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Ethnoeconomics of Plants as Traditional Medicine (Ethnomedicine) and Food (Ethnoculinary) of the Bastem Indigenous Community in Luwu Regency

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Abstract: Ethnoeconomics is the study of the economic value or use of biological resources by an ethnic group and becomes wisdom. The aim of the research is to inventory the types of plants used as traditional medicine and food by the Bastem indigenous people. The methods used in the research were observation, interviews, focus group discussions (FGD), and literature study, while the sample collection technique used purpose sampling. This type of exploratory research uses a PRR (Participatory Rural Appraisal) approach. The sample criteria used were community leaders and traditional healers. The research data, which is respondents' emic data, is presented in tabular form, then analyzed descriptively and compared with scientific data based on Google Scholar, Sinta, and Research Gate sources. The results of the research show that the types of plants with the economic value used by the Bastem indigenous people as traditional medicine (ethnomedicine) are bangle, galangal, aromatic ginger, white turmeric, coffee leaves, avocado leaves, castor leaves, banana shoots, cat's whiskers, bitter gourd, guava leaves, papaya leaves, lemongrass and ciplukan, while the plants used as food by indigenous communities (ethnoculinary) are grouped into staple foods, vegetables and side dishes, traditional cakes and my day's food. Staple foods include sokko, limestone, corn porridge, sweet potato rice, banana rice and banana sokko. Vegetables and side dishes include green vegetables, burak, and nasu kadundung. Traditional cakes include putu pesse, tori cake, and baruasa. My daily food includes baurasa, gogos, and tumbu'.

Keywords: Bastem; Ethnoculinary; Ethnoeconomics; Ethnomedicine; Indigenous knowledge

Introduction

Ethnoeconomics is the study of the economic value of biological resources by an ethnic group, such as the use of plants as a source of food, clothing, shelter, medicine, rituals, and shade, as well as other ecosystem roles such as producing oxygen, preventing erosion and wind, and etc. (Dikaumaya et al., 2019). The use of biological resources, such as plants, in life is nothing new. Since ancient times, humans have used plants in their daily lives to maintain their survival, for example as ingredients for traditional medicine and local food (Hartanto et al., 2014; Olanipekun, 2023). Medicinal plants are plants that contain active compounds and can be used in the treatment of disease (Katara et al., 2023; Miya et al., 2020), including as antioxidants, analgesics, antipyretics, anti-inflammatories, antitussives, and so on (Izzuddin et al., 2015), while food plants are plants that have roots, stems and leaves and can be consumed by humans (Apriliani et al., 2014).

Studies regarding the use of plants by an indigenous community are called ethnobotany (Bidiarti et al., 2020; Umba Tolo et al., 2023) and ethnobotanical studies of several indigenous communities in Indonesia have been carried out (Alang et al., 2021; Hafsah et al., 2022; Syamsuri, et al., 2023). The knowledge of an indigenous community regarding the use of plants in daily life is closely related to their customs (Rahman et al., 2019), so there are differences in the knowledge of each indigenous community (Maharani et al., 2021). Knowledge of plant use is passed down orally from generation to generation (Adnan et al., 2020;

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Pandapotan, 2018). Currently, even though health services are becoming more modern, natural medicine is a trend that cannot be replaced by (Mujahid et al., 2019). The assumption that traditional medicine is safer than chemicals, and is cheap and therefore more easily accessible, is also the reason for choosing traditional medicine (Syamsuri, Hafsah, et al., 2023). Public awareness of the importance of health is increasing over time. This is what causes people to choose more natural ingredients in treatment. Likewise, in terms of food choices, people are becoming increasingly aware of healthy lifestyles, so that choices are no longer based solely on the taste and appearance of the food, but also by looking at the physiological function of the food itself (Apriliani et al., 2014).

Anticipating the loss of local knowledge, a scientific record is needed so that local community knowledge regarding medicinal plants and food can be well documented. According to Bhagawan et al. (2021), Nasution (2022), Oknarida et al. (2019) and Hutubessy et al. (2021), ethnobotanical studies are a way can be done to document the knowledge of an indigenous community, so this knowledge is not lost. Apart from that, according to (Suwardi et al., 2020), ethnobotanical studies are also a step in conserving natural materials, so that their sustainability can be maintained due to the need for use as traditional medicine. One of the indigenous communities that still maintains the use of plants in daily life is the Bastem indigenous community, this is because this community believes that nature can be a medicine for diseases. This is in accordance with Utami et al. (2019) which states that the use of medicinal plants by an ethnic group is because that ethnic group believes that traditional medicine can cure diseases.

This indigenous community lives in an inland area located at the height of the border of Luwu Regency and Toraja Regency. Located quite far from the city and in isolated conditions, this indigenous community is still very dependent on the natural surroundings, for example, the use of plants as medicine and traditional food.

Each group of the Bastem indigenous people uses plants for various purposes in life. Processing and utilization are carried out traditionally based on information passed down from generation to generation so that it becomes a culture. The cultural wealth that constitutes the local wisdom of the Bastem Indigenous People needs to be protected so that it does not become extinct. Studies regarding the use of plants in daily life by various ethnicities have been widely carried out in Indonesia, but documentation in scientific form is still very limited (Kurniati et al., 2022). There has never been an inventory regarding the use of economically valuable plants as traditional medicine and food by the Bastem indigenous people. Therefore, this research needs to be carried out. The aim of the research is to inventory the types of plants used as traditional medicine and food by the Basem indigenous people.

Method

This research was carried out from February to March 2023 in Bastem Village. The research location was chosen because the indigenous people still maintain their culture or local wisdom regarding the use of plants. Apart from that, the research location is quite far from urban areas and is still isolated, so the culture of the local community is still very strong. The tools used in the research were stationery, observation/interview sheets, and a camera, while the substance used was alcohol.

This type of research is exploratory with a PRA (Participatory Rural Appraisal) approach, namely research that involves community participation in finding or obtaining data (Haruna et al., 2022). The data collection technique was carried out using observation, interviews, and focus group discussion (FGD) methods as well as literature study, while the sample collection technique used purpose sampling. The number of samples used is based on the opinion of Hardani et al. (2020) and Suliyanto (2017), namely, if there are more than 100 sampling locations in a sampling location, then the sample selected is 10-14% of the total population. The total population at the location was 135, and 16 people met the inclusion criteria, so 16 people were selected as respondents for the research.

The sample criteria used were community or traditional leaders and traditional healers. Interviews and FGDs were conducted using Indonesian and local languages with community leaders who met the criteria as research samples, by asking questions about the types of plants that can be used as medicine, their uses and methods of concoction as well as the types of plants used as food, so that data would be obtained verbally. Observations are carried out through direct observation so that real data will be obtained, while literature studies are carried out to identify the type of plant used, in order to confirm the identity of the scientific name of the plant.

The research data, which is emic or empirical data from respondents, is presented in tabular form, then analyzed descriptively and compared with scientific or scientific data based on Google Scholar, Sinta and Research Gate sources.

Results and Discussion

Ethnomedicine of the Bastem Indigenous People

Traditional medicinal plants are types of plants used by local people as traditional medicine, while traditional food plants are plants that are used as food by utilizing the natural resources around them. Based on the results of observations and interviews, it was found that there are 14 types of plants that are used as medicine by the Bastem indigenous people, including bangle, galangal, aromatic ginger, white turmeric, coffee leaves, avocado leaves, castor leaves, banana shoots, cat's whiskers, bitter leaf, guava, papaya leaves, lemongrass (Table 1). The use of plants as traditional medicine and

traditional food by the Bastem Indigenous People indicates that natural resources have considerable economic value.

Based on table 1, it can be seen that the most widely used plants are the Zingiberacea family. This is also supported by research results reported by Alang et al. (2022) in the Mamasa tribe community in Mamasa and Syamsuri et al. (2023) in the Bugis community in Bone and Wariani et al. (2023) in North Lombok, who stated that generally the type of plant most widely used as medicine is the Zingiberaceae family, while research (Camelia et al., 2019) on the Jeriaeng Tribe in Bangka found that Solaneceae is the most widely used plant family. The differences in variations in the plant groups that are most widely used are due to various factors, according to Kurniati et al. (2022) these factors include the availability of these plants in nature, the culture of the local community, taste and taste and nutritional value.

Table 1. Traditional Medicinal Plants by the Bastem Indigenous Community

Indonesian	Scientific Language	Famili
Bangles	*Zingiber cassumunar*	Zingiberaceae
Galangal	*alpinia galanga*	Zingiberaceae
Aromatic ginger	*Kaempferia galanga*	Zingiberaceae
White turmeric	*Curcuma zedoaria*	Zingiberaceae
Avocado leaves	*Persea americana*	Lauraceae
Coffee leaves	*Coffea sp.*	Rubiaceae
Castor leaves	*Ricinus communis*	Euphorbiaceae
Banana shoots	*Musa paradisiaca*	Musaceae
Sambiloto	*Andrographis paniculata*	Acanthaceae
Guava leaves	*Psidium guajava*	Myrtaceae
Papaya leaves	*Carica papaya*	Caricaceae
Lemongrass	*Cymbopogon citratus*	Poaceae
Cat whiskers	*Orthosphon stamineus*	Lamiaceae
Ciplukan	*Physalis angulata*	Solanaceae

The Bastem indigenous people use the rhizome part of Zingiberaceae as medicine by boiling it, eating it directly or mashing it and then applying it to the affected area. This is because these plant parts contain essential oils and alkaloids which can be used as medicine (Khairullah et al., 2021; Mutaqin et al., 2017). According to Washikah (2016), Zingiberaceae can be used as medicine by boiling it or eating it directly and/or applying it to the affected part (Washikah, 2016).

The parts of the plant used as medicine by the Bastem indigenous people are leaves (8), rhizomes (4), sap (1), all parts of the plant (1) and sap (1). The percentage of parts that are most widely used can be seen in Figure 1. There are differences in the parts of plants used as medicine because the chemical content contained in plants also varies (Bhagawan et al., 2022). Figure 1 shows that the most widely used part is the leaves. This is in accordance with research conducted by Ibo et al. (2019), Miya et al. (2020), Nasution (2022), Olanipekun (2023) and Wariani et al. (2023) who stated that the part of the plant that is widely used in medicine is the leaves. This means that, even though the Bastem indigenous people use plants as medicine, they still carry out conservation without realizing it. Leaves are a part of the plant that regenerates easily compared to other parts of the plant, so even though they are widely used, their existence is still maintained. This is in accordance with Larasati et al. (2019) and Oknarida et al. (2019) who stated that the use of leaves as a medicinal ingredient by an ethnic group will maintain the sustainability of the plant.

Leaves are plant organs where photosynthesis takes place. This is what causes many metabolites to be stored in the leaves (Izzuddin et al., 2015). According to Pandey et al. (2017), metabolites stored in leaves have certain functions, for example playing a role in medicine. The use of plant leaves as medicine is also because the leaves contain a lot of water. According to (Maghfirah, 2021), the large amount of water in the leaves causes their texture to become softer than other organs. This causes the compounds contained in the leaves to be more easily excreted, so they are widely used as medicine.

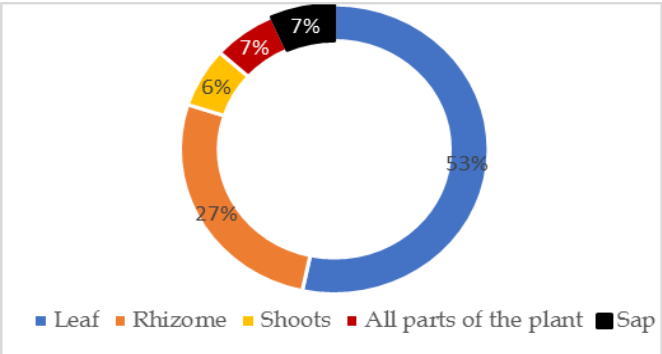

Figure 1. Percentage of plant parts used

The parts of the plants used as medicine are shown in table 2. Local people process traditional medicinal plants by grinding them grating or mashing them, spreading them, chewing them, and boiling them. This processing is carried out so that the metabolites in the plant that act as medicine can be released. This is in accordance with (Bahalwan et al., 2018) who state that the processing of traditional medicinal plants is done by boiling, mashing, and rubbing it on the sick part or squeezing it and then drinking it, where the aim of this treatment is so that the benefits of the plant as medicine can be obtained.

From the results of interviews, it was found that the most common processing of traditional medicinal plants used by the Basem indigenous people was by boiling. According to respondents, this was done because boiling is a process that is easier to carry out and more practical than other methods (table 2). The same thing was also reported by the research results of Utami et al. (2019) and Wariani et al. (2023) which state that boiling will remove metabolites from the plant.

The use of plants as traditional medicine by the Bastem indigenous tribe can be seen in Table 2 above.

Treatment is given to treat diseases such as stomach aches, bones, throat, coughs, hypertension, fever, mouth ulcers, cholesterol, and diarrhea. This is in accordance with research. This is because these traditional medicinal plants contain chemical compounds such as gingerol, flavonoids, saponins, polyphenols, essential oils, phenolics, tannins, terpenoids, alkaloids, and copoletin, where these compounds have pharmacological effects so they can be used as medicine. This is in accordance with Helal & Abou-Elwafa (2017), Pandey & Tripathi (2017), dan Syamsuri et al. (2023) state that the metabolite content in plants has various activities, one of which is medicine.

Table 2. Ethnomedicine of the Bastem Indigenous People

Plant name	Processing method	Medicinal benefits
Bangles	The rhizome is mashed or grated and then rubbed into the stomach	Treat stomach ache
Galangal	The rhizomes are boiled, then the boiled water is drunk	Treat bone pain
Aromatic ginger	The rhizome chewed	Treats sore throats and coughs
White turmeric	Grated rhizomes and drink the water	Treat toxic goiter
Avocado leaves	The leaves are boiled, then the boiled water is drunk	Treating coughs
Coffee leaves	The leaves are boiled, then the boiled water is drunk	Treat high blood pressure
Castor leaves	The leaves are boiled, then the boiled water is drunk	Reduce fever
	Sap is dripped on canker sores	Treat cancer sores
Banana	The tip of the banana shoot is taken and then rubbed on the tongue	Treating white tongue
Sambiloto	The leaves are boiled, then the boiled water is drunk	Treat cholesterol
Guava	The leaves are boiled, then the boiled water is drunk	Treating diarrhea and vomiting
Papaya	The leaves are boiled, then the boiled water is drunk	Treating dengue fever
Lemongrass	The leaves are boiled, then the boiled water is drunk	Treating coughs
Cat whiskers	The leaves are boiled, then the boiled water is drunk	Treating kidney disease
Ciplukan	All parts of the plant are boiled, then the boiled water is drunk	Treating toxic goiter

Source: Primary data after processing, 2023.

Ethnoculinary of the Bastem Indigenous People

The traditional food crops of local communities are divided into staple foods, vegetables and side dishes, traditional cakes and holiday foods. The ethnoculinary composition of the Bastem indigenous people is shown in Table 3.

Plants that are classified as staple foods by the Bastem indigenous people at the research location are rice, sago, corn, bananas and cassava. The results of interviews with local people stated that this plant was chosen as a staple food because it could be eaten or processed into various types of preparations, and was easy to cultivate given the natural conditions of the Bastem soil. According to Kurniati et al. (2022), crops such as cassava, corn, potatoes, sweet potatoes, Taro, bananas and sago contain carbohydrates and protein so they can be consumed by humans. The types of processed staple food (ethnoculinary) of the Bastem indigenous people based on the results of observations and interviews can be seen in Figure 2, namely sokko which comes from sticky rice, limestone (made from sago), corn porridge (corn, rice and various vegetables), sweet potato rice (rice with a mixture of sliced cassava), banana rice (rice mixed with sliced cassava) and sokko banana (banana mixed with grated coconut, then mashed).

Table 3. Ethnoculinary Group of the Bastem Indigenous People

Type of Food	Food Name	Plant Composition		Parts used
		Lokal Name	Scientific Name	
Side Dish	Sokko	Paddy	*Oryza sativa*	Fruit
	Kapurung	Sago	*Metroxylon sagu*	Sago starch
	Cassava rice	Cassava	*Ipomoea batatas*	Tubers
	Banana rice	Banana	*Musa paradisiaca*	Fruit
	Banana Songkolo	Banana	*Musa paradisiaca*	Fruit
	Corn rice	Corn	*Colocasia esculenta*	Tubers
	Grits	Corn	*Zea mays*	Fruit
Vegetables and Side dishes	Green vegetables	Cassava, Moringa	*Ipomoea batatas*	Leaf
	Burak	Banana	*Musa paradisiaca*	Young stem
	Kadundung rice	Ambarella	*Spondias pinnata*	Leaf
Traditional Cake	Baruasa	Sago	*Metroxylon sagu*	Flour
	Bagea	Sago	*Metroxylon sagu*	Flour
	Cicuru maddingki	Glutinous rice	*Oryza sativa*	Flour
	Deppa tori'	Glutinous rice	*Oryza sativa*	Flour
	Putu pesse'	Glutinous rice	*Oryza sativa*	Oryza sativa
Holiday Food	Gigoso	Sticky rice	*Oryza sativa*	Fruit
	Tumbu	Sticky rice	*Oryza sativa*	Fruit
	Burasa	Paddy	*Oryza sativa*	Fruit

Figure 2. Processed staple foods of the Bastem indigenous people (Sokko, Kapurung, corn porridge, sweet potato rice, banana rice and banana sokko)

The second type of food is vegetables and side dishes, consisting of green vegetables, burak (made from young banana stems mixed with grated coconut) and kadundung (chicken dish mixed with forest kedondong leaves). This type is daily consumption in the household. This is in accordance with the research results of Bidiarti et al. (2020) which states that several types of plants that are classified as vegetables are daily food.

Figure 3. Processed vegetables of the Bastem indigenous people (Green Vegetables, Burak and Nasu Kadundung)

Figure 4. Processed traditional cakes of the Bastem indigenous people (putu pesse, tori/tettekang cake and baruasa)

The third type of food group is traditional cakes, including putu pesse, tori/tettekang cakes and baruasa (Figure 4). Putu pesse is a preparation made from glutinous rice flour, palm sugar and grated coconut mixed together. Tori cake is made from ktena flour coated with sesame, while baruasa is made from sago flour. This type of cake is often found in traditional markets in Bastem. The last type of food in the group is holiday food (id fitri and id adha) as seen in Figure 5. Although some markets also sell this menu outside of

holidays. This means that the third and fourth food groups of the Bastem indigenous people have economic value because they are widely sold in the market. This is in accordance with the statement by Bidiarti et al. (2020) who stated that traditional food which is widely sold in markets is a menu that has economic value.

The ingredients needed to make traditional culinary delights of the Bastem indigenous people can be found around where they live. This material is a cultivated plant, which grows around the yard or garden. Of course, this will make it easier for people to use it in everyday life. This is in accordance with research by Alang et al. (2022) and Syamsuri et al. (2023) which states that plants used in daily life by an ethnic group can generally be obtained in the ethnic's living environment. The culture and character of an ethnic group, both in the use of medicine and as a food ingredient, is very dependent on the diversity of plants around where they live. This statement is also supported by the results of Sari & Nurdin (2022) research on the Tapalang Mamuju community, in West Sulawesi.

Figure 5. Processed holiday food by the basem indigenous people (burasa, gogos and tumbu')

Conclusion

Based on the research results, it can be concluded that the types of economically valuable plants used by the Bastem indigenous people as traditional medicine (ethnomedicine) are bangle, galangal, galangal, white turmeric, coffee leaves, avocado leaves, castor leaves, banana shoots, cat's whiskers, bitter, guava leaves, papaya leaves, lemongrass and ciplukan, while the plants used as food by indigenous peoples (ethnoculinary) are grouped into staple foods, vegetables and side dishes, traditional cakes and my day's food. Staple foods include sokko, limestone, corn porridge, sweet potato rice, banana rice and banana sokko. Vegetables and side dishes include green vegetables, burak and nasu kadundung. Traditional cakes include putu pesse, tori cake, and baruasa. My daily food includes baurasa, gogos, and tumbu'. It is hoped that further research will examine the types of plants used as food additives by the Bastem indigenous people.

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Conceptualization: Syamsuri and Hasria Alang. Data curation: Muh. Sri Yusal. Funding obtained: Syamsuri. Methodology: Hastuti, Adriani. Draft writing: Hasria Alang. Editing: Syamsuri.

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Conflict of Interest
The author team declares that there is no conflict of interest.

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