java, Indonesia. Fieldwork was carried out from March to April 2024 using direct interviews, questionnaires, and discussions. Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature. The plant types obtained were grouped into families according to the Cronquist classification system. Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org). This research reports that 30 plant species are commonly used by people in the Setu Region to treat diarrhea. Among the various plant parts used, leaves (53.3%) are most frequently used in making medicines, followed by rhizomes (16.7%), seed (10%), root (6.7%), fruit (6.7%), stem, and rind (respectively 3.3%). Meanwhile, the most frequently used preparation methods were decoction (80.0%) and infusion (20.0%). The results of this research confirm that people in the Setu Region still rely heavily on medicinal plants for their health care system, especially for the treatment of diarrhea with the most frequently used parts of the leaves and their use in decoctions and infusions.

KEYWORDS: Traditional medicine, Ethnomedicinal plants, Setu Region, Diarrhea.

INTRODUCTION

In developing countries, such as Indonesia, diarrhea is one of the main causes of morbidity and mortality in both children and adults. This is mainly due to poor hygiene and sanitation. Diarrhea kills more children than malaria, measles, and AIDS.[1] About 1.5 million children die every year from diarrhea.[2] Diarrhea is defined as loose or watery stools at least 3 times in 24 hours and is classified as acute and chronic based primarily on the duration of symptoms. Acute diarrhea is usually caused by bacteria (e.g., *Campylobacter*, *Salmonella*, *Shigella*, and *Escherichia coli*) and viruses (e.g., rotavirus). Diarrhea can also be caused by drugs such as antibiotics, anticancer drugs, and antacids that contain magnesium. On the other hand, chronic diarrhea is usually associated with functional disorders such as irritable bowel syndrome or intestinal diseases such as Crohn's disease. In addition, parasitic infections (*Giardia lamblia*, *Entamoeba histolytica*, and *Cryptosporidium*) can also cause chronic or persistent diarrhea.[3] The majority of people living in developing countries depend on traditional medicine to treat various diseases.[2] Medicinal plants are usually preferred for treating digestive disorders, such as diarrhea because they contain many elements that have the potential to increase effects and/or neutralize side effects and are considered relatively safe in long-term use.[4]

Like other developing countries, people in Indonesia rely heavily on the therapeutic benefits of traditional medicine.[5] One of the Region in Indonesia that still uses herbal plants as an alternative treatment, especially to treat diarrhea, is Setu Region. This research aims to obtain detailed information about the use of herbal plants for alternative therapy for diarrhea in Setu Region, Bekasi, and West Java, Indonesia using a field survey method.

MATERIALS AND METHODS

Study Area

Setu is located in Bekasi Regency, West Java, Indonesia, with an area of 62.16 km^2. This area has an altitude of 40

meters above sea level with an average maximum air temperature of 33°C and a minimum of 25°C. Moreover, it is located between 06°14′ 00″ South Latitude and 107°00′ 00″ East Longitude. This area is a tropical climate area that is mostly inhabited by Sundanese tribes (98%) and other tribes (2%). Vegetation in the study area is in humid conditions with an average rainfall of 351 mm/year.

Data Collection

An extensive field survey was carried out to obtain information about medicinal plants from the Sundanese tribe in the study area. To document existing information about medicinal plants from tribal practitioners, several field visits were conducted from March to April 2024 in the Setu Region, Bekasi, and West Java, Indonesia. During the research, ethnomedicinal information was collected from middle-aged and older tribal practitioners in their local language (Sundanese), through direct interviews, questionnaires, and discussions. Information on local names of plants, plant parts used preparation methods and administration routes (e.g., infusion, paste, juice and decoction) of all ethnomedicinal plants collected were recorded during the survey period.

Botanical Identification

Plant species are identified based on standard taxonomic methods, flower morphological characteristics, and where possible, using samples for comparison, as well as consultation with experts and the literature.[6] The plant types obtained were grouped into families according to the Cronquist classification system, except for Pteridophyta and Gymnospermae.[7] Plant names were checked against the Plant List (www.plantlist.org) and the International Plant Name Index (www.ipni.org).

Ethics Statement

All participants provided verbal consent before the interview and gave consent to publish the information they provided.

RESULTS AND DISCUSSION

This research revealed that 30 plant species are commonly used by local people to treat diarrhea (Table 1). This shows that the study location is affordable in terms of biodiversity. Among the various plant parts used, leaves (53.3%) are most frequently used in making medicines, followed by rhizomes (16.7%), seed (10%), root (6.7%), fruit (6.7%), stem, and rind (respectively 3.3%). The use of leaves is reported to be easier to prepare and easier to extract active substances from them for treatment. At the same time, leaves have less effect on the mother plant.[8] Meanwhile, the most frequently used preparation methods were decoction (80.0%) and infusion (20.0%). These results are in line with previous research which reported that the forms of traditional medicine most widely used by the community were decoctions and infusions.[6]

Table 1: Ethnomedicinal plants, local name, part used, mode of administration, and dosage uses in Setu, Bekasi, and West Java, Indonesia.

No	Species	Family	Local name	Parts used	Mode of administration	Dosage of use
1	*Allium sativum* L.	Alliaceae	Bawang Putih	Rhizome	Infusion	25 grams once a day
2	*Alpinia purpurata* K. Schum	Zingiberaceae	Lengkuas	Rhizome	Decoction	150 grams once a day
3	*Andrographis paniculata* Nees	Acanthaceae	Sambiloto	Leaf	Decoction	150 grams once a day
4	*Annona muricata* L.	Annonaceae	Sirsak	Leaf	Infusion	100 grams once a day
5	*Anredera cordifolia* (Ten.) Steenis	Basellaceae	Binahong	Leaf	Decoction	150 grams once a day
6	*Camellia sinensis* (L.) Kuntze	Theaceae	Teh Hijau	Leaf	Decoction	250 grams once a day
7	*Canna discolor* L.	Cannaceae	Ganyong	Root	Decoction	50 grams once a day
8	*Carica papaya* L.	Caricaceae	Pepaya	Seed	Decoction	100 grams once a day
9	*Cinnamomum verum* J.Presl	Lauraceae	Kayu Manis	Stem	Decoction	30 grams once a day
10	*Coleus scutellarioides* (L.) Benth.	Lamiaceae	Miana	Leaf	Decoction	250 grams once a day
11	*Curcuma longa* L.	Zingiberaceae	Kunyit	Rhizome	Infusion	150 grams once a day
12	*Eleutherine palmifolia* (L.) Merr	Iridaceae	Bawang Dayak	Leaf	Decoction	250 grams once a day
13	*Garcinia mangostana* L.	Clusiaceae	Manggis	Rind	Infusion	200 grams once a day
14	*Hibiscus tiliaceus* L.	Malvaceae	Waru	Leaf	Decoction	150 grams once a day
15	*Jatropha gossypiifolia* L.	Euphorbiaceae	Jarak	Leaf	Decoction	250 grams once a day

16	*Kaempferia galanga* L.	Zingiberaceae	Kencur	Rhizome	Infusion	200 grams once a day
17	*Maranta arundinaceae* L.	Manantaceae	Tanaman Garut	Root	Decoction	200 grams once a day
18	*Melastoma candidum* D. Don.	Melastomataceae	Senggani	Leaf	Decoction	250 grams once a day
19	*Momordica charantia* L.	Cucurbitaceae	Pare	Leaf	Decoction	200 grams once a day
20	*Morinda citrifolia* L.	Rubiaceae	Mengkudu	Fruit	Infusion	50 grams once a day
21	*Moringa oleifera* Lamk.	Moringaceae	Kelor	Leaf	Decoction	150 grams once a day
22	*Myristica fragrans* Houtt.	Myristicaceae	Pala	Seed	Decoction	20 grams once a day
23	*Nigella sativa* L.	Ranunculaceae	Jinten Hitam	Seed	Decoction	250 grams once a day
24	*Phaleria macrocarpa* (Scheff.) Boerl)	Thymelaceae	Mahkota Dewa	Fruit	Decoction	200 grams once a day
25	*Piper betle* L.	Piperaceae	Sirih	Leaf	Decoction	250 grams once a day
26	*Psidium guajava* L.	Myrtaceae	Jambu Biji	Leaf	Decoction	100 grams once a day
27	*Sonchus arvensis* L.	Asteraceae	Tempuyung	Leaf	Decoction	250 grams once a day
28	*Syzygium polyanthum* (Wight) Walpers	Myrtaceae	Salam	Leaf	Decoction	50 grams once a day
29	*Tinospora crispa* L.	Menispermaceae	Baratawali	Leaf	Decoction	150 grams once a day
30	*Zingiber officinale* Rosc.	Zingiberaceae	Jahe	Rhizome	Decoction	10 grams once a day

CONCLUSIONS

The results of this research confirm that people in the Setu Region still rely heavily on medicinal plants for their health care system, especially for the treatment of diarrhea with the most frequently used parts of the leaves and their use in decoctions and infusions.

REFERENCES

1. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Child health epidemiology reference group of WHO and UNICEF. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *Lancet*, 2012; 379(9832): 2151-2161.
2. Asrie AB, Abdelwuhab M, Shewamene Z, Gelayee DA, Adinew GM, Birru EM. Antidiarrheal activity of methanolic extract of the root bark of *Cordia africana*. *J Exp Pharmacol*, 2016; 8: 53-59.
3. Thapar N, Sanderson IR. Diarrhoea in children: an interface between developing and developed countries. *Lancet*, 2004; 363(9409): 641-53.
4. Gilani AH, Rahman AU. Trends in ethnopharmocology. *J Ethnopharmacol*, 2005; 100(1-2): 43-49.
5. Alkandahri MY, Sujana D, Hasyim DM, Shafirany MZ, Sulastri L, Arfania M, et al. Antidiabetic activity of extract and fractions of *Castanopsis costata* leaves on alloxan-induced diabetic mice. *Pharmacogn J.*, 2021; 13(6Suppl): 1589-93.
6. Bieski IGC, Santos FR, de Oliveira RM, Espinosa MM, Macedo M, Albuquerque UP, de Oliveira Martins DT. Ethnopharmacology of medicinal plants of the Pantanal Region (Mato Grosso, Brazil). *Evid Based Complement Alternat Med*; 2012; 2012: 1-36.
7. Cronquist A. The evolution classification of flowering plants. The New York Botanical Garden, New York, NY, USA, 2nd edition, 1988.
8. Ahmed S, Ahmad M, Swami BL, Ikram S. A review on plants extract mediated synthesis of silver nanoparticles for antimicrobial applications: Agreen expertise. *J Adv Res.*, 2016; 7(1): 17-28.