

Medicinal Plants for Traditional Treatment Used by the Malays in South Bangka Regency, Indonesia

Henri^{1*}, Dayu Puspita Sari¹, Luchman Hakim²

¹Department of Biology, Faculty of Agriculture, Fisheries and Biology, Universitas Bangka Belitung, Indonesia

²Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Brawijaya, Indonesia

*Corresponding Author: biology.henry@gmail.com

Submitted: 2022-01-11. Revised: 2022-02-02. Accepted: 2022-04-07.

Abstract. The people of South Bangka Regency have been well-known for using plants as traditional medicine and applied it in their daily life, but the information about the indigenous medical system the limited written of documentation. This study aimed to describe the types of medicinal herbs, analyze the medicinal herbs used as traditional medicine, and discover the conservational effort practiced by the Malays which is the local ethnic of South Bangka Regency. The study employed a quantitative method with field observation techniques, interviews, and herbs identification. The data were analyzed using the ethnomedicinal quantitative method. The results showed that there were 117 species of medicinal herbs with 57 families, while the most frequently used herb was *Areca catechu* with the results of UV (0.16), FL (16.22), and RFC (0.004). On the important family value (FIV), the most frequently used herb was the Myrtaceae family with 9 species, followed by Poaceae with 8 species. One of the conservation efforts of medicinal plants is by conducting cultivation to help prevent extinction in their natural habitat.

Key words: Ethnobotany, Local people, Ethnic malays, Medicinal plant

How to Cite: Henri, H., Sari, D.P., & Hakim, L. (2022). Medicinal Plants for Traditional Treatment Used by the Malays in South Bangka Regency, Indonesia. *Biosaintifika: Journal of Biology & Biology Education*, 14 (1), 125-134.

DOI: <https://doi.org/10.15294/biosaintifika.v14i1.34455>

INTRODUCTION

Indonesia is one of the countries with the largest biodiversity in the world. It has numerous kinds of traditional knowledge which is an important source of inspiration for the community, especially the use of plants as medicine for health problems. Nearly 80% of the world's population depends on plants for their primary health care needs (Ullah et al., 2010).

Based on previous research data, there are about 35,000–70,000 plant species used in traditional medicine worldwide (Shikov et al., 2014), there are almost 10,000 plants used for any use-categories. Indonesia has approximately 30,000 vascular plants. Based on data from the National Food and Drug Administration (BPOM), 283 plant species have been officially registered for national medicine and the rest are still used traditionally (Elfahmi et al., 2014).

Traditional medicinal plants is widely used in health care systems in various developing countries (Giday et al., 2016; Kpodar et al., 2015). Developing countries, especially countries in the Asian region, are the countries with the highest rates of use of plants as medicine both domestically and for export purposes (Bodeker, 2007). Since

their approval in 1981, nearly 71% of new drugs have come directly or indirectly from natural products such as medicinal plants (Newman & Cragg, 2012).

Ethnobotany studies are one of the most reliable guides for humans in utilizing natural resources as herbal medicine offered abundantly in nature. Knowledge of this medicinal plant has been passed down from generation to generation through prior knowledge experience. Ethnobotany assessments and documentation of indigenous peoples' ancestral knowledge of medicinal plants can fill gaps in knowledge related to future medicinal discoveries (Umair et al., 2017).

Modern human knowledge about the benefits of plants cannot be separated from the contribution of local knowledge that is spread in various traditional societies. The use of plants as traditional medicine by local people in South Bangka Regency is well known and applied in daily life. The present study reports on the ethnobotanically important resources from the South Bangka Regency and analyzes the indigenous traditional knowledge on the utilization of the most commonly used plants. This research will contribute a lot in providing the useful

information on the conservation and sustainable use of the natural resources in the area.

METHODS

Study Area

South Bangka Regency has an area of 3,607.08 km², with a population of 205,901 inhabitants in 2018. South Bangka Regency consists of eight sub-districts namely: Payung, Pulau Besar, Simpang Rimba, Toboali, Tukak Sadai, Air Gegas, Lepar Pongok, and Kepulauan Pongok (BPS South Bangka, 2018). Research on the use of medicinal plants was carried out in South Bangka Regency, Bangka Belitung Islands Province from July to October 2019, consisting of 17 villages in eight sub-districts. The village selection technique in each sub-district employed a purposive sampling method which was based on the considerations that most of those who use medicinal plants and have traditional medical knowledge.

Data Collection

Observation was used as a data collection technique through systematic recording of medicinal plants under study. Snowball sampling method was used to select the key informants from the community (Ristoja, 2017). The researcher obtained key informants through information from the village head who knew that the community experienced, was indigenous, and practiced medicine using herbs as medicine. The ethnobotanical information was collected from knowledgeable local people and traditional healers through semi-structured interviews and questionnaires. The plants were classified into various ethnobotanical classes.

Data Analysis

Use Value (UV)

The use-value (UV) index assesses the relative importance of each plant species known locally to be used as an herbal remedy. Use-value is calculated using the formula: $UV = U/N$, where UV is the use-value of a species; U refers to the number of citations per species; and N is the number of informants who reported on the plant species (Samoisy & Mahomoodally, 2016)

Fidelity Level (FL)

FL is used to know the species that are most commonly used to treat based on certain diseases, using the formula: $FL = (NP/Nur) \times 100$, where NP is the informants who rarely used certain plants and

had a particular disease; and Nur is the total number of the report on the use of each category for types of disease (Al-Qura'n, 2009).

Informant Consensus Factor (ICF)

ICF serves to analyze levels of plot informants and plants that will be used for each category. ICF is calculated using the formula: $ICF = Nur - Nt$ (Nur - 1), where Nur is the total number of a report on the use of each category for types of disease; Nt is the number of species classified by all informants (Gazzaneo et al., 2005).

Relative Frequency Citation (RFC)

RFC is used to determine most plants commonly used and liked. RFC is calculated using the formula: $RFC = FC/N$ ($0 < RFC < 1$). This index is obtained by dividing the number of informants mentioning a useful species frequency of citation by the total number of informants in the survey (N) (Tardío & Pardo-De-Santayana, 2008).

RESULTS AND DISCUSSION

Respondent Demographic in South Bangka Regency

The total number of respondents in this study are 37 respondents, consisting of two categories of informants namely traditional medicine (33 people or 89.19%) and local people (four people or 10.81%). The former category consisted of people who know the types of medicinal plants and are also believed to care for other people besides their family. They use traditional medicine in the treatment of prayer which is learned from the elders. Meanwhile, the local people category is applied for those who only know the types of plants medicine and only take care of their family without praying since they only cure minor ailments. Self-medication or household treatment is an effort made by people to cope with their complaints of illness in using medicinal plants in order to improve health and treat malarial diseases (Pierre et al., 2011). Lesmana et al., (2018) indicated that traditional medicine originated from their ancestors who were passed down from generation to generation and in traditional medicine or traditional healers by reciting prayers and mantras.

The category of sex, there were 32 males (86.49%) and five females (13.51%). Previous study found that male respondents had the highest number 55% (Ribeiro et al., 2017). Another study showed that male respondents dominated, i.e. 70% and female respondents were only 30%; while 52% of the respondents were aged 50 years and above

Table 1. Demographic data of respondents

No	Variable	Category	∑ Respondent	(%)
1	Informant category	Traditional healer	33	89.19
		Local community	4	10.81
2	Gender	Male	5	13.51
		Female	32	86.49
3	Age	17-30 years	0	0
		> 30-45 years	3	8.11
		> 45-59 years	11	29.73
		> 60 years	23	62.16
4	Level of education	No school	0	0
		Primary school	35	94.59
		Junior high school	0	0
		Senior high school	2	5.41
		College/University	0	0
		< 2 years	0	0
5	Experience of using	2-5 years	5	13.51
		5-10 years	5	13.51
		10-20 years	20	54.05
		> 20 years	7	18.92

(Baydoun et al., 2015). Based on the category of age, the most dominant respondent's age was >60 years, consisting of 23 people (62.16%), while age of 45-59 years were 11 people (29.73%), and age of >30-45 years were three people (8.11%). People who have knowledge about medicinal plants were mostly in age group of 40-60 years (62.5%) followed by age group >60 years (27.5%). It is considered that they have good knowledge of using medicinal plants in traditional medicine (Al-Fatimi, 2019).

The category of educational background showed that most of the respondents only graduated from elementary school (35 people or 94.59%), while there are only two people graduated from senior high schools (5.41%). Previous study showed that the respondents were illiterate (34%), graduated from elementary school (11%) and junior high or high school (31%), while those who graduated from tertiary education level (24%) were very low (Boudjelal et al., 2013). The educational background of traditional healers or informants interviewed in their research was only up to elementary and secondary school levels. The category of experience in traditional medicine shows that 20 people (54.05%) have been practicing it for 10-20 years, seven people (18.92%) have been practicing for > 20 years, five people (13.51%) have been practicing for 2-5 years, and five people (13.51%) have been practicing for 5-10 years. Practitioners' experience in knowledge about medicinal plants ranged from 35 to 86 years with an

average treatment practice of 21-29 years (Panmei et al., 2019).

Utilization of plants as medicine in South Bangka Regency

The results of the analysis on the use of plants as medicine in the South Bangka Regency showed that there are 117 species with 57 families. From the results, Myrtaceae family has 9 species (*B. frutescens*, *E. lepidocarpa*, *E. polyantha*, *M. leucadendra*, *P. guajava*, *S. aromaticum*, *S. cumini*, *S. pycnanthum*, *S. zeylanicum*); while Poaceae family has eight (8) species (*B. vulgaris*, *C. Lacryma-joib*, *C. Nardus*, *I. Cylindrica*, *O. Sativa*, *P. Abcissum*, *P. Aciculare*, *S. officinarum*). The Myrtaceae family is a large group of plants which its members are widely known and used by humans since they are easy to grow and commonly found in the tropics. *Psidium guajava* is included in the Myrtaceae family and the leaves are commonly used for diarrheal diseases. The young *P. guajava* leaves are directly eaten so that the existing tannin content will not disappear and be taken entirely because *P. guajava* contains tannins which is abstained genesis. After all, it can frighten mucous membranes (Permatasari et al., 2011).

Poaceae family is a large part of herbaceous plants that are not cultivated and it usually grows wildly in the surrounding of house, such as the roots of *B. vulgaris* that can be used to treat jaundice and

Table 2. Ethnobotany index of plants as medicine in South Bangka Regency

Family	Scientific Name	Local Name	Disease Treatment	Life Form	UV	FL	RFC
Acanthaceae	<i>Andrographis paniculata</i> (Burm.f.) Nees	Samiloto	Malaria	Shrubs	0.03	2.70	0.001
	<i>Avicennia germinans</i> (L.) L.	Bakau kayu api	Male disease	Shrubs	0.03	2.70	0.001
Anacardiaceae	<i>Gluta velutina</i> Blume	Mengkiker	Leucorrhoea	Shrubs	0.03	2.70	0.001
Ancistrocladaceae	<i>Ancistrocladus tectorius</i> (Lour.) Merr	Terung blus	Swollen	Liana	0.03	2.70	0.001
Annonaceae	<i>Annona muricata</i> L	Nangkak belande	Menstruation, High blood pressure	Tree	0.08	8.11	0.002
	<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	Kenango	Scabies	Tree	0.05	5.41	0.001
	<i>Polyalthia cauliflora</i> Hook.f. & Thomson	Bumbun	Flatulence	Tree	0.03	2.70	0.001
Apiaceae	<i>Centella asiatica</i> (L.) Urb	Pegagan	Postpartum	Herbs	0.03	2.70	0.001
	<i>Coriandrum sativum</i> L	Ketumber	Postpartum	Herbs	0.05	5.41	0.001
Apocynaceae	<i>Alstonia scholaris</i> (L.) R. Br.	Pulai	Sinusitis, Diabetes, Malaria	Tree	0.08	8.11	0.002
	<i>Tabernaemontana pauciflora</i> Blume	Pisang tikos	Blown	Shrubs	0.05	5.41	0.001
	<i>Plumeria alba</i> L	Kamboja	Scabies	Shrubs	0.03	2.70	0.001
Araliaceae	<i>Arthrophyllum diversifolium</i> Blume	Juluk antu laki	Flatulence, High blood pressure,	Tree	0.08	8.11	0.002
	<i>Areca catechu</i> L	Pinang	Scabies, Flatulence	Tree	0.16	16.22	0.004
Arecaceae	<i>Cocos nucifera</i> L	Kelapa iju	Flatulence, Malaria	Tree	0.11	10.81	0.003
	<i>Daemonorops angustifolius</i> Mart	Rotan nanggak	Wormy	Liana	0.03	2.70	0.001
Asteraceae	<i>Ageratum conyzoides</i> (L.) L	Rumput tai ayam	Difficult to defecate	Herbs	0.05	5.41	0.001
	<i>Gynura procumbens</i> (Lour.) Merr.	Keheambung	Postpartum	Herbs	0.03	2.70	0.001
Balsaminaceae	<i>Impatiens balsamina</i> L	Pacar aik	Scabies	Herbs	0.03	2.70	0.001
Caricaceae	<i>Carica papaya</i> L	Katis rambai	Painful urination	Herbs	0.05	5.41	0.001
Combretaceae	<i>Terminalia catappa</i> L	Ketapang	Stomach ache	Tree	0.03	2.70	0.001
Convolvulaceae	<i>Ipomoea aquatica</i> Forssk	Kangkong	Tonsils	Herbs	0.03	2.70	0.001
Crassulaceae	<i>Kalanchoe pinnata</i> (Lam.) Pers	Cocor bebek	Flatulence	Herbs	0.03	2.70	0.001
Cucurbitaceae	<i>Cucurbita maxima</i> Duchesne	Labu	Malaria	Liana	0.03	2.70	0.001
	<i>Lagenaria siceraria</i> (Molina) Standl	Labu aik	Typhus	Liana	0.03	2.70	0.001
Cyperaceae	<i>Scirpodendron ghaeri</i> (Gaertn.) Merr.	Sesayat	Fever	Herbs	0.03	2.70	0.001
	<i>Scleria melaleuca</i> Rchb. ex Schldl. & Cham.	Tenam batu	Flatulence	Herbs	0.03	2.70	0.001
Dilleniaceae	<i>Dillenia eximia</i> Miq	Himpur laki	Postpartum, Leucorrhoea, Tumors	Tree	0.11	10.81	0.003
Ebenaceae	<i>Diospyros kaki</i> L.f.	Heletup bulu	Leucorrhoea	Tree	0.05	5.41	0.001
	<i>Aleurites moluccanus</i> (L.) Willd	Kemiri	Stomach ache	Tree	0.05	5.41	0.001
Euphorbiaceae	<i>Mallotus barbatus</i> Mull.Agr	Balek angen	Fever	Tree	0.08	8.11	0.002
	<i>Suregada glomerulata</i> (Blume) Baill	Pialu	Appetite	Tree	0.03	2.70	0.001
	<i>Parkia speciosa</i> Hassk	Petai	Herpes	Tree	0.03	2.70	0.001
Fabaceae	<i>Pongamia pinnata</i> (L.) Pierre	Mabai	Sprue, Fever	Tree	0.03	2.70	0.001
	<i>Senna alata</i> (L.) Roxb	Ketepeng	Fever	Shrubs	0.05	5.41	0.001
	<i>Tamarindus indica</i> L	Asam jawo	High blood pressure	Tree	0.05	5.41	0.001

Family	Scientific Name	Local Name	Disease Treatment	Life Form	UV	FL	RFC
Gnetaceae	<i>Gnetum gnemon</i> L	Belinjo	Sprue	Tree	0.03	2.70	0.001
Lamiaceae	<i>Callicarpa candicans</i> (Burm.f.) Hochr	Kelingkak	Stomach ache	Shrubs	0.05	5.41	0.001
	<i>Orthosiphon aristatus</i> (Blume) Miq	Kumis kuceng	Diabetes	Herbs	0.05	5.41	0.001
	<i>Vitex pinnata</i> L	Leben	Tumor	Tree	0.03	2.70	0.001
Lauraceae	<i>Litsea cubeba</i> (Lour.) Pers.	Medang resak	Postpartum	Tree	0.08	8.11	0.002
	<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	Medang radak	Fever	Tree	0.05	5.41	0.001
	<i>Litsea resinosa</i> Blume	Medang biase	Itchy, Postpartum	Tree	0.05	5.41	0.001
	<i>Phoebe excelsa</i> (Blume) Nees	Medang sang	Postpartum	Tree	0.11	10.81	0.003
Leguminosae	<i>Saraca asoca</i> (Roxb.) Willd	Asoka	Scabies	Shrubs	0.03	2.70	0.001
Linaceae	<i>Ixonanthes grandiflora</i> Hochr	Jurong	Leucorrhoea, Headache	Tree	0.05	5.41	0.001
Lythraceae	<i>Punica granatum</i> L	Delima	Itchy	Tree	0.03	2.70	0.001
	<i>Sonneratia ovata</i> Backer	Terancam perpat	Sprue	Shrubs	0.03	2.70	0.001
Malvaceae	<i>Hibiscus rosa-sinensis</i> L	Kembang hepato	Scabies, Fever	Shrubs	0.11	10.81	0.003
	<i>Microcos tomentosa</i> Sm	Kepeletut	Headache	Tree	0.03	2.70	0.001
Melastomataceae	<i>Melastoma malabathricum</i> L	Keleta	Tumors, Wormy, Stomach ache	Herbs	0.11	10.81	0.003
Meliaceae	<i>Lansium parasiticum</i> (Osbeck) K.C.Sahni & Bennet	Duku	Tooth ache	Tree	0.03	2.70	0.001
Menispermaceae	<i>Tinospora tuberculata</i> Beumée ex K.Heyne	Krotowali	Malaria	Shrubs	0.03	2.70	0.001
Moraceae	<i>Artocarpus heterophyllus</i> Lam	Nangka beluleng	Bloating, Fever	Tree	0.14	13.51	0.004
	<i>Ficus carica</i> L.	Kayu are	Sprue	Tree	0.05	5.41	0.001
Musaceae	<i>Musa paradisiaca</i> L	Pisang	Postpartum	Herbs	0.03	2.70	0.001
	<i>Musa sapientum</i> L.	Pisang raje	Hemorrhoid	Herbs	0.03	2.70	0.001
Myrtaceae	<i>Baeckea frutescens</i> L.	Sapu-sapu	Fever	Shrubs	0.03	2.70	0.001
	<i>Eugenia lepidocarpa</i> Wall. ex Kurz	Hamak	Stomach ache, Postpartum	Tree	0.05	5.41	0.001
	<i>Eugenia polyantha</i> Barb. Rodr.	Herai kayu	Diabetes	Tree	0.05	5.41	0.001
	<i>Melaleuca leucadendra</i> (L.) L.	Gelem tikus	Difficult to defecate	Tree	0.03	2.70	0.001
	<i>Psidium guajava</i> L	Jambu bigik	Stomach ache	Tree	0.11	10.81	0.003
	<i>Syzygium aromaticum</i> (L.) Merr. & L.M.Perry	Cengkeh	Postpartum	Tree	0.03	2.70	0.001
	<i>Syzygium cumini</i> (L.) Skeels	Sisel ayam	Hemorrhoid, Postpartum	Tree	0.05	5.41	0.001
	<i>Syzygium pycnanthum</i> Merr. & L.M.Perry	Jambu utan	Tooth ache	Tree	0.05	5.41	0.001
	<i>Syzygium zeylanicum</i> (L.) DC	Bebetik	Fever Swollen stomach	Tree	0.08	8.11	0.002
Nepenthaceae	<i>Nepenthes gracilis</i> Korth	Ketakung	Spew	Liana	0.05	5.41	0.001
Nyctaginaceae	<i>Bougainvillea berberidifolia</i> Heimerl	Kembang kertas	Scabies	Herbs	0.03	2.70	0.001
Oleaceae	<i>Jasminum abyssinicum</i> Hochst. ex DC	Melati	Scabies	Shrubs	0.03	2.70	0.001
	<i>Jasminum sambac</i> (L.) Aiton	Melati utan	Magic	Shrubs	0.05	5.41	0.001
Oxalidaceae	<i>Oxalis barrelieri</i> L	Sesupap	Cough	Shrubs	0.05	5.41	0.001
Pandaceae	<i>Galearia filiformis</i> (Blume) Boerl.	Kayu tue	Swollen	Shrubs	0.03	2.70	0.001
Pandanaceae	<i>Pandanus odorifer</i> (Forssk.) Kuntze	Panden laut	Fever, Sprue	Shrubs	0.03	2.70	0.001
Pentaphragaceae	<i>Adinandra dumosa</i> Jack	Pelempang puteh	Leucorrhoea	Tree	0.03	2.70	0.001
	<i>Adinandra sarosanthra</i> Miq	Pelempang itam	Leucorrhoea, Postpartum	Tree	0.05	5.41	0.001
	<i>Eurya nitida</i> Korth	Sesala	Headache	Shrubs	0.03	2.70	0.001

Family	Scientific Name	Local Name	Disease Treatment	Life Form	UV	FL	RFC	
Phyllanthaceae	<i>Aporosa octandra</i> (Buch.-Ham. ex D.Don) Vickery	Pelangas	Headache	Tree	0.08	8.11	0.002	
	<i>Baccaurea lanceolata</i> (Miq.) Müll.Arg	Kayu lunding	Childhood illness	Tree	0.03	2.70	0.001	
	<i>Glochidion ferdinandii</i> (Müll.Arg.) F.M.Bailey	Ambong-ambong	Sprue	Tree	0.03	2.70	0.001	
Piperaceae	<i>Piper aduncum</i> L	Hireh licin	Postpartum	Liana	0.03	2.70	0.001	
	<i>Piper betle</i> L	Hireh	Leucorrhoea	Liana	0.05	5.41	0.001	
	<i>Piper nigrum</i> L	Sahang	Toothache, Postpartum	Liana	0.11	10.81	0.003	
	<i>Piper crocatum</i> Ruiz & Pav.	Hireh merah	Diabetes	Liana	0.03	2.70	0.001	
Poaceae	<i>Bambusa vulgaris</i> Schrad	Bambu kuneng	Jaundice	Shrubs	0.03	2.70	0.001	
	<i>Coix lacryma-jobi</i> L	Jelai batu	Urinary pain, Tonsils	Herbs	0.11	10.81	0.003	
	<i>Cymbopogon nardus</i> (L.) Rendle	Herai tanah	Bone pain, Leucorrhoea	Herbs	0.08	8.11	0.002	
	<i>Imperata cylindrica</i> (L.) Raeusch	Lalang	Jaundice, Wormy, Fever	Herbs	0.08	8.11	0.002	
	<i>Oryza sativa</i> L	Padi	Tonsils	Herbs	0.03	2.70	0.001	
	<i>Panicum abscissum</i> Swallen	Kerupit berisi	Swollen stomach	Herbs	0.05	5.41	0.001	
	<i>Panicum aciculare</i> Desv	Kerupit berbuah	Wormy	Herbs	0.03	2.70	0.001	
	<i>Saccharum officinarum</i> L	Tebu	Postpartum	Shrubs	0.03	2.70	0.001	
	Polypodiaceae	<i>Drynaria quercifolia</i> (L.) J. Sm.	Hekayar	Swollen	Liana	0.03	2.70	0.001
	Primulaceae	<i>Ardisia crispa</i> (Thunb.) A.DC.	Mate ayam	Postpartum	Shrubs	0.14	13.51	0.004
Rhizophoraceae	<i>Rhizophora apiculata</i> Blume	Bakau	Swollen abdomen, Diabetes	Tree	0.05	5.41	0.001	
Rosaceae	<i>Prunus avium</i> (L.) L	Ceri	Diabetes	Tree	0.03	2.70	0.001	
	<i>Prunus cerasus</i> L	Ceri merah	High blood pressure	Tree	0.03	2.70	0.001	
Rubiaceae	<i>Gardenia jasminoides</i> J.Ellis	Kembang peca	Fever, Sprue	Shrubs	0.03	2.70	0.001	
	<i>Morinda citrifolia</i> L	Mengkudu	High blood pressure	Tree	0.05	5.41	0.001	
	<i>Mussaenda pubescens</i> Dryand	Balek adap	Wormy, Postpartum	Shrubs	0.03	2.70	0.001	
	<i>Uncaria gambir</i> (Hunter) Roxb	Gambir	Stomach ache	Tree	0.03	2.70	0.001	
	<i>Psychotria viridiflora</i> Reinw. ex Blume	Tenam	Wormy, Postpartum	Tree	0.05	5.41	0.001	
Rutaceae	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Jeruk nipis	Head ache, Itchy	Shrubs	0.08	8.11	0.002	
Salicaceae	<i>Flacourtia rukam</i> Zoll. & Moritzi	Rukem	Postpartum, Fever	Tree	0.11	10.81	0.003	
Sapindaceae	<i>Guioa pleuropteris</i> (Blume) Radlk	Ulas	Swollen	Tree	0.03	2.70	0.001	
Simaroubaceae	<i>Brucea javanica</i> (L.) Merr	Poipo	Diabetes	Tree	0.03	2.70	0.001	
	<i>Eurycoma longifolia</i> Jack	Pasek bumi	Fever	Shrubs	0.03	2.70	0.001	
Solanaceae	<i>Capsicum annum</i> L	Cabik	Sprue, Tumor	Herbs	0.05	5.41	0.001	
	<i>Solanum lasiocarpum</i> Dunal	Terung asem	Swollen Stomach, Tumor	Herbs	0.08	8.11	0.002	
	<i>Solanum torvum</i> Sw.	Terung kepinit	Urinary pain	Herbs	0.03	2.70	0.001	
	<i>Physalis angulata</i> L.	Kecepuk	Tooth ache	Herbs	0.03	2.70	0.001	
Thelypteridaceae	<i>Sphaerostephanos arbuscula</i> (Willd.) Holttum	Ideng-ideng	Swollen	Herbs	0.03	2.70	0.001	
Thymelaeaceae	<i>Phaleria macrocarpa</i> (Scheff.) Boerl	Mahkota dewa	Stroke	Shrubs	0.03	2.70	0.001	

Family	Scientific Name	Local Name	Disease Treatment	Life Form	UV	FL	RFC
Zingiberaceae	<i>Alpinia galanga</i> (L.) Willd	Laos	Sinusitis, Postpartum	Herbs	0.05	5.41	0.001
	<i>Curcuma longa</i> L	Kunyet	Sprue Postpartum, Colds	Herbs	0.11	10.81	0.003
	<i>Kaempferia galanga</i> L	Cengkur	Colds	Herbs	0.03	2.70	0.001
	<i>Zingiber officinale</i> Roscoe	Jaik	Colds	Herbs	0.03	2.70	0.001

there are also some cultivated species that are used, i.e. *O. sativa*. In previous studies, sugarcane plants included in the family Poaceae can also be used as a cough medicine for blood, which is part of the root taken from sugar cane (Aminah et al., 2016). Rubiaceae family which has 5 species were obtained from interviews; Rubiaceae family is cosmopolitan that grows in various habitats (Saleh & Hartana, 2017).

Poaceae family is a large part of herbaceous plants that are not cultivated and it usually grows wildly in the surrounding of house, such as the roots of *B. vulgaris* that can be used to treat jaundice and a kind of plants of the thatched roofs *I. cylindrica* which has benefits for treating diseases that can hurt the eyes (Meliki et al., 2013). In the Poaceae family, there are also some cultivated species that are used, i.e. *O. sativa*. In previous studies, sugarcane plants included in the family Poaceae can also be used as a cough medicine for blood, which is part of the root taken from sugar cane (Aminah et al., 2016). Rubiaceae family which has 5 species were obtained from interviews; Rubiaceae family is cosmopolitan that grows in various habitats (Saleh & Hartana, 2017).

The most widely used plants are *A. catechu*, *A. heterophyllus*, and *A. crispa*. *A. catechu*, with UV yields (0.16), FL yields (16.22), and RFC yields (0.004). Areca nut plants are used by the community to treat bladder, rich, abdominal swelling, headaches, and stomach. Previous studies show that the fruits from areca plants can be used as a medicine to relieve dizziness due to colds; they are burned and the smokes are inhaled. *A. catechu* Can also be used to cure worm disease; the fruit is mashed and added with warm water. *A. catechu* plant flower bunches can also be used as a sore medicine by smoothing the betel flower bunches that have not yet bloomed and then sticking it to the mouth (Nuryanti et al., 2015). *A. heterophyllus* and *A. crispa* with UV (0.14), FL (13.51), and RFC (0.004), *A. heterophyllus* in the type of tamarind is used by community to treat swollen stomach, tumors, and abdominal pain. *A. heterophyllus* is used as a breastfeeding medicine for mothers who are breastfeeding; the plant parts used are leaves.

The leaves are taken sufficiently and then cleaned with clean water. Afterwards, the leaves are boiled with enough water. Once it is done, the water used to boil the leaves is drunk. Sometimes it is also used to relieve pain in the body (Safryadi et al., 2017).

The research results show that plants which have high UV values are medicinal plants that have many benefits and are recognized by most respondents. The three plants that have the highest UV value are plants that are often used by the respondents. Medicinal plants that have a low UV value are plants that are not recognized by the respondents and do not have the properties of medicinal plants (Silalahi et al., 2018). Kayani et al. (2015) stated that plants that have high RFC values must be tested biologically to assess and protect their authenticity and should also be prioritized to preserve high plants against values that are often used as medicines. It will threaten plant populations if many people use it without preserving it. Plants with high RFC values must also be further evaluated phytochemically and pharmaceutically to identify medicine discovery (Vitalini et al., 2013). Previous studies show that high UV and RFC values indicate good healing potential for certain diseases. FL value is used to determine the type of plant that is most preferred for certain uses, so that plants with higher FL values are widely used by the community (Butt et al., 2015).

The most common life form consists of 50 species (43.48%) of tree habitus, 30 species (26.09%) of habitus, 24 species (20.87%) of shrub habitus and 11 species (9.57%) of liana habitus. Tree habitus has a high utilization rate compared to other habitus such as the roots and bark. From the results, people use plants as medicine derived from tree habitus because many parts of tree that can be used as medicine such as roots, stems, fruit, flowers, leaves, and bark. Life form at the herbaceous level is estimated that 30% of herbaceous plants are easier to grow (Rahman et al., 2019).

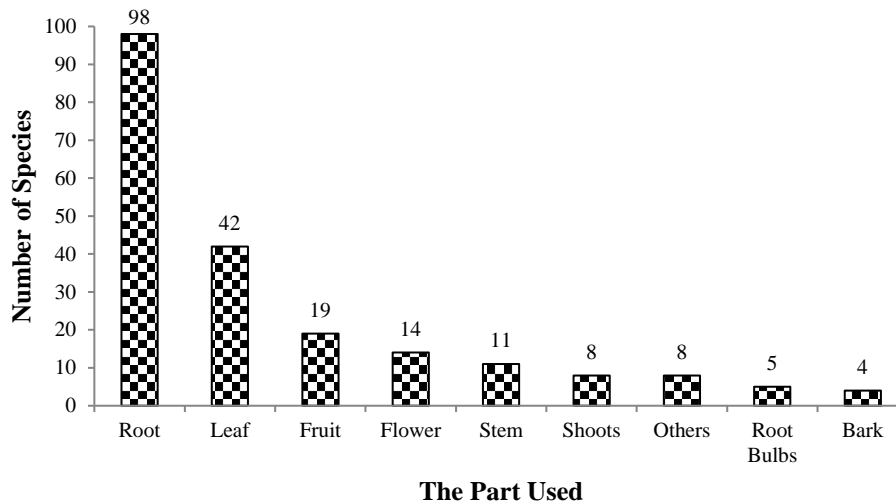


Figure 1. Plant parts used of medicinal plant

Parts of Plant Used in Medicinal Plants

Figure 1 shows the parts of plants used in medicinal plants in the South Bangka Regency including leaves, roots, root bulbs, stems, fruit, flowers, bark, shoots, etc. The most used part of plant is root since it is very durable and can also be boiled many times until it no longer has tastes. This result is in line with Utami et al. (2019) stating that root is the strongest part that lasts longer than other parts of the plant. The root can also be mixed with other types of medicinal plants. Root plays an important role in absorbing nutrients in the soil which plays a very important role in plant growth. Another popular part of plant commonly used is leaf which is also an important part used by the community in traditional medicine. This result is in line with Henri et al. (2020) stating that around 46% of the leaves from plants can be used by the people

of South Bangka Regency as part of early childhood treatment.

Medical Plants Utilization

Figure 2 describes how people of South Bangka Regency use medicinal plants in various kinds, namely: decoction, powder, juice, extract, infusion, crude form, etc. Decoction is taken after being boiled and there is also in the bath after boiling. Hasanah (2016) stated that the processing of most medicinal plants is boiling, since people generally mix them in the form of herbal medicine. The boiling process of medicinal plants can solve all nutritious substances contained in medicinal plants into water (Efremila et al., 2015).

This ethnobotanical survey can assist scientists and researchers in identifying medicinal plants that may be useful in the development of new drugs. Creating this awareness is very important for the

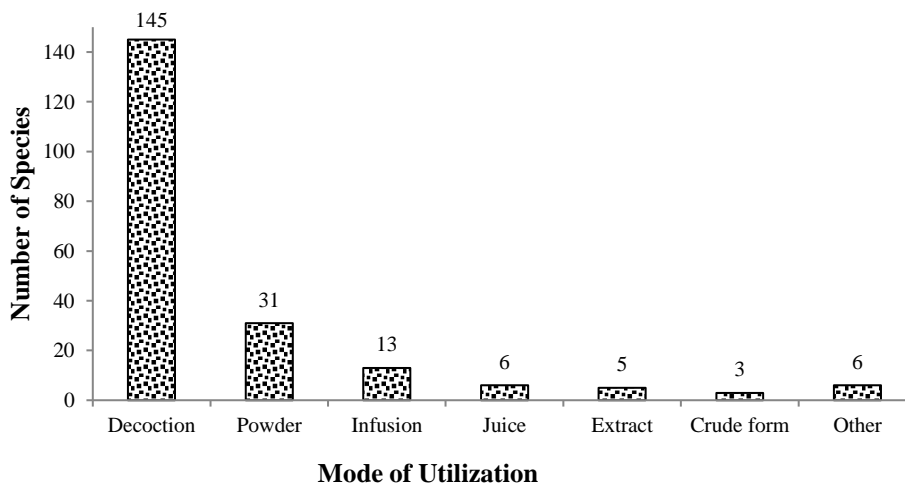


Figure 2. Mode of utilization medicinal plants

younger generation both in terms of sustainable use of plants and the protection of traditional knowledge as a form of conservation of the availability of raw materials as medicines in the future (Henri & Erpandi, 2021). This study was conducted to protect information about the local use of plant species, transfer it to future generations, and provide preliminary information for future studies.

CONCLUSION

Medicinal plants used by the ethnic Malays of South Bangka Regency are very diverse. There are 117 species of plants within 57 families used as medicine. Areca catechu is the plant with highest utility value. Roots and leaves are the most common parts widely used by the community. Generally, boiling is the most common process in making medicine from medicinal plants. The communities in South Bangka Regency have abundant medicinal resources and traditional knowledge. However along with the development of global economy, the specialized knowledge of medicine resources are threatened by human activities and natural causes, and associated traditional knowledge is rapidly eroding. So, the present study reinforcing the importance of continuing with ethnobotanical research.

ACKNOWLEDGEMENT

The author would like to thank the Institute for Research and Community Services or Lembaga Penelitian dan Pengabdian kepada Masyarakat (LPPM) of Universitas Bangka Belitung. In addition, the author would also thank the Biology Laboratory and Herbarium of Bangka Belitungense in Universitas Bangka Belitung.

REFERENCES

- Al-Fatimi, M. (2019). Ethnobotanical survey of medicinal plants in central Abyan governorate. *Journal of Ethnopharmacology*, 241, 1–24.
- Al-Qura'n, S. (2009). Ethnopharmacological survey of wild medicinal plants in Showbak, Jordan. *Journal of Ethnopharmacology*, 123(1), 45–50.
- Aminah, S., Wardenaar, E., & Muflihati. (2016). Tumbuhan Obat yang Dimanfaatkan oleh Battra di Desa Sejahtera Kecamatan Sukadana Kabupaten Kayong Utara. *Jurnal Hutan Lestari*, 4(3), 299–305.
- Baydoun, S., Lamis, C., Helena, D., Nelly, A., & Hermon, M. (2015). Ethnopharmacological survey of medicinal plants used in traditional medicine by the communities of Mount Hermon, Lebanon, 173, 139–156.
- Bodeker, G. (2007). Medicinal Plant Biodiversity & Local Healthcare: Sustainable Use & Livelihood Development. In *17th Commonwealth Forestry Conference 2005-Colombo, Sri Lanka* (pp. 1–15).
- Boudjelal, A., HENCHIRI, C., Sari, M., Sarri, D., Hendel, N., Benkhaled, A., & Ruberto, G. (2013). Herbalists and wild medicinal plants in Mâ€™Silâ€™ (North Algeria): An ethnopharmacology survey. *Journal of Ethnopharmacology*, 148(2), 395–402.
- Butt, M. A., Ahmada, M., Fatima, A., Sultana, S., Zafar, M., Yaseen, G., and Kayani, S. (2015). Ethnomedicinal uses of plants for the treatment of snake and scorpion bite in Northern Pakistan. *Journal of Ethnopharmacology*, 168, 164–181.
- Efremila, Wardenaar, E., & Sisillia, L. (2015). Studi Etnobotani Tumbuhan Obat oleh Etnis Suku Dayak di Desa Kayu Tanam Kecamatan Mandor Kabupaten Landak. *Jurnal Hutan Lestari*, 3(2), 234–246.
- Elfahmi, Woerdenbag, H. J., & Kayser, O. (2014). Jamu: Indonesian traditional herbal medicine towards rational phytopharmacological use. *Journal of Herbal Medicine*, 4(2), 51–73.
- Gazzaneo, L. R. S., Paiva de Lucena, R. F., & de Albuquerque, U. P. (2005). Knowledge and use of medicinal plants by local specialists in a region of Atlantic Forest in the state of Pernambuco (Northeastern Brazil). *Journal of Ethnobiology and Ethnomedicine*, 1, 1–8.
- Giday, K., Lenaerts, L., Gebrehiwot, K., Yirga, G., Verbist, B., & Muys, B. (2016). Ethnobotanical study of medicinal plants from degraded dry afro-montane forest in northern Ethiopia: Species, uses and conservation challenges. *Journal of Herbal Medicine*, 6(2), 96–104.
- Hasanah, N., Sudrajat, H. W., & Damhuri. (2016). Etnobotani Tumbuhan Obat Masyarakat Desa Lapandewa Kaindea Kecamatan Lapandewa Kabupaten Buton Selatan. *Jurnal Ampibi*, 1(1), 14–20.
- Henri, H., & Erpandi, E. (2021). Local Ethnic Malay Community Knowledge in Traditional Medicine Utilization and Its Conservation Strategy in East Belitung Regency, Indonesia. *Media Konservasi*, 26(1), 44–51.
- Henri, H., Nababan, V., & Hakim, L. (2020). Ethnobotanical Study of Early Childhood Medicinal Plants Used by the Local People in South Bangka Regency, Indonesia. *Biosaintifika: Journal of Biology & Biology Education*, 12(3), 414–421.
- Kayani, S., Ahmad, M., Sultana, S., Khan Shinwari, Z.,

- Zafar, M., Yaseen, G., and Bibi, T. (2015). Ethnobotany of medicinal plants among the communities of Alpine and Sub-alpine regions of Pakistan. *Journal of Ethnopharmacology*, 164, 186–202.
- Kpodar, M. S., Lawson-Evi, P., Bakoma, B., Eklugadegbeku, K., Agbonon, A., Aklikokou, K., & Gbeassor, M. (2015). Ethnopharmacological survey of plants used in the treatment of diabetes mellitus in south of Togo (Maritime Region). *Journal of Herbal Medicine*, 5(3), 147–152.
- Lesmana, H., Alfianur, A., Utami, P. A., Retnowati, Y., & Darni, D. (2018). Pengobatan tradisional pada masyarakat tidung kota Tarakan: study kualitatif kearifan lokal bidang kesehatan. *Medisains*, 16(1), 31–41.
- Meliki, Linda, R., & Lovandi, I. (2013). Etnobotani Tumbuhan Obat oleh Suku Dayak Iban Desa Tanjung Sari Kecamatan Ketungau Tengah Kabupaten Sintang. *Protobiont*, 2(3), 129–135.
- Newman, D. J., & Cragg, G. M. (2012). Natural products as sources of new drugs over the 30 years from 1981 to 2010. *Journal of Natural Products*, 75(3), 311–335.
- Nuryanti, S., Linda, R., & Lovadi, I. (2015). Pemanfaatan Tumbuhan Arecaceae (Palem-Paleman) oleh Masyarakat Dayak Randu' di Desa Batu Buil Kecamatan Belimbing Kabupaten Melawi. *Protobiont*, 4(1), 128–135.
- Panmei, R., Gajurel, P. R., & Singh, B. (2019). Ethnobotany of medicinal plants used by the Zeliangrong ethnic group of Manipur, northeast India. *Journal of Ethnopharmacology*, 235(August 2018), 164–182.
- Permatasari, D., Diniatik, & Hartanti, D. (2011). Studi Etnofarmakologi Obat Tradisional Sebagai Anti Diare Di Kecamatan Baturaden Kabupaten Banyuwangi. *Pharmacy*, 8(1), 44–64.
- Pierre, S., Toua, V., Fernand, T. ., Michel, N. N. ., & Jean, M. (2011). Medicinal plants used in traditional treatment of malaria in Cameroon. *Journal of Ecology and the Natural Environment*, 3(3), 104–117.
- Rahman, K., Wardenaar, E., & Mariani, Y. (2019). Identifikasi Jenis dan Pemanfaatan Tumbuhan Obat di Hutan Tembawang oleh Masyarakat Kelurahan Beringin Kecamatan Kapuas Kabupaten Sanggau. *Jurnal Hutan Lestari*, 7(1), 44–55.
- Ribeiro, R. V., Bieski, I. G. C., Balogun, S. O., & Martins, D. T. de O. (2017). Ethnobotanical study of medicinal plants used by Ribeirinhos in the North. *Journal of Ethnopharmacology*, 205, 69–102.
- Ristoja. (2017). *Eksplorasi Pengetahuan Lokal Etnomedisin dan Tumbuhan Obat Berbasis Komunitas di Indonesia*. Jakarta: Balai Besar Litbang Tanaman Obat dan Obat Tradisional.
- Safryadi, A., Nasution, A. R., & Mahdalena. (2017). Kajian Etnobotani Melalui Pemanfaatan Tanaman Obat Di Desa Rema Kecamatan Bukit Tusam Kabupaten Aceh Tenggara. *Prosiding Seminar Nasional Biotik 2017*, 367–380.
- Saleh, M. F. R. ., & Hartana, A. (2017). Plant Species Diversity of Pangi Binangga Nature Reserve, Central Sulawesi. *Media Konservasi*, 22(3), 286–292.
- Samoisy, A. K., & Mahomoodally, F. (2016). Ethnopharmacological appraisal of culturally important medicinal plants and polyherbal formulas used against communicable diseases in Rodrigues Island. *Journal of Ethnopharmacology*, 194, 803–818.
- Shikov, A. N., Pozharitskaya, O. N., Makarov, V. G., Wagner, H., Verpoorte, R., & Heinrich, M. (2014). Medicinal Plants of the Russian Pharmacopoeia; Their history and applications. *Journal of Ethnopharmacology*, 154(3), 481–536.
- Silalahi, M., Walujo, E. B., Mustaqim, W. (2018). Etnomedisin Tumbuhan Obat oleh Subetnis Batak Phakpak di Desa Surung Mersada, Kabupaten Phakpak Bharat , Sumatera Utara. *Jurnal Ilmu Dasar*, 19(2), 77–92.
- Tardío, J., & Pardo-De-Santayana, M. (2008). Cultural importance indices: A comparative analysis based on the useful wild plants of southern Cantabria (northern Spain). *Economic Botany*, 62(1), 24–39.
- Ullah, R., Hussain, Z., Iqbal, Z., Hussain, J., Khan, F. U., Khan, N., and Hussain, I. (2010). Traditional uses of medicinal plants in Darra Adam Khel NWFP Pakistan. *Journal of Medicinal Plants Research*, 4(17), 1815–1821.
- Umair, M., Altaf, M., & Abbasi, A. M. (2017). An ethnobotanical survey of indigenous medicinal plants in Hafizabad district, Punjab-Pakistan. *PLoS one*, 12(6), e0177912.
- Utami, R. D., Zuhud, E. A. M., & Hikmat, A. (2019). Medicinal Ethnobotany and Potential of Medicine Plants of Anak Rawa Ethnic at the Penyengat Village Sungai Apit Siak Riau. *Media Konservasi*, 24(1), 40–51.
- Vitalini, S., Iriti, M., Puricelli, C., Ciuchi, D., Segale, A., & Fico, G. (2013). Traditional knowledge on medicinal and food plants used in Val San Giacomo (Sondrio, Italy) - An alpine ethnobotanical study. *Journal of Ethnopharmacology*, 145(2), 517–529.