Journal of TROPICAL BIODIVERSITY E-ISSN : 2774-4116

Ethnobotany of Societies Tanjung Belit, Muara Bio and Batu Sanggan Around the Wild Reserve Bukit Rimbang Bukit Baling Riau, Pekanbaru Indonesia

Ikhsan Matondang, Sri Endarti Rahayu and Ritchi Y.H.L.T

Faculty of Biologi Universitas Nasional, Jakarta

Email : matondangikhsan@gmail.com

Abstract

Villagers around the wildlife reserve Bukit Rimbang Bukit Baling Riau are societies that still used the wealth of plant resources for daily living. Tanjung Belit, Muara Bio and Batu Sanggan are villages around wild reserve Bukit Rimbang Bukit Baling, Riau. The tribes that inhabit these three villages are Domo, Melayu, Tonga, and Kafe tribes. Not much scientific information reveals the use of plants by the societies in the three villages mentioned above. The purpose of this study is to inventory the use of plants in the three villages mentioned. The study was conducted in April 2016 by interviewing societies leaders and people with knowledge about the use of plants for the daily use of the societies and direct observations during field trips. The results obtained 95 species of plants in 49 family are used by the societies in everyday use in the three villages. The use of the plant by the three societies villagers 55 species for medicine, 39 species for food, 8 species for board material, 5 species for industrial material, 2 species for ornamental, 1 species for aphrodisiac, and 2 for others. This knowledge is very important for the next generations and also as a guide for the existence of the used to be preserved sustainability.

Keywords: plant, societies, village, wildlife reserve Bukit Rimbang Bukit Baling

Submission	:	Jan, 09th 2022
Revision	:	March 08th 2021
Publication	:	April 30th 2022

INTRODUCTION

Indonesia is occupied by different ethnic from Sabang to Merauke because of the abundant natural resources and culture. Also, each of these communities has personal knowledge of the therapeutic uses of these plants (Kandari et al., 2012). Indonesia has numerous natural resources, where 9,000 out of 30,000 plant species are medicinal (Decree of Minister of Health of the Republic of Indonesia, 2007). The traditional drug in this society is a piece of the nation's culture and is commonly utilized by the people. Moreover, in 2013 information from Basic Medical Research (Riskesdas) demonstrated 35.2% of Indonesian communities have and utilize orthodox drugs for treatment (Shanti et al., 2014).

Riau is a province located on the island of Sumatera which has a wildlife reserve. The Bukit Rimbang Bukit Baling conservation area covers approximately 136,000 ha. Bukit Rimbang Bukit Baling has a hilly topography with a slope of 25-100%. The main hilly areas are located at Bukit Rimbang in the Southwest with an altitude of ± 927m above sea level and Bukit Baling in the north of the area at an altitude of ± 1,070m above sea level. Bukit Rimbang Bukit Baling is designated as a nature reserve area because the forest area around Bukit Rimbang Bukit Baling has the function of a wildlife reserve and springs that need to be fostered for its sustainability, to regulate water management, prevent flood, landslide, and erosion hazards. Rimbang Baling Wildlife Conservation area is located upstream of two Sub-Watersheds, namely Subayang River and Singingi which is a

branch of Kampar River Basin. Administratively the area is located in Kampar District and Kuantan Singingi Regency (Kuansing) Riau (Kenedie, et al., 2002).

The village of Tanjung Belit, Muara Bio, and Batu Sanggan are the three villages adjacent to the conservation area mentioned above. Societies in the three villages consist of Domo, Melayu, Melayu Tonga, and Kafe. Society knowledge in these three villages related to the utilization of plants for daily needs is the knowledge that is passed on and develops from generation to generation. Inheritance of hereditary knowledge is done orally, so it is possible that this traditional knowledge can be lost if not documented.

Based on the above, ethnobotany research, community knowledge about the use of plants becomes important to be done so that the knowledge of the people of Domo, Melayu, Melayu Tonga, and Kafe tribes can be documented and utilized more widely in the societies of Riau. The purpose of this study is to explore the potential knowledge of the use of plants by the societies in the village of Tanjung Belit, Muara Bio, and Batu Sanggan that exist around Bukit Rimbang Bukit Baling Wildlife Areas.

METHOD

Research location

The research was conducted in three villages namely Tanjung Belit, Muara Bio, and Batu Sanggan Villages (Figure 1.) which are located around wildlife Bukit Rimbang Bukit Baling, Riau Province in April 2016.

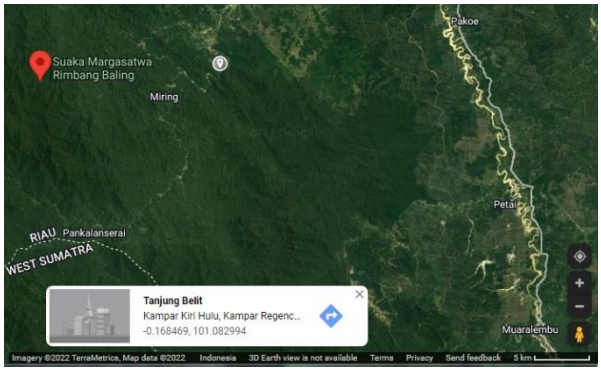

Figure 1. Research location.

Data collection techniques

The research was conducted with interviews with the leaders and people who know the utilization of plants in everyday life with the purposive sampling method. Interviews were conducted in-depth with questions in accordance with needs and semi-structured using the questionnaire that had been prepared (Rugayah et al, 2004).

Field surveys were conducted to identify the species of plants mentioned in the interview. The introduction of the species is done by searching for plants around the community residences, gardens, and the forest. The species are documented and then identified with the literature.

Data analysis

The data obtained is processed qualitatively by description. Data is displayed in table form based on the designation of each species.

RESULT

A. Plant Potential

Tanjung Belit, Muara Bio, and Batu Sanggan Villages have good plant potential in fulfilling the daily needs of the communities. Plants that are on the edge of the forest wildlife reserve area, plants in the garden, and the yard are used by the societies for the needs of life both for consumption and also to earn income as material for sale. Plants on the edge of the forest are usually used for medicinal and firewood materials. Plants in the garden are used for everyday purposes and also for sale. As for those grown in the yard needed to be consumed and in small quantities is an ornamental plant. The potential of existing plants in wildlife Bukit Rimbang Bukit Baling is high enough, obtained 95 species of 49 family used by societies in the three villages.

B. Diversity of plant species

Based on the results of interviews with the societies in the three villages (Tanjung Belit, Muara Bio, and Batu Sanggan), there were 95 plant species used by the communities (Table 1.). Ninety-five of these species consist of 49 family.

Table 1. Plants Used by People of Tanjung Belit, Muara Bio and Batu Sanggan.

Family	Scientific name	Local name	Use
Acanthaceae	*Graptophyllum pictum*	Puding hitam	Medicine
Acoraceae	*Acorus calamus*	Jangau	Medicine
Anacardiaceae	*Mangifera foetida*	Ambacang	Food
	Mangifera odorata	Kuini	Food
	Mangifera indica	Mangga	Food
	Mangifera indica	Mangga polan	Medicine
Annonaceae	*Annona squamosa*	Sri Kaya	Food
Apocynaceae	*Thevetia peruviana*	Ginje	Decorative plant
Araceae	*Colocacia esculenta*	Keladi	Food
Arecaceae	*Cocos nucifer*	Kelapa	Food, Medicine, board
	Elaeis guineensis	Kelapa sawit	Industry
	Areca cathecu	Pinang	Medicine, food, craft, dye
	Calamus rotanga	Rotan	Craft
	Salacca edulis	Salak	Food
Asteraceae	*Blumea balsamifera*	Capo	Medicine
Bombacaceae	*Durio zibethinus*	Durian	Medicine
	Ceiba pentandra	Kapuk	Medicine
Bromeliaceae	*Ananas comosus*	Nenas	Medicine
Campanulacea	*Isotoma longiflora*	Katarak	Medicine
Cluciaceae	*Garcinia mangostana*	Manggis	Food
Crassulacea	*Kalanchoe pinnata*	Sidingin	Medicine
Caricaceae	*Carica papaya*	Pepaya	Food, Medicine
Cycadaceae	*Cycas rumphii*	Pakis haji	Medicine
Cyperaceae	*Scirpodendron ghaeri*	Rumbai	Craft
Dioscoreaceae	*Dioscorea hispida*	Umbi gadang	Medicine

Dipterocarpacea	*Vatica teysmanniana*	Resak	Medicine, food
	Shorea sp	Meranti	Furniture, decorative plant
Euphorbiaceae	*Jatropha multifida*	Betadin	Medicine
	Hevea brasiliensis	Karet	Industry
	Baccaurea motleyana	Rambai	Food
	Manihot utilissima	Singkong	Food
	Baccaurea macrocarpa	Tampui	Food
Fabaceae	*Parkia speciosa*	Petai	Food
	Ricinus communis	Jarak	Medicine
	Cassia alata	Galinggang	Medicine
	-	Kabau	Food
Gleicheniaceae	*Dicranopteris linearis*	resam	Craft
Lamiaceae	*Coleus* sp	Piladang	Medicine
	Orthosiphon aristatus	Kucing kucingan	Medicine
	Ocimum citriodorum	Kumangi	Food
	Ocimum basilicum	Selasih	Medicine
Lauraceae	*Phoebe grandis*	Medang	Furniture, industry
Liliaceae	*Allium cepa*	Bawang merah	Medicine
	Allium sativum	Bawang putih	Medicine
Loranthaceae	*Loranthus* sp	Benalu	Medicine
Malvaceae	*Hibiscus rosasinensis*	Bunga raya	Medicine
Marattiaceae	*Angiopteris evecta*	Paku gajah	Medicine
Meliaceae	*Lansium domesticum*	Langsat	Food
	Sandoricum koetjape	Sentul	Food
Moraceae	*Artocarpus heteropyllus*	Nangka	Food
Musaceae	*Musa paradisiacal*	Pisang	Food, Medicine
	Musa sp	Pisang nangka	Food
Myristicaceae	*Myristica fragrans*	Pala	Medicine
Myrtaceae	*Syzygium polyanthum*	Daun salam	Food, Medicine
	Syzygium aquaeum	Jambu air	Food
	Syzygium malaccensis	Jambu jambeh	Food
	Psidium guajava	Jambu biji	Food, cosmetic
Olaceae	*Scorodocarpus borneensis*	Kulin	Decorative
Orchidaceae	*Phalaenopsis amabilis*	Anggrek bulan	Decorative
Oxaladiaceae	*Averrhoa carambola*	Belimbing	Medicine, food
Passifloraceae	*Passiflora edulis*	Markisa	Food
Pandanaceae	*Pandanus amaryllifolium*	Pandan	Food
	Pandanus purcatus	Pandan	Craft
Phyllanthaceae	*Sauropus androgynus*	Katuk	Food, breast milk
Piperaceae	*Piper nigrum*	Merica	Medicine
	Piper betle	Sirih	Medicine
Poaceae	*Imperata cylindrica*	Ilalang	Cosmetic

	Hymenachne acutigluma	Kumpai	Medicine
	Eleusine indica	Rumput kumpangi	Medicine
	Cymbopogon citrates	serai	Medicine
Rubiaceae	*Paederia scandens*	Kentut kentutan	Medicine
	Coffea liberica	Kopi afrika	Medicine
Rutaceae	*Citrus aurantifolia*	Jeruk nipis	Medicine, trance
	Citrus hystrix	Jeruk purut	Trance
Sapindaceae,	*Dimocarpus longan*	Lengkeng	Food
	Pometia pinnata	Matoa	Food
	Nephelium lappaceum	Rambutan	Food
Simarubaceae	*Eurycoma longifolia*	Pasak bumi	Aphrosidiac
Solanaceae	*Capsicum annum*	Cabai	Food, Medicine
	Datura metel	Kecubung	Medicine
	Solanum torvum	Rimbang	Food
	Nicotiana tabacum	Tembakau	Medicine
Sterculiaceae	*Scaphium* sp	Kembang semangka	Medicine
	Theabroma cacao	Cokelat	Industry
Thymeliaceae	*Aquilaria malaccensis*	Gaharu	Industry
	Phaleria macrocarpa	Mahkota dewa	Medicine
Verbenaceae	*Peronema canescens*	Sungkai	Medicine, furniture
Zingiberaceae	*Alpinia galanga*	Langkuih	Food, Medicine
	Costus speciosus	Pancinge	Medicine
	Curcuma domestica	Kunyit	Food, Medicine
	Curcuma xanthorrhiza	Temulawak	Medicine
	Kaempferia galanga	Kencur	Food, Medicine
	Zingiber purpureum	Kunyit bolai	Medicine
	Zingiber officinale	Jahe	Food, Medicine
	Zingiber zerumbet	Puyang	Food, Medicine

Zingiberaceae 8 species have the highest number of species while the Arecaceae and Euphorbiaceae are the second-highest of each of the 5 species. In the third order are the Anacardiaceae, Poaceae, Solanaceae, Fabaceae, Lamiaceae, and Myrtaceae with each species 4 (Table 2).

Table 2. The Number of plant family and species utilized.

Family	Number of species
Zingiberaceae	8
Arecaceae and Euphorbiaceae	5
Anacardiaceae, Fabaceae, Lamiaceae, Myrtaceae, Poaceae and Solanaceae	4
Sapindaceae	3

Bombacaceae, Dipterocarpacea, Liliaceae, Meliaceae, Musaceae, Pandanaceae, Piperaceae, Rubiaceae, Rutaceae Sterculiaceae, Thymeliaceae	2	
Acanthaceae, Acoraceae, Annonaceae, Apocynaceae, Araceae, Asteraceae, Bromeliaceae, Campanulacea, Caricaceae, Cluciaceae, Crassulacea, Cycadaceae, Cyperaceae, Dioscoreaceae, Gleicheniaceae, Loranthaceae, Lauraceae, Malvaceae, Marattiaceae, Moraceae, Myristicaceae, Olaceae, Orchidaceae, Oxaladiaceae,Passifloraceae, Phyllanthaceae Simarubaceae, Phyllanthaceae, and Verbenaceae	1	------

There are several plants (not yet known the name species and family) in the forest that can be used as food if someone runs out of stock while in the forest. The plant is given the name of idan or fruit leaf point, mites, and tuing (forest rambutan). The fruit is used as a substitute for rice. Species of *Peronema canescens* are the dominant plants found around community settlements. The *Eurycoma longifolia* is a rare plant, but in this study can still be found (Figure 2). The root of this plant is used as an aphrodisiac.

Figure 2. Long jack/pasak bumi (*Eurycoma longifolia*)

Matoa plants (*Pometia pinnata*) can also be found in the village of Tanjung Belit. This is very possible because this village is quite often visited by people from outside the region. The species of medang (*Phoebe grandis*) is a species of wood used for the manufacture of mosquito repellent is a source of livelihood for most of the community. Agarwood (*Aquilaria malaccensis*) is commercially valuable and in nature, its existence is limited by the people of Tanjung Belit village trying to be cultivated in the garden.

C. Diversity of Plant Utilization

Based on the utilization group, recorded plants can be grouped into 6 groups of utilization. Food groups (fruit, vegetables, cooking spices), medicines (cosmetics and breast milk), industry, boards (household items, handicrafts, boats), ornamental plants, and others. Ninety-five species utilized by communities in the three research areas were mostly used for medicine. Second-order for food (39 species) and third-order for boards (8 species). *Areca cathecu* can be used for medicine, food, handicrafts, and dyes. *Cocos nucifera* is used for food, medicine, and board. *Alpinia galanga*, *Averrhoa carambola*, *Capsicum annum*, *Carica papaya*, *Citrus aurantifolia*, *Curcuma domestica*, *Kaempferia galanga*, *Peronema canescens*, *Phoebe grandis*, *Psidium guajava*, *Sauropus androgynus*, *Syzygium polyanthum*, *Vatica teysmanniana*, *Zingiber officinale* are the species that have 2 benefits.

1. Medicine

The people of Tanjung Belit village, Muara Bio, and Batu Sanggan are still using plants for medicinal materials. Fifty-five plant species were used for the treatment of more than 20 kinds of diseases ranging from minor ailments, such as wounds to serious illnesses such as cancer. Treatment of injuries when outside the home or forest, by people in the three ordinary villages by using three kinds of plants that are found. Shoot three different types of bites directly then chewed and after a smooth spray on the wound.

2. Foodstuffs

Plants used as food, including fruits, vegetables, and spices as many as 39 species. Fruit is the most widely used organ for food next rhizome roots of the *Zingiberaceae* and bay leaves are used as cooking spices.

3. Material board and craft

The use of the board, in this case, includes the manufacture of crafts, such as ambung and chopsticks (Figure 3). The number of species utilized by communities in these three villages is for the board. 8. The *Peronema sanescens* plants found in the village of Tanjung Belit are used for boards, the leaves are used for medicine. Similarly, *Phoebe grandis* stems for boat building materials (Figure 4) and also as a source for making mosquito repellent which at the time of this research was a good additional livelihood.

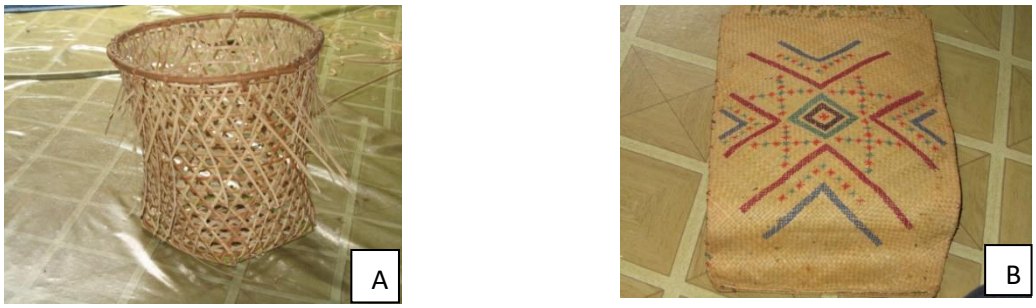

Figure 3. Handicrafts by the community around the Rimbang Baling Wildlife Sanctuary (A) Ambung (B) Chopsticks

Figure 3. A Boat Made of Medang Wood.

4. Industrial material

Plants used as raw materials for the industry are found in 5 species. Palm oil for vegetable oil industry, gaharu for the cosmetic industry, wood material for mosquito repellent, rubber for tire industry, chocolate for food chocolate. The above-mentioned plants are found in Tanjung Belit and Muara Bio, whereas in Batu Sanggan only gaharu and chocolate are found.

5. Ornamental Plants

The communities of the three villages generally have a yard, but plants are intentionally planted to meet the needs of households, in the form of live pharmacies and necessities for the kitchen. Found only two species are grouped in ornamental plants such as orchids and "ginje" (*Thevetia peruviana*).

6. Other uses

Batu Sanggan community in terms of treating diseases, such as possession using lime, lime, added with other ingredients then "do'a". Lemon plant is used for "belimau" used bathing material to welcome the holy month of Ramadhan. Pinang plants can be used for dyes. Although the village of Tanjung Belit is found pandanus, but not used as a dye, but only for mixed materials at the time of making porridge. While in the village of Aur Kuning, leaves of pandanus plants is used for dye.

DISCUSSION

Based on the exploration results Puspitaningtyas (2009) in wildlife Bukit Rimbang Baling found 121 species of plants in 47 family and 87 genera, and 49 species of orchids in 21 genera that exist in the forest area. Habitus of plants obtained in the form of trees, shrubs, bush and creeping species. The results of Ernawati's research (2009) in Aur Kuning Village Kampar Kiri Hulu subdistrict had the potential of 15% vegetation utilized by the communities, 22% forest, 29% roadside, and 34% in the yard.

In Aur Kuning Village obtained 168 species with many family as many as 15 (Ernawati, 2009). Differences in the number of species utilized from the two results of this study cannot be separated from the community's linkage to the biological resources of plants. In the community of the village of Aur Kuning the relationship between the community with plants is more than in the community in the village of Tanjung Belit, Muara Bio, and Batu Sanggan. It can be said that the people in these three villages have been using more product materials from the city compared to the people of Aur Kuning village whose position is far from the city crowd. In addition, data on the number of more plants in the village of Aur Kuning compared with the 3 villages studied can occur because the number of more respondents in the village of Aur Kuning and his research conducted more longer.

Zingiberaceae is the dominant plant family found in daily use. An ethnobotanical survey of medicinal plants in the Semiliguda of Koraput district, Odisha, India, found that the dominant plants were from the Euphorbiaceae and Myrtaceae. (Smita et al., 2013). While the study of medicinal plants in the Inurug village, Bogor, West Java, found that the Zingiberaceae (10 species) was the most widely used in therapy (Rahayu et al.,2021). The relatively large number of species of the Zingiberaceae, Arecaceae, and Euphorbiaceae family are almost identical to those found by Ernawati (2009), Lestari (2011), and Setyowati and Wardah (2007).

The "pasak bumi" plant is a rare, but in the research area it can be found, this indicate that this plant is still possible to be saved. "Pasak bumi" was randomly distributed in the lowland forest of Langkat Regency, North Sumatera with a high individual density in an area with an open canopy. It is hoped that the use of pasak bumi by the local community will comply with the customs regulations that have been mutually agreed upon so that it does not threaten the population in their natural habitat (Rahmawati et al., 2019).

Agarwood plants whose presence in nature is decreasing, even in research areas, people are trying to plant and cultivate them. In Central Bangka Regency, it is even cultivated with a land area of up to 7-11 ha (Yulizah et al., 2019).

The young leaves of the sungkai plant from the *Verbenaceae* tribe, are traditionally often used as cold medicine, ringworms, prevention of toothache by gargling, a mixture of spices in bath water for women who have just given birth, and as a fever reducer. The young leaves used are boiled, then the boiled water is consumed (Ningsih 2013). Ethanol extract of "sungkai" leaf (*P. canescens*) can inhibit the growth of *E. coli* (Fransisca et al., 2020).

CONCLUSION

Based on the results of this study can be concluded: The number of plants utilized by the community in Tanjung Belit, Muara Bio, and Batu Sanggan, as many as 95 species. The spectrum of the community's use of plants in these three villages is for ingredients of medicines, foodstuffs, board materials and handicrafts, industrial materials, ornamental plants, for possession and coloring. The most widely used plant family comes from Zingiberaceae.

ACKNOWLEDGMENT

The author would like to thank the Nasional University for funding this research.

REFERENCES

Decree of Minister of Health of the Republic of Indonesia. Number: 81/Menkes/SK/III/2007, March 27, 2007: National Policy of Traditional Medicine.

Ernawati. (2009). Etnobotani Masyarakat Suku Melayu Daratan (Studi Kasus di Desa Aur Kuning, Kecamatan Kampar Kiri Hulu, Kabupaten Kampar, Propinsi Riau. Skripsi. Institut Pertanian Bogor. Bogor.

Fransisca, D., Kahanjak, D.N. and Frethernety, A. (2020). Uji aktivitas antibakteri ekstrak etanol daun sungkai (*Peronema canescens* Jack) terhadap pertumbuhan *Escherichia coli* dengan metode difusi cakram Kirby-Bauer. Jurnal Pengelolaan Lingkungan Berkelanjutan, JPLB, 4(1):460-470.

Kandari, L.S.; Ashish, K.G.; Tripti, N. and Phondani, P.C. (2012). Ethnobotanical knowledge of medicine plant among tribal communities in Orissa India. J. Forest Res., 1(1): 1-5.

Kenedie, J. M. Zanir, Nukman dan H. Sasongko. (2002). Buku Informasi Kawasan Konservasi di Propinsi Riau. Departemen Kehutanan. Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam Balai Konservasi Sumber Daya Alam Riau. Pekanbaru. Riau.

Rahmawati, K., Fefirenta, A.D. dan Lestari, V.B. (2019). Studi Populasi dan Potensi Pasak Bumi (*Eurycoma longifolia* Jack) di Kabupaten Langkat, Provinsi Sumatera Utara. **dalam**

Prosiding Seminar Nasional Konservasi dan pemanfaatan tumbuhan dan Satwa Liar "Riset Sebagai Pondasi Konservasi dan Pemanfaatan Tumbuhan dan Satwa Liar" 2019. Halaman 66-72.

Lestari. R. (2011). Kajian Etnobotani Masyarakat Suku Kerinci di Sekitar Hutan Adat Bukit Tinggi Desa Sungai Deras Kabupaten Kerinci-Provinsi Jambi. Skripsi. Institut Pertanian Bogor. Bogor.

Ningsih A. (2013). Potensi antimikroba dan analisis spektroskopi isolataktif ekstrak n-heksan daun sungkai (*Peronema canescens*.Jack) terhadap beberapa mikroba uji [Tesis]. Pascasarjana Program Studi Farmasi, Universitas Hasanudin, Makassar.

Puspitaningtyas, D.M. (2009). Eksplorasi Tumbuhan Di Kawasan Suaka Margasatwa Bukit Rimbang Baling-Riau. Prosiding Keanekaragaman Hayati.

Rahayu, S.E., Purba, R and Matondang, I. (2021). Ethnobotanical Study of Medicinal Plants Inurug Indigeneous Village Bogor District, Indonesia. Plant Archives Vol. 2, No. 2, pp 116-125.

Rugayah, Widjaja, E.A. dan Praptiwi. (2004). Pedoman Pengumpulan Data Keanekaragaman Flora. Pusat Penelitian Biologi-Lembaga Ilmu Pengetahuan Indonesia.

Setyowati, F.M. dan Wardah. (2007). Keanekaragaman Tumbuhan Obat Masyarakat Talang Mamak di Sekitar Taman Nasional Bukit Tigapuluh, Riau. Biodiversitas. Volume 8 No. 3. Halaman 228-232.

Shanti, R.V.; Jumari and Munifatul, I. (2014). Etnobotany study of medicinal treatment for women's care in Surakarta Hadiningrat Palace society. Biosaintifika: Biology & Biology Education. 6: 61-69. [Indonesian]

Smita, R; Sngeeta, R; Kumar, S.S.; Soumya, S. and Deepak, P. (2013). An Ethnobotanical survey of Medicinal Plants in Semiliguda of Koraput District, Odisha, India. Res.J.Recent Sci. Vol. 2(8), 20-30.

Yulizah, Rini, D.S, Rahajoe, J.S., Ardiyani, M., Wulansari, D. dan Susiarti, S. (2019). Populasi Gaharu (Aquilaria malaccensis Lam.) di Provinsi Kepulauan Bangka Belitung **dalam** Prosiding Seminar Nasional Konservasi dan pemanfaatan tumbuhan dan Satwa Liar "Riset Sebagai Pondasi Konservasi dan Pemanfaatan Tumbuhan dan Satwa Liar" 2019. Halaman 111-117.