Berkala Kedokteran

doi: 10.20527/jbk.v21i2.24496

RESEARCH ARTICLES

OPEN ACCESS

Use of Natural Ingredients on the banks of the Lulut River as Self-medication and Potential for Pharmaceutical Product Development

Melviani, Noval

Department of Pharmacy, Faculty of Health, Sari Mulia University, Banjarmasin, Indonesia
Corespondence Author: Melviani.apt87@gmail.com

Abstract:

Since ancient times, the people of the Banjar Tribe of South Kalimantan have used medicinal plants as a treatment for all kinds of diseases. However, over time, the forest area has been used as shifting cultivation, rubber plantations and oil palm plantations. This has resulted in a decrease in the number of plants in the forest, including medicinal plants. Apart from that, minimal information about types of medicinal plants in the community can also reduce public awareness of the use of medicinal plants as herbal medicines. This has resulted in concerns about the loss of use of medicinal plants from the forest in the future. So it is necessary to encourage the community to increase the role of traditional medicine. The aim of this research is to determine the use of natural ingredients as medicine in riverbank communities as well as efforts to develop the potential of medicinal plant products in the community as pharmaceutical preparations. The research method uses an observational research design with a cross-sectional approach and cluster sampling technique. This research involved 100 respondents from Sungai Lulut, South Kalimantan. The majority of respondents were women (76%) from the Banjar tribe (98%). The use of natural ingredients as traditional medicine, such as soursop leaves, which are the most commonly used, are often boiled and drunk to treat cancer, fever and diarrhea. The majority of respondents chose trees as the type of natural material used, especially the leaves. Information about traditional medicine was mostly obtained from the surrounding environment, while knowledge about the contents of natural ingredients, storage methods, and taboos or use was not generally known to respondents. for the development of pharmaceutical preparations which are most preferred in the form of tablets, capsules and pills.

Keywords: Medicinal plants; Riverbanks; Product Development; Treatment

Introduction

Currently, the use of natural ingredients (back to nature) for treatment has become a choice for many people. This is because chemical medicines produced with modern technology cause many side effects on health because of the chemical elements contained in the medicine[1]. People believe herbal medicines are safer because they have no side effects and can be used by all family members. One of the plants that is often used is turmeric (Curcuma domestica Val.) where this plant has various benefits and is easy to find in various regions of Indonesia, so it is in great demand among people for natural treatment which can be used as a mouthwash, topical medicine and traditional medicine[2]. Another example is research conducted by Noval and friends regarding the use of natural ingredients as oral antiseptics which utilize bundung plant extract as the active ingredient in mouthwash preparations[3]. In other research, the use of bajakah root, a natural ingredient typical of Kalimantan, functions to inhibit the growth of viruses and bacteria which was innovated into a hand sanitizer[4].

The use of herbal medicine has usually been passed down from generation to generation because it is efficacious in curing various diseases and is relatively cheaper[5]. People on the island of Kalimantan, especially the Dayak Kebahan tribe in Entogong Village, Kayan Hulu District, Sintang Regency, have long used medicinal plants as treatment for all kinds of diseases. Likewise with the Banjar tribe of Kalimantan. However, over time, the forest area has been used as shifting cultivation, rubber plantations and oil palm plantations. This has resulted in a decrease in the number of plants in the forest, including medicinal plants. Apart from that, minimal information about types of medicinal plants in the community can also reduce public awareness of the use of medicinal plants as herbal medicines. This has resulted in concerns about the loss of use of medicinal plants from the forest in the future.

Based on these concerns, it is necessary to encourage the community to increase the role of traditional medicine. Efforts that can be made are the introduction, research, testing and development of the efficacy and safety of medicinal plants[6].

Sungai Lulut is one of the sub-districts in East Banjarmasin District. The Sungai Lulut Village area is a lowland area with an area of 2.95 km2. There are rivers throughout the area with many small river branches. The population is 12,172 people, 6,110 men and 6,062 women, divided into 33 RTs, with a total of 3,102 families.

Medicinal plants have great potential to be developed. Various products from medicinal plants, both from forests and cultivation, have good and extensive opportunities because of the benefits they have. Medicinal plants have many benefits to help humans maintain their health. For example, it helps fight degenerative diseases such as hypertension, coronary heart disease, stroke, diabetes mellitus, and many more. Based on the background above, the problem formulation is "How are natural ingredients used as self-medication in riverbank communities and efforts to develop potential pharmaceutical products from medicinal plants?"

Research Methods

This research uses tools and materials in the form of questionnaires and direct interviews. This research method uses an observational research design with a cross-sectional approach. Researchers used a cluster sampling technique. This technique is quite easy, cheap, and appropriate to the intended inclusion criteria. The population used in this research is the general public who live in South Kalimantan on the banks of the Lulut River, consisting of 100

samples/respondents. Some of the desired inclusion criteria are respondents who are domiciled in South Kalimantan and live on riverbanks with ages 15-60 years. Subjects are willing to participate in research and can communicate well.

Results

Characteristics of respondents for this study showed in Table 1.

Table 1. Characteristics of Respondents

Respondent Characteristics	Characteristics	Number (n)	Percentage (%)
Gender	Man	24	24
	Woman	76	76
Tribal Origin	Banjar	98	98
	Java	2	2
Age	< 30 years	21	21
	31 - 40 yrs	18	18
	41 - 50 years old	35	35
	51 – 60 years	26	26
Education	elementary school	41	41
	JUNIOR HIGH SCHOOL	16	16
	SENIOR HIGH SCHOOL	37	37
	S1/S2	6	6
Work	Employee	15	15
	Businessman	8	8
	Self-employed	13	13
	civil servants	2	2
	Student/Students	3	3
	Other	59	59
Family Status	Head of family	23	23
	Not the Head of the Family	77	77
Total Income	< Rp.500,000	24	24
	IDR 500,000 – IDR 1,000,000	53	53
	Rp.1,000,000 – Rp.2,000,000	17	17
	Rp.2,500,000 – Rp.5,000,000	6	6
Amount of Expenditure	< Rp.500,000	24	24
	IDR 500,000 – IDR 1,000,000	53	53
	Rp.1,000,000 – Rp.2,000,000	17	17
	Rp.2,500,000 – Rp.5,000,000	6	6

Table 2. Use of Natural Ingredients as Medicine

No.	Category	Number (n=100)	Percentage (%)
1	Natural ingredients that have been used as medicine.		
	Waving Leaves	1	1
	Cherry Leaves	1	1
	Soursop leaf	13	13
	Cat whiskers	6	6
	Luntas Leaves	3	3
	Pandan leaves	4	4
	Guava Shoots	4	4
	Confused	1	1

No.	Category	Number (n=100)	Percentage (%)
	Ring	5	5
	Moringa Leaves	1	1
	Star Fruit Flower	2	2
	Bran leaves	2	2
	Lemongrass	2	2
	Noni	1	1
	Jelbesar leaves	1	1
	Cataract Leaves	1	1
	Gotu Kola	1	1
	Eel	4	4
	Death Connect Plant	1	1
	Insulin Leaf	1	1
	Rambai leaves	5	5
	Worm	1	1
	Rumbia	1	1
	Sago Caterpillar	1	1
	Bilaran Leaves	1	1
	Starfruit	3	3
	Karamunting	2	2
	Banana	1	1
	Galam Tree	1	1
	Aloe vera	2	2
	Turmeric	6	6
	Red onion	2	2
	Betel	3	3
	Hibiscus flower	1	1
	Ginger	4	4
	Tabangan Leaves	1	1
	Chinese teak	1	1
	Butterfly flower	1	1
	Baby Duck	2	2
	Bay leaf	1	1
	Taro	1	1
	Chinese Betel	1	1
	Bidura leaves	1	1
	Water hyacinth	1	1
	Betel Habang	1	1
	Total	100	100
2.	Benefits of natural ingredients.		
	Headache	1	1
	Diabetes	17	17
	Hypertension	14	14
	Kidney stones	1	1
	Cyst	1	1
	Cholesterol	3	3
	Muntaber	1	1
	Wound Medicine	7	7
	Itchy rash	11	11
	Cough	3	3
	Pimple	1	1
	Eye Medicine	2	2
	Deep Heat	2	2
	Medication After Surgery	1	1

No.	Category	Number (n=100)	Percentage (%)
	Typhus	1	1
	Ambien	1	1
	Smallpox	1	1
	Back pain	1	1
	Fever	5	5
	Stomach ache	2	2
	Chicken pox	1	1
	Diarrhea	2	2
	Asthma	1	1
	Hair loss	1	1
	Maagh	2	2
	Prevents Colds	2	2
	Urinary Tract Inflammation	2	2
	Warms the Body	1	1
	Constipation	1	1
	Gout	3	3
	Body Health	1	1
	Pain Reliever	1	1
	Thickens Hair	1	1
	For the feminine area	1	1
	Blood Flow	1	1
	Swollen	1	1
	Heart Medicine	1	1
	Sore foot	1	1
	Total	100	100
3.	Types of Natural Materials.		
	Bush	21	21
	Tree	40	40
	Herb	32	32
	Animal	7	7
	Total	100	100
4.	Part of the natural ingredients used		
	Leaf	61	61
	Flower	6	6
	Stem	5	5
	Fruit	2	2
	Shoots	6	6
	Gel/sap	3	3
	Root	4	4
	Bulbs	5	5
	Pseudo-Trunked Clumps	1	1
	Meat	7	7
	Total	100	100
5.	Mixture/ingredients used.		
	5-7 Leaves + 1 Glass of Water	10	10
	3-5 Leaves + 1 Glass of Water	4	4
	Cool Powder	4	4
	3-7 Leaves + 1 Glass of Water	5	5
	7 Leaves + 1 Glass of Water	2	2
	3 Leaves + 2 Glasses of Water	5	5
	1 Leaf + 1 Glass of Water	1	1
	Leaves/flowers as needed	8	8
	3 Leaves + 1 Glass of Water + A Little Sugar	1	1

No.	Category	Number (n=100)	Percentage (%)
	5-7 Flower Sheets + 1 Glass of Water	3	3
	5 Flowers + 1 Glass of Water	1	1
	Lemongrass + Lime + Sugar + Ginger	1	1
	Shallots + Olive Oil/Eucalyptus Oil	1	1
	2 Lemongrass + 1 Ginger + 2 Glasses of Water	1	1
	Ginger + Brown Sugar + 1 Glass of Water	1	1
	Ginger + Bear Milk	1	1
	Turmeric + 1 Glass of Water	1	1
	Other	2	2
	Total	49	49
		100	100
6.	Processing Method.		
	Boiled	54	54
	Soaked	8	8
	Baked	2	2
	Pounded	23	23
	Fried	3	3
	Shredded	4	4
	Eat straight away	3	3
	Smeared	1	1
	Take the gel/sap	2	2
	Total	100	100
7.	How to use.		
	Drink/eat	69	69
	Smeared	17	17
	Drip	2	2
	Sticked	12	12
	Total	100	100
8.	Consumption Rules.		
	1x-3x a day	74	74
	1x-3x a week	9	9
	Together Eating	1	1
	When sick	6	6
	Total	100	100
9.	Preferred Dosage Form.		
	Tablets/pills/capsules	55	55
	Drinking Fluids	16	16
	Ointment/cream	14	14
	Patches	2	2
	Polished Liquid	10	10
	Made into Tea	1	1
	Drops	1	1
	Powder	1	1
	Total	100	100
10.	People know the contents of natural ingredients.		
	Know	0	0
	Do not know	100	100
	Total	100	100
11.	Storage of processed natural ingredients		
	Disposable	82	82
	24 hours	9	9
	Store in the refrigerator	9	9
	Total	100	100

No.	Category	Number (n=100)	Percentage (%)
12.	Source of Information about Natural Ingredients.		
	Public	68	68
	Family	27	27
	Internet/advertising	5	5
	Total	100	100
13.	Abstinence/Lack of Natural Ingredients.		
	There isn't any	95	95
	Feels hot	1	1
	Not allowed for hypertension sufferers	1	1
	Should not be taken together with other medicines.	1	1
	May Cause Constipation	1	1
	If consumed too often it can cause low sugar levels	1	1
	Total	100	100

Discussion

Respondent Characteristics

Respondent characteristics are generally used to determine the diversity of respondents based on gender, ethnic origin, age, education, occupation, family status, total income and expenses. With these characteristics, it is hoped that it can provide a fairly clear picture of the condition of the respondents related to the problem and research objectives in accordance with table 1.

Based on the gender characteristics of the respondents, it is known that when data was collected by visiting people's homes, it was found that many women tended to be at home compared to men. Research conducted by Arute et al (2013) found that women have a greater tendency to care about health than men. The results of this research are in line with Wijaya et al (2014), where research data shows that women are more willing to be respondents[7]. Women and men have differences in terms of needs, desires and expectations[8]. Women have an important role as decision makers in health services not only for themselves but also for their families[9]. The Lulut River area is an area of native Banjarmasin people, and there are very few immigrants from outside.

Based on the characteristics, ages in the range of 41-50 years are more dominant as respondents because at that age a lot of information is obtained and quite a lot of people use herbal plants as an alternative treatment[7]. One factor that influences decision making is age[9]. In education, elementary school respondents were more often found due to inadequate economic conditions[10]. Someone with a higher level of education tends to be more critical in making decisions by prioritizing quality[11].

Other jobs were 59 people. The other jobs in question are those of housewives which are more common. This is because the location of the research is the environment where the community lives[7]. Based on the characteristics of family status, the status of non-head of the family is more dominant because at the time of the research many housewives were most likely to be found because they were where they lived/at home.

Income and expenses are in accordance with the respondents' job ratings, it is known that respondents with various jobs such as employees, entrepreneurs, self-employed, civil servants and housewives[10]. People's willingness to pay (WTP) for health interventions is strongly influenced by income. WTP will increase as household income increases. Family income determines family purchasing power[12].

Use of Natural Ingredients as Medicine

Since ancient times, people have relied heavily on the surrounding environment to meet their needs. One of them is the use of natural ingredients as medicine. Starting from cosmetic products, skin care to products for

self-medication (self-medication). The use of natural/herbal products for self-medication in the general public is often understood to be much safer and without side effects than using conventional medicines[13].

Natural Ingredients that Have Been Used as Medicine

In this research, the natural ingredient most often used by the people of Sungai Lulut is Soursop Leaves. Soursop leaves are a natural ingredient that they have used as medicine. Soursop leaves contain chemical compounds such as alkaloids, tannins, and several other ingredients. So far, soursop leaves have been used as an antioxidant for cancer, anti-microbial, anti-viral, fever, diarrhea, anti-seizure, anti-fungal, and many more. Soursop leaves are easy to find in the community so they are often used as traditional medicine by boiling them[14].

Benefits of Natural Ingredients

Diabetes as a benefit from the most natural ingredients and other diseases such as headaches, fever, itching, and many more. This is in line with the statement by the International Diabetes Federation (2021) which states that diabetes is a deadly chronic disease today. It is recorded that 537 million adults (aged 20-79 years) or 1 in 10 people worldwide live with diabetes. Diabetes causes the death of 6.7 million people or 1 person every 5 seconds. Indonesia is the fifth country with the highest number of diabetes sufferers, namely 19.47 million out of a population of 179.72 million. This makes diabetes a common disease recognized by society. So, most people try to cure or avoid diabetes by using natural ingredients as complementary therapy for diabetes.

Names/Other Languages of Natural Materials Used

In the category of other names/languages for natural ingredients used, respondents mentioned Janar as another name for turmeric. The Banjar tribe people are accustomed to calling Kunyit Janar. According to Tolapa (2022), regional languages are a form of local wisdom which is part of culture which needs to be preserved.

Types of Natural Materials

respondents chose trees. This is because the Lulut River area is on the riverbank and there are lots of trees, so people use trees more often than the other 3 categories as medicine.

Parts of Natural Materials Used

respondents chose leaves as the part they used as medicine. According to Handayani (2003) in Pelokang (2018), the leaves are widely used as traditional medicine because the leaves are the part that is easiest to obtain and use. Leaves are very easy to find and accessible to the public. Processing is also simple because the leaves are usually thin and soft so they are easy to dry to make powder, or boil to extract the juice.

Mixture/Ingredients Used

In processing, 5-7 leaves + 1 glass of water are used. While not mentioning additional ingredients or other mixtures. In general, respondents still use traditional methods to process natural ingredients into medicine. They measure the amount of natural ingredients using a handheld system, finger joints, or the number of pieces/pieces. Most respondents chose odd numbers because according to beliefs that have been passed down from generation to generation, people believe that when processing natural ingredients as medicine, odd numbers must be used[15].

Processing Method

In the processing method category, they boil natural ingredients which they use as medicine. The people of Sungai Lulut believe that boiling can make it easier to use and reduce the bitter taste when consuming it, especially natural ingredients from plants. The people of Sungai Lulut also believe this method is healthier than consuming it directly because it can kill germs and bacteria in these natural ingredients. This is in line with Lestari's statement which states that the public

believes that the boiling method can kill germs in plants, is safer, and more compounds in plants come out[16].

How to use

In the method of use category, drinking is the most common. The people of Sungai Lulut say that this method of drinking is more practical than other methods. This is also in line with the way people prefer to process natural ingredients, namely boiling. According to Lestari and friends, the way to use traditional medicine depends on the method of concocting the traditional medicine[17].

Preferred Dosage Form

Based on the dosage form category, choose solids (tablets, capsules, pills) to be taken orally as the preferred form. While liquids are drunk as their most preferred form. This is in line with research conducted by Nurjanah and friends, that the oral route of drug administration is much preferred by the public because it is easy to use[18].

People know the content of natural ingredients

In the category of natural ingredients, all respondents (100%) stated that they did not know the contents of the natural ingredients they used. This is because people usually use these natural ingredients from generation to generation so they don't know what they contain. People only focus on the benefits of these natural ingredients[19].

Storage of Processed Natural Ingredients

From the results obtained in the category of storing processed natural ingredients, as many as 82 (82%) respondents chose single use as a way of storing processed products from natural ingredients that they use. This is because the people of Sungai Lulut only use this traditional medicine for one consumption.

Source of Information about Natural Ingredients

Respondents said that they got information about natural ingredients as medicine from the environment where they lived or the surrounding community. and others from family or from generation to generation or the Internet/web they read. This is in line with research conducted by Pratiwi and friends, that public knowledge about traditional medicine has been passed down from generation to generation through word of mouth from the community[20].

Abstinence/Lack of Natural Ingredients

In the category of Abstinence/Disadvantages of natural ingredients, the results obtained were that 95 (95%) respondents stated that there were no taboos or deficiencies in the natural ingredients they processed. This may be due to a lack of public knowledge about the contents of the natural ingredients they process and/or experience. Respondents' use of natural ingredients is always safe because it is based on generations. Natural ingredients are chemical substances which are secondary metabolites which can be in the form of single or pure isolated components or still in the form of mixtures of components in the form of extracts, dry preparations from parts of an organism, whether plants, microbes or animals, which are utilized for their pharmacological effects. The use of natural ingredients includes medicines, medicinal ingredients, neutraceuticals, functional foods, nutritional supplements, herbal products, aromatherapy, natural dyes, natural spices, perfumes and various local products with certain terms such as herbal medicine in Indonesia. Several types of products using natural ingredients include essential oil products, pharmaceutical products, nutraceutical products, cosmetic and care products, herbal medicine, standardized herbal medicines, and phytopharmaceuticals [21].

Conclusions

The use of soursop leaves as a popular traditional medicine in Sungai Lulut, South Kalimantan. Detailed knowledge about the contents and storage methods is still lacking among respondents. Information regarding the use of natural ingredients is generally obtained from the surrounding environment and the development of pharmaceutical preparations in the form of capsules, pills, tablets.

Acknowledgments

In preparing this simple scientific publication manuscript, the author received assistance from various parties, for this reason the author would like to thank Sari Mulia University and the Sungai Lulut community for this research. Finally, thanks are expressed to all parties who cannot be mentioned one by one.

References

1. Inna M, Atmania N, Prismasari S. Potential use of Cinnamomum burmanii essential oil-based chewing gum as oral antibiofilm agent. J Dent Indones. 2010;17(3):80–6.
2. Nibras GU, Noval N, Tuti TA. Formulation and Evaluation of Nanomouthwash from Turmeric Rhizome Extract (Curcuma domestica Val.) for the Treatment of Mouth Ulcers. Farm J Sains Farm. 2022;3(2):76–85.
3. Noval N, Melviani M, Novia N, Syahrina D. Formulation and Evaluation of Mouthwash Formulation from Ethanol Extract of Bundung Plant (Actinoscirpus grossus) as Oral Antiseptic. J Surya Med. 2020;6(1):112–20.
4. Noval N, Nastiti K, Nugraha DF, Rahmadani R, Alawiyah T. Hand Sanitizer Product Innovation Of Bajakah's Root As Prevention Measurement In COVID-19 Pandemic. Logista J Ilm Pengabdi Kpd Masy. 2020;4(2):305–12.
5. Sari LORK. Utilization Of Traditional Medicine With Consideration Of Its Benefits And Safety. Maj Ilmu Kefarmasian. 2006;III(1):1–07.
6. Melviani M, Rohama R, Noval N. The Use Of Plants As Medicine In The People Of Banjar, Dayak, and Bugis Tribes In South Kalimantan. J Surya Med. 2022;8(2):171–7.
7. Dewi RS, Wahyuni W, Pratiwi E, Muharni S. The Use of Traditional Medicine by the Community in Tuah Karya Subdistrict, Pekanbaru City. J Penelit Farm Indones. 2019;8(1):41–5.
8. Hutauruk J, Tucunan AAT, Sondakh RC. Overview of COVID-19 Prevention Behavior in Senduk Village, Tombariri District, Minahasa Regency. J Kesmas. 2021;10(3):42–50.
9. Sangadji EM. Sopiah. Perilaku Konsumen Pendekatan Praktis. Yogyakarta: CV Andi Offset; 2013.
10. Jannah M, Melviani M, Sarkiah S. Factors Related To The Use Of Toga (Family Medicinal Plants) In Improving Community Health In Pagatan, Kusan Hilir District. J Surya Med. 2021;7(2):142–6.
11. Sinulingga NAB, Sihotang HT. Perilaku Konsumen: Strategi dan Teori. Medan: IOCS Publisher; 2023. 283 p.
12. Muslihun M. Environmental Study in the Policy of Paid Plastic Bags in Semarang City. Repos Univ Diponegoro. 2019;(1):473–84.
13. Amirah S, Wati A, Putra B, Walani FA. (Antirheumatoid Arthritis Activity of Salam (Syzygium polyanthum) Leaf Extract to Mice Induced by Complete Freund's Adjuvants (CFA)). Galen J Pharm. 2020;6(1):77–83.
14. Muin R. Community Knowledge of the Use of Soursop Leaves (Annona muricata Linn) as Hypertension Medication. J Pharm Sci Herb Technol. 2020;5(1).
15. Nasution BEC. The Effect of Local Microorganism Extract (MOL) from Banana Rhizome on the Growth of Oil

Palm Seedlings (Elaeis guineensis Jacq.) in the Main Nursery Phase. Repos Univ Andalas. 2018;
16. Lestaridewi NK, Jamhari M, Isnainar I. Study Of Plant Utilization As Traditional Medicines At Tolai Village, Torue Subdistric, Parigi Moutong District. e-JIP BIOL. 2017;5(2):92–108.
17. Lestari F, Susanti I. Exploration of the Processing Process of Immunomodulatory Medicinal Plants by the Anak Dalam Tribe in Bendar, Bengkulu. BIOEDUKASI (Jurnal Pendidik Biol. 2019;10(2):179.
18. Nurjanah F, Sriwidodo S, Nurhadi B. Stabilization of Tablets Containing Hygroscopic Active Ingredients. Maj Farmasetika. 2021;6(1):10–22.
19. Khairunnisa F, Haq KU, Setyawati H, Permana AJ, Ramadhan R, Raharjo Y, et al. Education on the Utilization of Natural Ingredients as Traditional Medicine for Disease Prevention and Healthcare. J ABDI. 2022;8(1):79–84.
20. Pratiwi R, Saputri FA, Nuwarda RF. Knowledge and Use of Traditional Medicine among the Community: Preliminary Study in Hegarmanah Village, Jatinangor, Sumedang. J Apl Ipteks untuk Masy. 2018;7(2):97–100.
21. Nugroho A. Buku Ajar: Teknologi Bahan Alam. Cetakan pe. Lambung Mangkurat University Press. Banjarmasin: Lambung Mangkurat University Press; 2017. 1–155 p.