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Traditional knowledge of medicinal plants as tonic by Karya Bhakti Village community of Bengkayang Regency West Kalimantan Indonesia

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Abstract

People in West Kalimantan Province, Indonesia, have close relationships with plants. They use the plants to fulfill their needs, one of them as medication in the traditional therapeutic system. Medicinal plants are used to treat people when they are sick and maintain their health. This medicinal plant knowledge becomes their local wisdom and part of their culture. We document the traditional knowledge of medicinal plants as tonics owned by local people in Karya Bhakti Village, Bengkayang Regency, West Kalimantan. Tonic is a remedy used to strengthen the function of organs or organ systems such as the heart, digestion, blood vessels, nerves, and uterus. This study was conducted in Karya Bakti Village of Bengkayang Regency West Kalimantan, Indonesia. A total of 221 respondents of the villagers of five sub-village of Karya Bhakti village were selected by purposive sampling. Respondents were questioned several questions related to their knowledge of the use of medicinal plants as a tonic. The information obtained is then analyzed with ethnobotanical indices, namely use-value (UV), informant consensus factor (ICF), and fidelity level (FL). Our result found that all the villagers of Karya Bhakti village who participated in this study have knowledge of medicinal plants and use it as a tonic. There were 41 types of medicinal plants used by the villagers of Karya Bhakti Village as tonics. These tonics are especially those used to enhance male vitality, increase appetite, improve the digestive system, blood enhancer, strengthen pregnancy, overcome muscle pain, reduce joint pain, fever, as well as post-natal care for women (deflating women's abdomen, reducing post-delivery pain, restoring the abdominal skin, warming women's bodies, promoting puerperal blood flow, cleaning the uterus and healing uterine wounds). The use-value range from 0.02-to 0.74; some plants have high use value, namely riak putih or white ginger (*Z. officinale* Rosc. Var officinale), riak merah or red ginger (*Z. officinale* Var. Rubrum), serai or lemongrass (*C. citratus* DC), cakur or galangal (*K. galanga* L), and kunyit or turmeric (*C. longa* L). Almost all tonic categories showed high ICF values (> 0.9) except for the promoting puerperal blood flow. The fidelity level ranges from 3-to 100%, and there are 15 plants as tonics with the highest fidelity level (100) with several tonic categories. It is suggested that the community of Karya Bhakti village have the knowledge, and this knowledge is still well preserved among them.

Key words: Medicinal plants, tonic, Karya Bhakti Village, traditional knowledge

INTRODUCTION

West Kalimantan is a province in Indonesia with rich natural resources and cultures. The plants are diverse and have various uses. Local communities use those plants to fulfil their needs, one of which is as materials in traditional medication due to the health facilities are still limited (Sulatri et al. 2019). These medicinal plants are used to cure various diseases and maintain people's health (Mariani et al. 2021).

The tradition of using plants in traditional medication can be traced in many areas in West Kalimantan. Several researchers have documented the knowledge of medicinal plant utilization among local communities resulting in several differences in the pattern of medicinal plant utilization (Pradita

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et al. 2021; Yusro et al. 2020; Mariani et al. 2021; Sari et al. 2021). The difference in local knowledge in the community of each area certainly gives a pattern in how they recognize the medicinal plants and utilize them. The knowledge of medicinal plants is part of community traditions and cultures, it passed down from previous generations to the present generation and through personal experience (Ningsih et al. 2020). However, the knowledge of medicinal plants continues to decline due to cultural changes, mainly due to the influence of modernization, lack of written documentation, deforestation, environmental degradation, and the lack of interest of young people in medicinal plants (Napagoda et al. 2018).

In the local community, high knowledge of traditional medicinal plants has been owned by traditional healers or batra. This traditional healer conducts traditional therapeutic using medicinal plants. Nowadays, their existence is limited, and it is possible that in the future, their knowledge will be lost along with the increase in their age and the rapid availability of health facilities in the village. An effort has to be conducted to prevent the loss of local knowledge of medicinal plants utilization in the community. The transmission of knowledge from traditional healers to the general public must be done; thus, their knowledge is not lost in their absence (Yusro et al., 2020).

In this study, we document the knowledge of medicinal plants as tonics owned by local people in Karya Bhakti Village, Bengkayang Regency, West Kalimantan. In our previous studies, we have reported the knowledge possessed by traditional healers in using plants as tonics (Riconadi et al., 2020). Through this research, we try to describe the pattern of using medicinal plants as tonics that are owned by the community of Karya Bhakti Village.

Tonic is a remedy used to strengthen the function of organs or organ systems such as the heart, digestion, blood vessels, nerves, and uterus (Efferth et al., 2016). Tonic can stimulate and strengthen all organ systems and stimulate the repair of muscle tone cells (Retnani and Parmadi, 2014). People have used a tonic to restore stamina, especially after heavy activities or strenuous work. The tonic is also used for post-illness care and mothers' postnatal care (Prastiwi et al., 2015). According to (Mariani et al., 2021; Pradita et al., 2021), tonic remedies consist of various medicinal plants that women use to strengthen pregnancy. Tonic is also used for maternal care after childbirth to repair the reproductive organs to recover after birth.

MATERIAL AND METHODS

Research site

This study was conducted in Karya Bakti Village, Sungai Betung District, Bengkayang Regency (Figure 1). The respondents interviewed live in 5 (five) sub-villages such as Keranji, Bemuran, Ingkar, Rasau and Bengkuang.

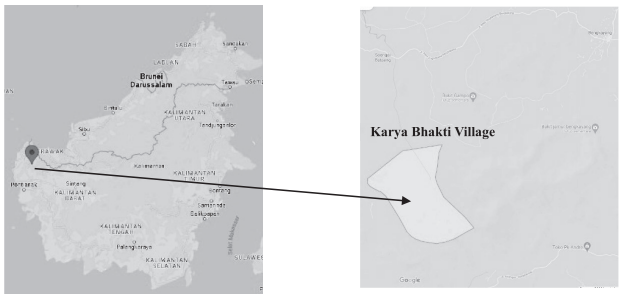

Fig. 1. The research site (Karya Bhakti Village).

Data collection

Data collection was carried out from March-April 2020 using the in-depth interview method. A total of 221 respondents of the villagers of Karya Bhakti village were selected by purposive sampling. The respondents selected are permanent residents in Karya Bhakti Village, aged more than 17 years, and are the general public or are not traditional healers.

During the interview, respondents were questioned several questions related to their knowledge of the use of medicinal plants as a tonic. The plants they used as a tonic or to strengthen the organ system, as a health condition booster, and repair muscle cells. These tonics are especially those used to enhance male vitality, increase appetite, improve the digestive system, blood enhancer, strengthen pregnancy, overcome muscle pain, reduce joint pain, fever, as well as post-natal care for women (deflating the abdomen, reducing post-delivery pain, restoring the skin of the abdomen, warming the body, promoting puerperal blood flow, cleaning the uterus and healing uterine wounds). We also asked the respondents to explain the parts of the plants used, how to process these medicinal plants and how to use them. Respondents were asked to show the plants then we documented them to identify their scientific names (Yusro et al., 2020); (Mariani et al., 2021).

Data analysis

The data obtained were then carried out the ethnobotanical analysis in the form of use-value (UV), informant consensus factor (ICF), and Fidelity level (FL) using the following equation (Tangjitman *et al*., 2015):

$$UV = \sum U/n$$

UV = Use value
U = Number of respondents who use a particular plant
n = Total respondents

$$ICF = (Nur\text{-}Nt) / (Nur - 1)$$

ICF = Informant consensus factor
Nur = Number of respondents who use a particular plant to treats a particular treatment
Nt = Number of plants to treat a particular treatment

$$FL\ (\%) = (Np/N) * 100$$

FL = Fidelity level (%)
Np = Total of respondents who use a particular plant to treats a particular treatment
N = Total of respondents who use the plant for all the benefits possessed

RESULTS AND DISCUSSION

Respondents characteristic

In this study, we interviewed as many as 221 respondents who were residents of the Karya Bhakti Village, belonging to five sub-villages. The characteristics of the respondents are presented in Table 1.

In this study, the respondents were dominated by males (66.51%). The participating respondents were distributed into four age groups, ranging from 31-40 years, 41-50 years, 51-60 years to > 60 years, and the majority of respondents were in the 31-40 years group (Table 1). in this village, Dayak is the dominant ethnic, and only 0.46% are from Sundanese ethnic. The people of Karya Bhakti Village embraced Christianity, Catholicism, and Protestantism, while those of the Sundanese ethnicity embraced Islam.

The people of Karya Bhakti Village who participated in this study had varying levels of education, ranging from those who did not complete elementary school (non-educated), elementary school, junior high school, and senior high school to the bachelor degree. The majority of respondents have a basic education level (32. 58%). Farming is the dominant occupation of the village community (61.99%). In addition, some work as civil servants, and merchant, while the female respondents are generally housewives.

The knowledge of medicinal plants as tonic

Our result found that all the villagers of Karya Bhakti village who participated in this study are have the knowledge of medicinal plants and use it as a tonic. There were 41 types of medicinal plants used by the villagers of Karya Bhakti Village as tonics. These plant species are presented in Table 2.

We group the plants mentioned by respondents according to their families. There are 41 species of plants mentioned by respondents as a tonic; these plants belong to 31 families. The most widely used medicinal plant species by the people of Karya Bakti Village are the Zingiberaceae family with six species (14.29%), Myrtaceae 3 species (7.14%), Apiaceae, Fabaceae, Piperaceae, and Verbenaceae each with two species percentage (4.73%) (Fig. 2). Plants from the Zingiberaceae family contain various chemical components such as aromatic compounds, alkaloids, flavonoids, polyphenols, saponins, and tannins (Irayanti and Yadnya Putra, 2020). The presence of

Table 1. Respondent Characteristics of Karya Bhakti Village.

No.	Characteristic	Category	Total	Percentage
1	Gender	Male	147	66,51
		Female	74	33,49
2	Age	31-40 years old	103	46,61
		41-50 years old	47	21,27
		51-60 years old	36	16,29
		>60 years old	35	15,83
3	Ethnic	Dayak	220	99,54
		Sunda	1	0,46
4	Religion	Catholic	60	27,15
		Protestan	160	72,39
		Islam	1	0,46
5	Education Level	Not educated	46	20,81
		Elementary School	72	32,58
		Junior High School	45	20,36
		Senior High School	50	22,62
		Bachelor	8	3,61
6	Occupation	Farmer	137	61,99
		Civil Servant	9	4,07
		Merchant	4	1,81
		Housewives	71	32,13

Table 2. The Medicinal Plants as Tonic Used by The Villagers of Karya Bhakti Village.

No	Vernacular Name	Scientific Name	Family	Efficacy	Plant Part Used	Preparation Modes	Administration Routes
1	Ahnyam tidur	*Phyllanthus reticulatus* Poir	*Phyllanthaceae*	Improve the digestive system	All parts	Decoction	Drunk
2	Asam jawa	*Tamarindus indica* L	*Fabaceae*	Enhance male vitality, increase appetite, improve the digestive system, fever, restoring the abdominal skin in post-natal care	Fruits	Decoction	Drunk
3	Bamali	*Leea indica* (Burm.f.) Merr	*Vitaceae*	Increase male vitality, reducing post-delivery pain, healing uterine wounds.	All parts	Decoction	Drunk
4	Bangkayak	*Justicia gendarussa* Burm.f	*Acanthaceae*	Enhance male vitality, reduce joint pain, fever	All parts	Decoction, smashed	Drunk, patched
5	Bawang merah	*Allium cepa* L	*Amaryllidaceae*	Enhance male vitality, reduce joint pain, fever	Tuber	Decoction, smashed	Smeared, drunk
6	Bawang rama	*Eleutherine americana* Merr	*Iridaceae*	Enhance male vitality, improve the digestive system	Tuber	Decoction	Drunk
7	Buant	*Dillenia suffruticosa* (Griff. ex Hook) Martelli	*Dilleniaceae*	Reducing post-delivery pain, healing uterine wounds	Roots	Decoction	Drunk
8	Bunan	*Carica papaya* L	*Caricaceae*	Enhance male vitality, improve the digestive system	All parts	Decoction, grated	Drunk, ate
9	Buntan	*Cocos nucifera* L	*Arecaceae*	Enhance male vitality, improve the digestive system, strengthen pregnancy, deflating women's abdome	Fruits	Grated	Drunk, ate
10	Cakur	*Kaempferia galanga* L	*Zingiberaceae*	Enhance male vitality, improve the digestive system, reduce join pain	Rhizome	Smashed	Drunk
11	Cengkeh	*Syzygium aromaticum* L	*Myrtaceae*	Enhance male vitality	Flower	Decoction	Drunk
12	Jambu batu	*Psidium guajava* L	*Myrtaceae*	Improve the digestive system	Leaves	Decoction	Drunk
13	Jintan hitam	*Nigella sativa* Linn	*Ranunculaceae*	Enhance male vitality	Seeds	Decoction	Drunk
14	Jintan putih	*Cuminum cyminum* L	*Apiaceae*	Overcome muscle pain, reduce join pain, enhance male vitality	Seeds	Decoction	Drunk
15	Kalamabo	*Blumea balsamifera* L	*Asteraceae*	Enhance male vitality	Roots	Decoction	Drunk
16	Karungan merah	*Jatropha gossypifolia* L	*Euphorbiaceae*	Improve the digestive system, overcome muscle pain, reduce join pain, fever	All parts	Decoction, smashed	Drunk, patched
17	Kayu manis	*Cinnamomum verum* J.Presl	*Lauraceae*	Increase appetite	Bark	Decoction	Drunk
18	Ketumbar	*Coriandrum sativum* L	*Apiaceae*	Overcome muscle pain, reduce join pain, warming women bodies in post-natal care	Seeds	Decoction	Drunk
19	Kunyit	*Curcuma longa* L	*Zingiberaceae*	Increase appetite, strengthen pregnancy, restoring the abdominal skin and cleaning the uterus in post-natal care	Rhizome	Decoction, grated	Smeared, drunk
20	Lada	*Piper ningrum* L	*Piperaceae*	Increase appetite, deflating women's abdomen and warming women's bodies in post-natal care	Seeds	Decoction	Drunk
21	Lengkuas	*Alpinia galanga* L	*Zingiberaceae*	Increase appetite, improve the digestive system, blood enhancer, restoring the women's abdominal skin and promoting puerperal blood flow	Rhizome	Decoction	Drunk
22	Mahkota dewa	*Phaleria macrocarpa* (Scheff.) Boerl	*Thymelaeaceae*	Enhance male vitality	Fruits	Decoction	Drunk
23	Marawat	*Vitex pinnata* L	*Laminaceae*	Improve the digestive system, overcome muscle pain, reduce joint pain, fever	Roots	Decoction	Drunk
24	Mengkudu	*Morinda citrifolia* L	*Rubiaceae*	Vitalitas pria, meningkatkan sistem, pencernaan, demam	Roots	Decoction	Drunk
25	Padang	*Imperata cylindrica* L	*Poaceae*	Improve the digestive system, fever	Roots	Decoction	Drunk
26	Pakis	*Stenochlaena palustris* Bedd	*Polypodiaceae*	Improve the digestive system, blood enhancer	Leaves	Decoction	Drunk, ate
27	Pala	*Myristica fragrans* Houtt	*Myristicaceae*	Enhance male vitality	Seeds	Decoction	Drunk
28	Pandan wangi	*Pandanus amaryllifolius* Roxb	*Pandanaceae*	Increase appetite	Leaves	Decoction	Drunk

No	Vernacular Name	Scientific Name	Family	Efficacy	Plant Part Used	Preparation Modes	Administration Routes
29	Palado	*Fibraurea tinctoria* Lour	*Menispermaceae*	Enhance male vitality, improve the digestive system	Roots	Decoction	Drunk
30	Palai	*Alstonia scholaris* L	*Apocynaceae*	Improve the digestive system	Roots	Decoction	Drunk
31	Putri malu	*Mimosa pudica* L	*Fabaceae*	Improve the digestive system	Roots	Decoction	Drunk
32	Riak merah	*Zingiber officinale* Rosc. Var. Rumph	*Zingiberaceae*	Enhance male vitality, reduce joint pain, deflating women's abdomen after delivery, reducing post-delivery pain, warming women's bodies, healing uterine wounds after delivery.	Rhizome	Decoction, smashed	Drunk, patched
33	Riak putih	*Zingiber officinale* Var. Amarum	*Zingiberaceae*	Enhance male vitality, reduce joint pain, deflating women's abdomen after delivery, reducing post-delivery pain, warming women's bodies, healing uterine wounds after delivery.	Rhizome	Decoction, smashed	Drunk, patched
34	Salam	*Syzygium polyanthum* (Wight) Walp	*Myrtaceae*	Increase appetite, improve the digestive system	Leaves	Decoction	Drunk
35	Serai	*Cymbopogon citratus* DC	*Poaceae*	Increase appetite, reduce joint pain, overcome muscle pain	Rhizome	Decoction, smashed	Drunk, patched
36	Tabu amot	*Cheilocostus speciosus* (J.Konig) C.Specht	*Costaceae*	Improve digestive system	Roots	Decoction	Drunk
37	Takang	*Melastoma malabathricum* L	*Melastomataceae*	Reduce joint pain	Leaves	Smashed	Patched
38	Tampajarak	*Leucosyke capitellata* (Poir.) Wedd	*Urticaceae*	Fever	Roots	Decoction	Drunk
39	Temulawak	*Curcuma xanthoriza* Roxb	*Zingiberaceae*	Enhance male vitality, reduce joint pain, overcome muscle pain, reducing post-delivery pain, restoring women abdominal skin after delivery, healing uterine wounds	Rhizome	Decoction, smashed	Drunk, patched
40	Tungun merah	*Homalomena occulta* (Lour.) Schott	*Araceae*	Reduce joint pain, reducing post-delivery pain	Rhizome	Decoction	Drunk
41	Uwit merah	*Piper ornatum* L	*Piperaceae*	Cleaning the uterus after delivery	All parts	Decoction	Drunk

these compounds leads to the high usage of plants members of this family for various needs, such as in traditional medication, food flavor, or seasoning the dishes.

This study found that all interviewed respondents used medicinal plants as tonics. They use 41 species of plants as a tonic to maintain and maintain their health condition. These tonics are especially those used to enhance male vitality, increase appetite, improve the digestive system, blood enhancer, strengthen pregnancy, overcome muscle pain, reduce joint pain, fever, as well as post-natal care for women (deflating women' s abdomen, reducing post-delivery pain, restoring the abdominal skin, warming women' s bodies, promoting puerperal blood flow, cleaning the uterus and healing uterine wounds).

An exciting result is that the number of plants used by the community in Karya Bhakti Village as tonics is more than that stated by "batra," or traditional healers in the village, where batra only uses 32 types of plants as tonics (Riconadi et al., 2020). In the local community, a traditional healer is a person who considers having a high knowledge of medicinal plants. They give traditional therapeutic to the community when their sick or to improve their health condition. Our results suggest that the knowledge of medicinal plants, especially those as tonics not only owed by batra but also to the community. It

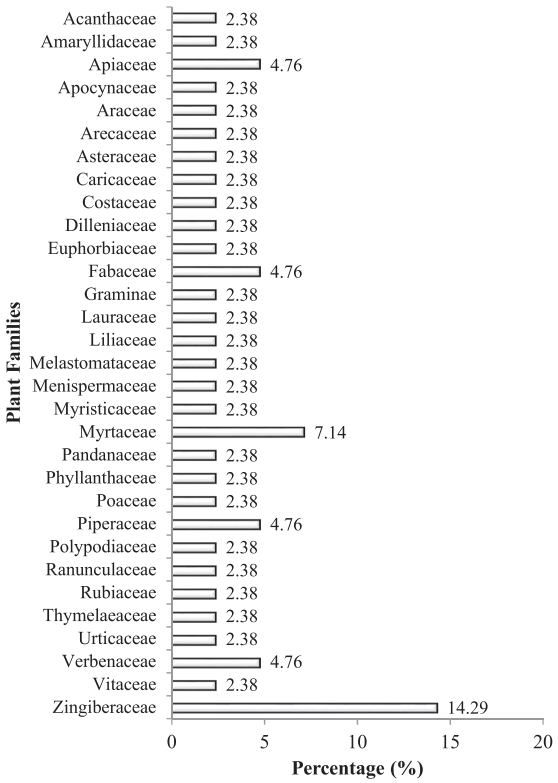

Fig. 2. Medicinal plant families.

proved that the knowledge had been disseminated to the community in this village. A similar result was reported by (Rania et al., 2019) and (Yusro et al., 2020), where the general public also has knowledge of medicinal plants to overcome female health problems and those of batra in Masbangun village Noth Kayong Regency.

The people of Karya Bhakti Village use various plants with several life forms, such as shrubs, trees, herbs, palms, and lianas. Herbs were the highest (35.71%) (Fig. 3A). In several areas in West Kalimantan, the use of herbs is reported to be one of the most widely used life forms as traditional medication, as reported by (Pradita et al. (2021); Sari et al. (2021); Yusro et al. (2020).

In using plants as tonics, the people of Karya Bhakti Village use various plant parts, such as fruit, skin, stems, leaves, rhizomes, tubers, roots, and even all parts (Fig. 3B). The community of Karya Bhakti village predominantly uses roots (26.19%) in making tonic potions. Traditional healers in this village also carry out the same pattern of use in making tonic potions, as reported by (Riconadi et al., 2020). Traditional healers in Masbangun Village, Kayong Utara Regency, also prefer to use the root in making potions for the mother's care after postpartum (Rania et al., 2020). One of the medicinal plants used by the community of Karya Bhakti Village is the Padang (*I. cylindrica*). The roots of this plant are used to improve the digestive system and reduce body heat (fever). It has been reported to contain secondary metabolites such as saponins, flavonoids, coumarins, phenols, and glycosides. It has the ability as antibacterial, antioxidant, and anti-inflammatory (Jung and Shin, 2021).

In preparing tonic concoctions, the community of Karya Bhakti Village uses several methods, namely decoction, grating, and pounding (Fig. 3C). Our result found that the decoction method is the most widely used (75%). This method is similar to traditional healers in this village to prepare tonic concoctions (Riconadi et al., 2020). Traditional communities in West Kalimantan commonly use the decoction method for medication preparation (Yusro et al., 2020); (Mariani et al., 2021). Decoction is a conventional extraction method capable of dissolving secondary metabolites found in medicinal plants. It usually uses universal solvents, namely water which is cheap and safe for consumption (Rasul, 2018). Our finding in the preparation method is in line with the dominant administration method for using their tonic concoction, which is by drinking (77.36%) (Fig. 3D).

In practice, the people of Karya Bhakti Village boil the medicinal plants part by adding 2-3 cups of water and cook until the water is reduced to 1 cup. Once it cools, the concoction can be drunk. Tonic is a potion generally used to normalize or strengthen organ function and increase body

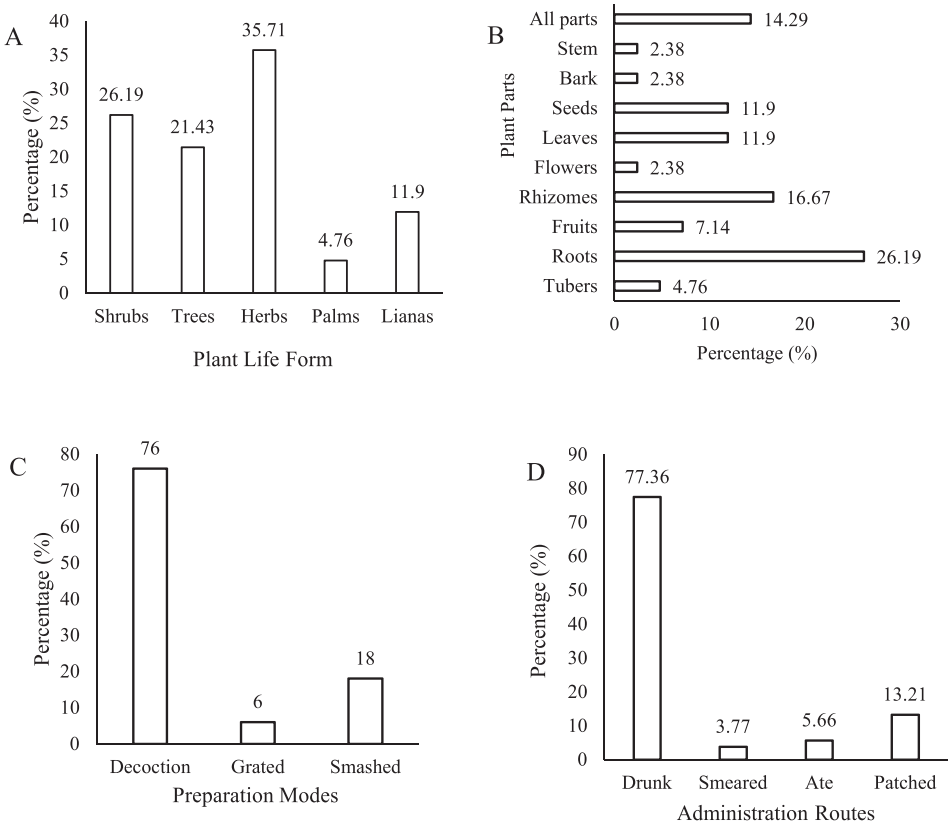

Fig. 3. Medicinal plants as tonic based on plants life form (A); plants part used (B); preparation modes (C); administration routes (D).

vitality (Efferth et al., 2016). Most of the concoctions are administered by drinking. They believe that a tonic potion administered by drinking will be quickly absorbed by the body and give good results.

The utilization patterns of medicinal plants as tonic by the community of Karya Bhakti Village

In this study, we analyze the utilization pattern of medicinal plants as a tonic by the community of Karya Bhakti Village. Thus, we employed several ethnobotanical indices such as use value (UV) to measure the relative use-value of each plant. Informant consensus factor (ICF) to measure the agreement among the community on the use of medicinal plants in a particular treatment and Fidelity Level (FL) to determine the preferable medicinal plants for a specific treatment.

Use Value (UV)

UV is an ethnobotanical index used to analyze the use-value of a medicinal plant in society (Faruque et al., 2018). We documented 41 species of plants as a tonic used by the community of Karya Bhakti Village with use-value range from 0.02-0.74. Among those plants, riak putih or white ginger (*Z. officinale* Rosc. Var officinale) and riak merah or red ginger

Table 3. The use value of medicinal plants as tonic used by the community of Karya Bhakti Village.

No	Vernacular Name	Scientific Name	∑U	UV
1	Ahnyam tidur	*Phyllanthus reticulatus* Poir	114	0,52
2	Asam jawa	*Tamarindus indica* L	49	0,22
3	Bamali	*Leea indica* (Burm.f.) Merr	115	0,52
4	Bangkayak	*Justicia gendarussa* Burm.f	61	0,28
5	Bawang merah	*Allium cepa* L	99	0,45
6	Bawang rama	*Eleutherine americana* Merr	24	0,11
7	Buant	*Dillenia suffruticosa* (Griff. ex Hook) Martelli	122	0,55
8	Bunan	*Carica papaya* L	84	0,38
9	Buntan	*Cocos nucifera* L	109	0,49
10	Cakur	*Kaempferia galanga* L	132	0,60
11	Cengkeh	*Syzygium aromaticum* L	4	0,02
12	Jambu batu	*Psidium guajava* L	31	0,14
13	Jintan hitam	*Nigella sativa* Linn	5	0,02
14	Jintan putih	*Cuminum cyminum* L	30	0,14
15	Kalamabo	*Blumea balsamifera* L	63	0,29
16	Karungan merah	*Jatropha gossypifolia* L	72	0,33
17	Kayu manis	*Cinnamomum verum* J.Presl	36	0,16
18	Ketumbar	*Coriandrum sativum* L	29	0,13
19	Kunyit	*Curcuma longa* L	120	0,54
20	Lada	*Piper ningrum* L	41	0,19
21	Lengkuas	*Alpinia galanga* L	50	0,23
22	Mahkota dewa	*Phaleria macrocarpa* (Scheff.) Boerl	18	0,08
23	Marawat	*Vitex pinnata* L	43	0,19
24	Mengkudu	*Morinda citrifolia* L	37	0,17
25	Padang	*Imperata cylindrica* L	67	0,30
26	Pakis	*Stenochlaena palustris* Bedd	92	0,42
27	Pala	*Myristica fragrans* Houtt	7	0,03
28	Pandan wangi	*Pandanus amaryllifolius* Roxb	37	0,17
29	Palado	*Fibraurea tinctoria* Lour	37	0,17
30	Palai	*Alstonia scholaris* L	9	0,04
31	Putri malu	*Mimosa pudica* L	6	0,03
32	Riak merah	*Zingiber officinale* Rosc. Var. Rumbrum	164	0,74
33	Riak putih	*Zingiber officinale* Rosc. Var officinale	170	0,77
34	Salam	*Syzygium polyanthum* (Wight) Walp	15	0,07
35	Serai	*Cymbopogon citratus* DC	142	0,64
36	Tabu amot	*Cheilocostus speciosus* (J.Konig) C.Specht	21	0,10
37	Takang	*Melastoma malabathricum* L	28	0,13
38	Tampajarak	*Leucosyke capitellata* (Poir.) Wedd	12	0,05
39	Temulawak	*Curcuma xanthoriza* Roxb	104	0,47
40	Tungun merah	*Homalomena occulta* (Lour.) Schott	78	0,35
41	Uwit merah	*Piper ornatum* L	41	0,19

(*Z. officinale* Var. Rubrum) had the highest UV value (0.77 and 0.74). The high UV value indicates that these two plants are the most widely used by the community as tonics. In this community, both riak putih and riak merah are used as a tonic to increase male vitality, improve appetite, and reduce pain in muscles and joints. They are also used in postnatal care treatment (shrinking the mother's stomach, relieving body pain, warming the body, helping accelerate wound healing in the uterus).

Some communities in West Kalimantan use riak putih and riak merah for treating mother and baby in postnatal care, as reported by (Mariani et al. (2021) in the community of Tanap village Sanggau Regency and at Dayak Paus community (Pradita et al., 2021). Damayanti et al. (2021) reported that riak in several villages on Lombok island was used to reduce fever and treat diarrhea.

The extensive use of riak in the local community may be due to the secondary metabolites in these plants' rhizomes. Riak putih has several compounds, such as gingerol, shogaol, and zingeron. The phenolic compounds in riak putih give a unique spicy taste and contain high vitamin E, thus possessing antioxidant activity (Setyawati et al., 2021). This plant showed biological activities as an anti-inflammatory, analgesic, anticarcinogenic and cardiotonic. Another researcher also reported that the rhizome part of riak putih contains monoterpenes, sesquiterpenes, diterpenes, vanilloids, flavonoids. It also has several amino acids, vitamins, and minerals (iron, copper, manganese, zinc, chromium, nickel, and others) (Zhang et al., 2022).

In this study, we found several plants also have high use-value (Table 3), namely serai or lemongrass (*C. citratus*), cakur (*K. galanga*), kunyit or turmeric (*C. longa*), (0.64; 0.6; and 0.54, respectively). Belgica et al. (2021) suggested that a plant with a high UV value shows its abundant potential, making it easier for people to harvest and use for specific uses. All plants with the highest UV in this village are herbaceous plants. They are easy to grow and can be found in yards or gardens. In addition to its active compound components, this reason is thought to cause these plants' high UV values.

There are six species of plants as tonics with the lowest UV values. Those plants are cengkeh or clove (*S. aromaticum*), jintan hitam or black cumin (*N. sativa*), pala or nutmeg (*M. fragrans*), putri malu (*M. pudica*), palai (*A. scholaris*), mahkota dewa (*P. macrocarpa*) (0.2; 0.2; 0.2; 0.3; 0.3; 0.4 and 0.8, respectively). The low UV values shown may be due to its properties as a tonic are only known by a few respondents, and their efficacy as a tonic has not spread to other members of the village community (Elfrida et al., 2021). In addition to these reasons, we assumed that those plant has other properties besides being a tonic.

Informant consensus factor (ICF) and fidelity level (FL)

There are 41 species of medicinal plants used by the people of Karya Bhakti Village as tonics. After this, we grouped the plants according to their benefits as tonics according to the information received from respondents. There are 15 tonic categories, including enhanced male vitality, increased appetite, improved digestive system, blood enhancer, strengthened pregnancy, reduced muscle pain, reduced joint pain, and reduced body heat (fever). The tonic categories also cover women's postpartum treatment, namely deflated women's stomach, reduced postnatal pain and restored abdominal skin, warming women's bodies, promoting puerperal blood flow, cleaning the uterus, and healing uterine wounds.

The informant consensus factor (ICF) is an ethnobotanical index that can determine the agreement between respondents and the plants used for each disease category (Shuaib et al., 2021). The results of interviews with the people of Karya Bhakti Village showed that almost all tonic categories showed high ICF values (> 0.9) except for the promoting puerperal blood flow (Table 4).

In this present study, the ICF value ranges from 0-0.99. The tonic category with the highest ICF value was shown in the benefits of medicinal plants as a blood enhancer, strengthening pregnancy, and cleansing the uterus after giving birth, with an ICF value of 0.99. This high ICF value indicates a high agreement from the community of Karya Bhakti Village on the medicinal plants for each benefit category. For example, people agree that lengkuas or galangal (*A. galanga*) and pakis or ferns (*S. palustris*) can enhance blood flow. On the other hand, a low ICF value (0) shown by the category as promoting puerperal blood flow means that the village community does not agree that lengkuas have efficacy for this benefit. It is supported by the low number of respondents who reported that galangal has the effectiveness of promoting puerperal blood flow.

Table 4. ICF and FL values for each tonic category of efficacy of medicinal plants as tonics.

No.	Tonic Categories	ICF	FL
1.	Enhance male vitality	0,95	*Tamarindus indica* (8%), *Leea indica* (10%), *Justicia gendarussa* (11%), *Allium cepa* (10%), *Eleutherine americana* (17%), *Carica papaya* (36%), *Cocos nucifera* (16%), *Kaempferia galanga* (66%), *Syzygium aromaticum* (100%), *Nigella sativa* (100%), *Cuminum cyminum* (23%), *Blumea balsamifera* (100%), *Morinda citrifolia* (5%), *Myristica fragrans* (100%), *Fibraurea tinctoria* (70%), *Phaleria macrocarpa* (100%), *Zingiber officinale* Rosc. Var. Rumbrum (14%), *Zingiber officinale* Rosc. Var officinale (6%), *Curcuma xanthoriza* (17%)
2.	Increase appetite	0,97	*Tamarindus indica* (53%), *Cinnamomum verum* (100%), *Curcuma longa* (37%), *Piper ningrum* (27%), *Alpinia galanga* (54%), *Pandanus amaryllifolius* (100%), *Zingiber officinale* Rosc. Var officinale (15%), *Syzygium polyanthum* (87%), *Cymbopogon citratus* (17%)
3.	Improve digestive system	0,96	Ahnyam tidur (100%), *Tamarindus indica* (20 *Eleutherine americana* (83%), *Carica papaya* (64%), *Cocos nucifera* (11%), *Psidium guajava* (100%), *Jatropha gossypifolia* (17%), *Alpinia galanga* (18%), *Vitex pinnata* (52%), *Morinda citrifolia* (65%), *Imperata cylindrica* (69%), *Stenochlaena palustris* (13%), *Fibraurea tinctoria* (30%), *Alstonia scholaris* (100%), *Mimosa pudica* (100%), *Syzygium polyanthum* (13%), *Cheilocostus speciosus* (100%)
4.	Blood enhancer	0,99	*Alpinia galanga* (22%), *Stenochlaena palustris* (87%)
5.	Strengthen pregnancy	0,99	*Cocos nucifera* (55%), *Curcuma longa* (13%)
6.	Reduce joint pain	0,97	*Allium cepa* (46%), *Kaempferia galanga* (22%), *Cuminum cyminum* (70%), *Jatropha gossypifolia* (31%), *Coriandrum sativum* (10%), *Vitex pinnata* (8%), *Zingiber officinale* Rosc. Var. Rumbrum (34%), *Zingiber officinale* Rosc. Var officinale (28%), *Cymbopogon citratus* (46%), *Melastoma malabathricum* (100%), *Curcuma xanthoriza* (33%), *Homalomena occulta* (62%)
7.	Overcome muscle pain	0,95	*Justicia gendarussa* (36%), *Kaempferia galanga* (12%), *Cuminum cyminum* (7%), *Jatropha gossypifolia* (38%), *Coriandrum sativum* (3%), *Vitex pinnata* (10%), *Zingiber officinale* Rosc. Var. Rumbrum (13%), *Zingiber officinale* Rosc. Var officinale (20%), *Cymbopogon citratus* (37%), *Curcuma xanthoriza* (26%)
8.	Fever	0,95	*Tamarindus indica* (10%), *Justicia gendarussa* (52%), *Allium cepa* (44%), *Jatropha gossypifolia* (15%), *Vitex pinnata* (30%), *Morinda citrifolia* (30%), *Imperata cylindrica* (31%), *Leucosyke capitellata* (100%)
9.	Deflating women's abdomen after delivery	0,91	*Cocos nucifera* (18%), *Piper ningrum* (10%), *Zingiber officinale* Rosc. Var. Rumbrum (4%), *Zingiber officinale* Rosc. Var officinale (3%)

No.	Tonic Categories	ICF	FL
10.	Reduce post-delivery pain	0,98	*Leea indica* (53%), buant (75%), *Zingiber officinale* Rosc. Var. Rumbrum (4%), *Zingiber officinale* Rosc. Var officinale (11%), *Curcuma xanthoriza* (11%), *Homalomena occulta* (38%)
11.	Restoring women's abdominal skin after delivery	0,97	*Tamarindus indica* (8%), *Curcuma longa* (18%), *Alpinia galanga* (4%), *Curcuma xanthoriza* (7%)
12.	Warming women's bodies after delivery	0,97	*Coriandrum sativum* (86%), *Piper ningrum* (63%), *Zingiber officinale* Rosc. Var. Rumbrum (27%), *Zingiber officinale* Rosc. Var officinale (12%)
13.	Promoting puerperal blood flow	0	*Alpinia galanga* (2%)
14.	Cleaning the uterus	0,99	*Curcuma longa* (33%), *Piper ornatum* (100%)
15.	Healing uterine wounds	0,96	*Leea indica* (37%), *Dillenia suffruticosa* (25%), *Zingiber officinale* Rosc. Var. Rumbrum (4%), *Zingiber officinale* Rosc. Var officinale (4%), *Curcuma xanthoriza* (7%)

We note that the fidelity level value ranges from 3-to 100% (Table 4). There are 15 plants as tonics that have the highest fidelity level (100) with several tonic categories. The tonic categories that function to increase vitality are cengkeh or clove (*S. aromaticum*), jintan hitam (*N. sativa*), kalamabo (*B. balsamifera*), pala (*M. fragrans*), and mahkota dewa (*P. macrocarpa*). As appetite enhancers, there are kayu manis or cinnamon (*C. verum*) and pandan wangi (*P. amaryllifolius*). There are four plants as tonics to improve the digestive system, namely ahnyam tidur (*P. reticulatus*), jambu batu or guava (*P. guajava*), palai (*A. scholaris*), putri malu (*M. pudica*) and tabu amot (*C. speciosus*). Plants with high FL values reduce pain in the muscles, namely takang (*M. malabathricum*). Tampajarak (*L. capitellata*) reduces body heat or fever and uwit merah (*P. ornatum*) for cleaning the uterus after childbirth. A high of fidelity level illustrates the high percentage of citations from respondents who stated the use of a plant species in a specific treatment category to all plant citations for other types of treatment (Tugume et al., 2016). The fidelity level also provides an overview of the plants most favored by the community for use in a specific type of treatment (Tangjitman et al., 2015).

Cengkeh or clove (*S. aromaticum*) is a type of plant that has long been known and widely used by the people of Indonesia, especially as a spice. The main ingredients in cengkeh secondary metabolites are terpenoid compounds, namely eugenol, -caryophyllene, and eugenol acetate. In addition, cengkeh has other compounds such as steroids, phenols, coumarins, unsaturated fatty acids, lignans, flavonoids, vitamins, tannins, stilbene, and others that make it a natural aphrodisiac (Wael et al., 2018). These metabolites are thought to increase neurotransmitters at the cellular level, thereby increasing nerve stimulation and resulting in changes in sexual behavior, significantly increasing libido (Wahyuni et al., 2010). Cengkeh flower also has activity as a natural antioxidant, anesthetic, and anti-inflammatory (Nuñez and D'Aquino, 2012). The results of scientific tests that have proven that the cengkeh can increase male vitality prove the reason for the high FL value possessed by this plant. The high FL value is because respondents have high confidence in the efficacy of these plants in treating or in use for specific treatments, so they choose them as the primary choice in particular therapies or treatments. Riconadi et al. (2020) reported that traditional healers in Karya Bhakti Village also used cloves to increase male vitality. It proves that the knowledge possessed by the traditional healers or batra has been conveyed to the general public. Yusro et al. (2020) also reported the same finding that the general public in Masbangun Village, Kayong Utara Regency, had a knowledge of medicinal plants almost the same as that of traditional healers in the village.

Plants with the highest FL value are guava or jambu batu or guava (*P. guajava*). Jambu batu is a plant that has long been used by the people of West Kalimantan in various regions as a traditional medicine to treat digestive problems (Ningsih et al., 2020); (Yusro et al., 2021). The guava leaves contain several secondary metabolites such as phenolics, triterpenoids, and others (Wang et al., 2021). Beauty (2015) reported that the pectin content in guava leaf extract has the potential as an antihypercholesterolemic that stimulates the excretion of fecal bile acids and free sterols and increases fat absorption.

The knowledge of Karya Bhakti Village community in using medicinal plants is generally derived from personal experience that involves trial and error, resulting in the best choice in selecting plant species that are believed to have the highest efficacy. This knowledge is traditionally passed down

orally from generation to the next, including the local wisdom in using natural ingredients, namely plants, as tonics. In the local community, traditional healers are considered to know best how to maintain health and treat diseases faced by the general public. This study proves that the knowledge possessed by the traditional healers in Karya Bhakti village consciously or unconsciously has been distributed to the general public. It is excellent because it can prevent the degradation of traditional knowledge from being lost in the future; therefore, it is essential to document the knowledge possessed by traditional healers and the general public.

CONCLUSION

We document the knowledge possessed by the community in Karya Bhakti Village in the use of medicinal plants as tonics. There are 41 types of medicinal plants used as tonics for 15 categories of benefits. This study indicates that the general public in Karya Bhakti Village also knows the use of medicinal plants as tonics like those of traditional healers. Some plants have high use value, namely riak putih or white ginger (*Z. officinale* Rosc. Var officinale), riak merah or red ginger (*Z. officinale* Var. Rubrum), serai or lemongrass (*C. citratus* DC), cakur or galangal (*K. galanga* L), and kunyit or turmeric (*C. longa* L). Several tonic categories showed a high respondent agreement on the medicinal plants used. Some plants also offer high fidelity levels, and some of them have been scientifically proven. Further research is needed to test these medicinal plants' biological activity as tonics.

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Conflict of Interest

The authors declare that there is no conflict of interest

REFERENCES

Beauty BA. (2015). Guava Leaf Extract (Psidium guajava Linn) As A Hypercholesterolemia Treatment. Pharmacology, Contemporary Application , and Toxicology 4(3): 29-33. Available at: https://doi.org/10.3390/nu2080889.

Belgica T. H. R., Suba M. D. and Alejandro G. J. D. (2021). Quantitative ethnobotanical study of medicinal flora used by local inhabitants in selected barangay of malinao, albay, philippine, Biodiversitas, 22(7): 2711-2721. doi: 10.13057/biodiv/d220720.

Damayanti R., Umami S. and Suhirman (2021). The Ethnobotany Study of Medicinal Plants in Lombok Island. *Biota. Ac. Id* 14(2). Available at: https://biota.ac.id/index.php/jb/article/view/386.

Efferth, T., Shan, L. and Zhang, Z. W. (2016). Tonic herbs and herbal mixtures in Chinese medicine. *World Journal of Traditional Chinese Medicine*, 2(1), pp. 10-25. doi: 10.15806/j.issn.2311-8571.2015.0037.

Elfrida, TN. and Suwardi, A. (2021). Ethnobotanical study of medicinal plants used by community in jambur labu village, East Aceh, Indonesia. *Biodiversitas*, 22(7), pp. 2893-2900. doi: 10.13057/biodiv/d220741.

Faruque, MO., Uddin, SB. Barlow., JW. Hu, S,. Dong, S., Cai, Q., Li, X. and Hu X. (2018). Quantitative ethnobotany of medicinal plants used by indigenous communities in the Bandarban district of Bangladesh. *Frontiers in Pharmacology*, 9(FEB). doi: 10.3389/fphar.2018.00040.

Irayanti, A. and Yadnya Putra, A. . G. R. (2020).A Narrative Review of Zingiberaceae Family As Antibacterial Agent for Traditional Medication Based on Balinese Local Wisdom. *Journal of Pharmaceutical Science and Application*, 2(2), p. 66. doi: 10.24843/jpsa.2020.v02.i02.p04.

Jung, Y. K. and Shin, D. (2021). Imperata cylindrica: A review of phytochemistry, pharmacology, and industrial applications. *Molecules*, 26(5), pp. 56-73. doi: 10.3390/molecules26051454.

Mariani, Y., Wardenaar, E. and Yusro, F. (2021). Tumbuhan Berkhasiat Obat Di Desa Tanap Kabupaten Sanggau Dan Pemanfaatannya Untuk Perawatan Bayi Dan Perempuan Pasca Persalinan. *Biosains*, 7(2), pp. 92-102. https://doi.org/10.24114/jbio.v5i2.13984%0AISSN.

Ningsih, K., Mariani, Y., Arbiastutie, Y.. and Yusro, F. (2020). Studi Pemanfaatan Tumbuhan Obat Berpotensi Mengobati Pada Penyakit Pada Penyakit Sistem Pencernaan Di Kelurahan Bunut Kecamatan Kapuas Kabupaten Sanggau. *Jurnal Hutan Lestari*, 8(2), pp. 217-228. doi: 10.26418/jhl.v8i2.39782.

Nuñez, L. and D'Aquino, M. (2012). Microbicide activity of clove essential oil (Eugenia Caryophyllata). *Brazilian Journal of Microbiology*, 43(4), pp. 1255-1260. doi: 10.1590/S1517-83822012000400003.

Pradita, S., Mariani, Y., Wardenaar, E. and Yusro, F. (2021) Pemanfaatan Tumbuhan Obat oleh Suku Dayak Paus dan Melayu untuk Perawatan Ibu dan Anak Pasca Persalinan di Desa Pengadang. *Jurnal Biologi dan Pembelajarannya*, 16(1), pp. 93-110.

Prastiwi, R., R.Tjahyadi and Chusun (2015) Uji Efek Tonik Ekstrak Etanol Herba Pegagan (Centella asiatica (L). Urb) Pada Mencit Jantan BALB/C. *Fitofarmaka*, 5(1), pp. 292-293.

Rania. Yusro, F., Wardenaar, E., Mariani, Y. (2019) Studi Pemanfaatan Tumbuhan Obat Oleh Pengobat Tradisional Untuk Mengatasi Masalah Kewanitaan di Desa Masbangun Kecamatan Teluk Batang Kabupaten Kayong Utara. *Borneo Akcaya*, 5 (2), pp. 84-94. doi: 10. 51266/borneoakcaya.v5i2.113.

Rasul, M. (2018). Conventional Extraction Methods Use in Medicinal Plants, their Advantages and Disadvantages. *International Journal of Basic Sciences and Applied Computing*, 2(6), pp. 10-14.

Retnani, Y. and Parmadi, A. (2014). Perbandingan Efek Tonikum Ekstrak Etanol Jahe Merah (Zingiber Officinale Var.Rubrum) Dan Jahe Putih (Zingiber Officinale Var. Album) Pada Mencit Jantan (Mus Musculus L.) Ras Swiss. *IJMS - Indonsian Journal on Medical Science*, 1 (2), pp. 76-80.

Riconadi., Arbiastutie, Y., Mariani, Y., Sisillia, L., and Yusro. F. (2020) Studi Pemanfaatan Tumbuhan Obat Sebagai Tonik Oleh Pengobat Tradisional Di Desa Karya Bakti Kecamatan Sungai Betung Kabupaten Bengkayang. *Hutan Lestari*, 8(3), pp. 640-652.

Sari, R. P., Yusro, F. and Mariani, Y. (2021). Medicinal Plants Used by Dayak Kanayatn Traditional Healers in Tonang Village Sengah Temila District Landak Regency. *Jurnal Biologi Tropis*, 21(2), pp. 324-335. doi: 10.29303/jbt.v21i2.2557.

Setyawati, A., Komariah, B., Pujiasmanto, B., Fatawi, A., and Batubara I. (2021) Secondary metabolites of turmeric and ginger on various altitudes and soil characteristics, *IOP Conference Series: Earth and Environmental Science*, 724(1). doi: 10.1088/1755-1315/724/1/012020.

Shuaib, M., Hussain, F., Rauf., Jan, F., Romman, M., Parvez, R., Zeb, A., Ali, S., Abidullah, S., Bahadur, S., Shah, AA., Azamh, N., Dilbari, S., Beumj, K., Khank, H., Sajjadi, S., Muhammadj L., and Shahl NA.. (2021). Traditional knowledge about medicinal plant in the remote areas of Wari Tehsil, Dir Upper, Pakistan. *Brazilian Journal of Biology*, 83(e246803), pp. 1-28. doi: 10.1590/1519-6984.246803.

Sulatri, D., Roslinda, E. and Mariani, Y. (2019). Pemanfaatan Tumbuhan Obat Oleh Masyarakat Di Sekitar Hutan Adat Tawang Panyai Di Desa Tapang Semadak Kecamatan Sekadau Hilir Kabupaten Sekadau. *Jurnal Hutan Lestari*, 7(1), pp. 597-616. doi: 10.26418/jhl.v7i1.32739.

Tangjitman, K., Wongsawad, C., Kamwong, K., Sukkho, T., and Trisonthi, C.(2015). Ethnomedicinal plants used for digestive system disorders by the Karen of northern Thailand, *Journal of Ethnobiology and Ethnomedicine*, 11(1), pp. 11-27. doi: 10.1186/s13002-015-0011-9.

Tugume, P., Kakudidi, EK., Buyinza, M., Namaalwa, J., Kamtenesi, M., Mucunguzi, P., and Kalema, J. (2016.) Ethnobotanical survey of medicinal plant species used by communities around Mabira Central Forest Reserve, Uganda. *Journal of Ethnobiology and Ethnomedicine*. Journal of Ethnobiology and Ethnomedicine, 12(1), pp. 1-28. doi: 10.1186/s13002-015-0077-4.

Wael, S. Nuringtyas, TR., Wijayanti, N., and Astuti, P (2018). Secondary metabolites production in clove (Syzygium aromaticum): Chemical compounds. *Journal of Biological Sciences*, 18(7), pp. 399-406. doi: 10.3923/jbs.2018.399. 406.

Wahyuni, A., Wahyuningtyas, N. and Arifiyanti (2010). Aktivitas Afrodisiaka Minyak Atsiri Kuncup Bunga Cengkeh (Syzygium aromaticum (L.) Merr. & Perry). *Pharmacon*, 11(2), pp. 43-46. Available at: https://www. golder.com/insights/block-caving-a-viable-alternative/.

Wang, D., Zhou, L., Zhou, H., and Hou G. (2021) Effects of Guava (Psidium guajava L.) Leaf Extract on the Metabolomics of Serum and Feces in Weaned Piglets Challenged by Escherichia coli. *Frontiers in Veterinary Science*, 8(May), pp. 1-13. doi: 10.3389/fvets.2021.656179.

Yusro, F., Pranaka, R., Budiastutik, I., Mariani, Y. (2020). Diversity of Medicinal Plants Used by Traditional Healers of Dayak Desa Tribe in the Villages of Kebong and Merpak, Sintang Regency. *Jurnal Biologi Tropis.* doi: 10.29303/jbt.v20i3.2010.

Yusro, F., Pranaka, R., Budiastutik, I., Mariani, Y. (2020). Pemanfaatan Tumbuhan Obat Oleh Masyarakat Sekitar Taman Wisata Alam (Twa) Bukit Kelam, Kabupaten Sintang, Kalimantan Barat. *Jurnal Sylva Lestari*, 8(2)(2), pp. 255-272. Available at: http://jurnal.fp.unila.ac.id/index.php/JHT/article/view/3811.

Yusro, F., Rania., Mariani, Y., Wardenaar, Y., and Arbiatutie, Y. (2020) Tumbuhan Obat Dilingkungan Sekitar Dan Tingkat Pemanfaatannya Untuk Kesehatan Wanita Di Desa Masbangun, Kabupaten Kayong Utara. *Jurnal Biologi Makasar*, 5(1), pp. 186-198.

Yusro, F., Mariani, Y. and Wardenaar, E. (2021) The Utilization of Medicinal Plants to Overcome Gastric Disorders by The Dayak Muara Tribe in Kuala Dua Village, Sanggau Regency', *Jurnal Biologi Tropis*, 21(2), p. 416. doi: 10.29303/jbt.v21i2.2638.

Zhang, S., Kou X., Zhao, H., Mak, KK., Balijepalli, MK., and Pichika MR. (2022) Zingiber officinale var. rubrum: Red Ginger' s Medicinal Uses', *Molecules*, 27 (3). doi: 10. 3390/molecules27030775.