

## The Ethnobotany Study of Medicinal Plants in Lombok Island

Riska Damayanti, Sri Sofiati Umami, Suhirman

Universitas Islam Negeri Mataram, Mataram, Nusa Tenggara Barat

Corresponding author: [sofie.umami@uinmataram.ac.id](mailto:sofie.umami@uinmataram.ac.id)

### Abstract

Lombok has the biodiversity plant potential that can be used as medicine. This study aimed to identify the types of medicinal plants used by Sasak people, how to obtain, the parts used, how to use and processing, and the *Species Use Value* (SUV), *Family Use Value* (FUV), and *Fidelity Level* (FL). The results showed that there were 84 species used as traditional medicine by Lombok people. The method of obtaining medicinal plants was mostly done by cultivation, as much as 58% of the processing methods, and the most common use of plants in medicine was boiling and drinking. Plant species that had the highest SUV value were *Morinda citrifolia*, *Zingiber officinale*, and *Elephantopus scaber* with SUVs of 0.8 each. The plant family that had the highest FUV value was *Zingiberaceae* (eight species), furthermore, the part of the plant that had the highest value was the leaf. The total of plant species that had the highest Fidelity level was 52. One of them was celery (*Apium graveolens L.*). The data obtained from this research was needed to create an inventory of medicinal plant species and their use by the community, so that traditional knowledge of medicinal plants could be documented and preserved.

**Keywords:** ethnobotany, Sasak tribe, medicinal plants

### 1. Introduction

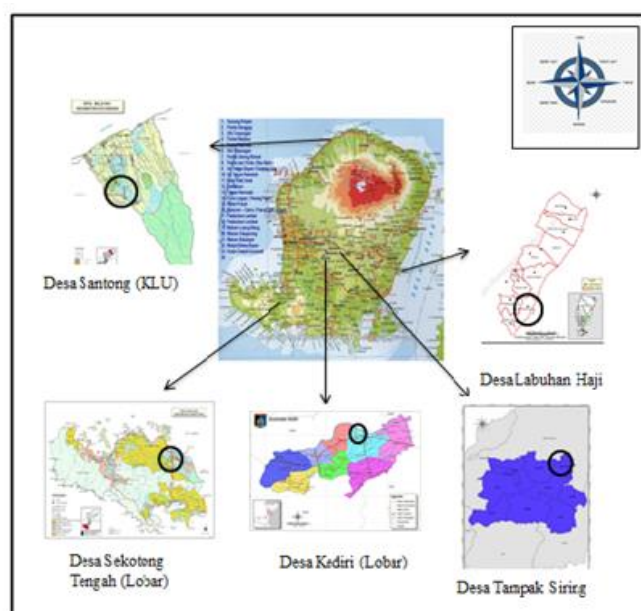
Indonesia is a rich country in its biodiversity. There were 30,000-40,000 plant species and 7500 medicinal plant species, consisting of native species, introduced species, wild and cultivated species (Cahyaningsih et al., 2021). Its usefulness has been recognized throughout the world for centuries for its medicinal and cosmetic uses, as well as its use in both traditional and modern ways. Medicinal plants are efficacious plants as drugs to relieve pain, increase endurance, kill germs, and repair damaged organs such as the heart, kidneys, and lungs. Medicinal plants also have been shown to inhibit the growth of tumors and cancer (Safitri et al., 2015).

The diversity of medicinal plants is usually used by the community and is believed to be able to cure various types of diseases by utilizing organs from medicinal plant species such as leaves, stems, flowers, roots, tubers, rhizomes, fruits, and seeds could be utilized and used as ingredients for traditional medicine. The use of plants as traditional medicine is still favored by the Sasak people in Lombok Island. It is because the use of drugs derived from local plants or traditional medicine is cheaper, easy to obtain, safe, and has minimal effects (Arsyad, 2018). The data collection on medicinal plants is still very limited, so investigations are still needed to have a specific collection of data about plants used as medicine, especially in Lombok Island. Therefore, efforts are needed to document the knowledge of traditional medicine using plants along with efforts to preserve medicinal plants for knowledge, conservation, and public welfare.

The objective of this study was to identify plant species used as traditional medicine by the Lombok people. The results of this study were expected to provide information related to the use and management of plants by local communities in Lombok Island. The results of previous studies regarding the ethnobotany studies of medicinal plants have been widely carried out, but investigations still need to be carried out to have a specific database of plants used as medicine, especially on the island of Lombok because it has various types of plants that can be used as traditional medicines.

## 2. Material and Method

This research was conducted from May until June 2021 in five villages in Lombok island, namely Kediri village and Sekotong Middle village (West Lombok Regency), Santong village (North Lombok Regency), Tampak Siring village (Central Lombok Regency), and Labuhan Haji village (East Lombok Regency)(Figure 1). The data was collected through participatory observation, semi-structured interviews, collection of plants in the field, classification of plants, and documentation. The selection of sources used was *the purposive sampling method*. The resource persons were aimed at people who knew medicinal plants, such as traditional healers (shamans).



**Figure 1.** Map of research location

Qualitative data included data on types of medicinal plants, methods of obtaining, and methods of using and processing medicinal plants. Furthermore, the quantitative data was in the form of *Species Use Value (SUV)*, *Family Use Value (FUV)*, and *Fidelity Level (FL)*, was calculated by the following formula:

### 1. *Species Use Value (SUV)*

Species use value was used to calculate the use-value of a plant used as medicine by the Lombok people.

$$UV_s = \frac{\sum UV_{is}}{n_i}$$

Description:

UVs = Species use value

UVi = Number of stated uses of one species

ni = Total number of informants interviewed

### 2. *Family Use Value (FUV)*

Family use value was used to calculate the use-value of a family that was used as medicine by the Lombok people.

$$FUV = \frac{\sum UV_s}{N_s}$$

Description:

FUV = Use value for a family

UVis = Number of stated uses of one species

Ns = Total number of species in one family

### 3. *Fidelity Level (FL)*

The fidelity level was used to determine the types of plants that were mostly used to treat particular disease categories by respondents from the research area.

$$FL (\%) = \frac{NP}{N}$$

Description:

FL = Confidence level

Np = Number of respondents who mention species for certain uses

N = Total number of respondents who mentioned species for various uses

All data, both qualitative and quantitative were analyzed descriptively and thoroughly related to the observed aspects.

### 3. Results and Discussion

#### 3.1. Results

##### 3.1.1 Types of medicinal plants in Lombok

Based on the results of the study, 84 plant species from 76 genera and 46 families were used as traditional medicine by the Sasak tribe in Lombok Island (Table 1). The types of medicinal plants used by the Lombok people vary from herb to tree level.

**Table 1.** Types of plants used by the Lombok people

No	Local Name, Species Name	Family	Method of Obtaining	Types of Disease Treated	Parts Used	Method of Processing and Use
1.	<i>Avokat, (Persea Americana)</i>	Lauraceae	Cultivation	High Blood Pressure	Leaf	Boiled, then drunk
2.	<i>Ambon jamak, (Ipomea batatas L.)</i>	Convolvulaceae	Cultivation	Boils, goiter	Leaf	Pounded, then pasted; boiled, then drunk
3.	<i>Arus, (Maranta arundinacea)</i>	Marantaceae	Wild	Diabetes	Rhizome	Boiled, then drunk
4.	<i>Banten, (Lannea coromandelica),</i>	Anacardiaceae	Wild	Sore eyes, fever	Leaf, Stems	Chewed, then spit out; Pounded, then the water was squeezed and dripped
5.	<i>Borok, (Erythrina subumbrans)</i>	Fabaceae	Wild	Malaria	Seed	Directly consumed
6.	<i>Bagu, (Gnetum gnemon)</i>	Gnetaceae	Cultivation	Rheumatism	Bark	Boiled, then drunk
7.	<i>Bebele, (Centella asiatica L.)</i>	Mackinlayaceae	Wild	Wound medicine	Leaf	Pounded, then pasted
8.	<i>Belimbing, (Averrhoa carambola L.)</i>	Oxalidaceae	Cultivation	Diabetes	Leaf	Boiled, then drunk
9.	<i>Bokah, (Benincasa hispida)</i>	Cucurbitaceae	Wild	Typhus	Fruit	Grated, then the water was drunk
10.	<i>Bebungkak, (Phyllanthus niruri L.)</i>	Euphorbiaceae	Wild	Rheumatism	Leaf	Boiled, then drunk
11.	<i>Beluntas, (Pluchea indica)</i>	Asteraceae	Wild	Feverish	Leaf	Boiled, then drunk
12.	<i>Binhong, (Anredera cordifolia)</i>	Bassellaceae	Cultivation	Stomach ulcer, kidney failure	Leaf	Boiled, then drunk
13.	<i>Bagek, (Tamarindus indica L.)</i>	Fabaceae	Cultivation	Chickenpox	Fruit	Squeezed, then drunk
14.	<i>Bawang beak, (Allium cepa)</i>	Amaryllidaceae	Cultivation	Vomiting, feverish	Tubers	Squeezed, then drunk
15.	<i>Cengkeh, (Syzygium aromaticum)</i>	Myrtaceae	Cultivation	Tootache, sore aches	Leaf	Boiled, then drunk
16.	<i>Cermen, (Phyllanthus acidus)</i>	Phyllanthaceae	Wild	High blood pressure	Leaf	Boiled, then drunk

17.	<i>Delima,</i> ( <i>Punica granatum L.</i> )	Punicaceae	Cultivation	Cancer	Roots	Boiled, then drunk
18.	<i>Empet-empet</i> ( <i>Grona trifolia</i> )	Fabaceae	Wild	Diarrhea	Leaf	Chewed, then spit out
19.	<i>Gingseng,</i> ( <i>Panax ginseng C.A.Mey</i> )	Araliaceae	Cultivation	Sore aches	Rhizome	Boiled, then drunk
20.	<i>Gorogosok,</i> ( <i>Cleome gynandra</i> )	Cleomaceae	Wild	Rheumatism	All parts	Chewed, then spit out
21.	<i>Gedang,</i> ( <i>Carica papaya L.</i> )	Caricaceae	Cultivation	Diarrhea, stomach ulcer	Leaf	Pounded, then the water was squeezed and drunk
22.	<i>Imbe,</i> ( <i>Azadiractha indica</i> )	Meliaceae	Wild	Malaria, diarrhea	Leaf	Boiled, then drunk
23.	<i>Jae,</i> ( <i>Zingiber officinale</i> )	Zingiberaceae	Cultivation	Feverish, diarrhea, tumor, rheumatism	Leaf, Rhizome	Boiled, then drunk
24.	<i>Jarak,</i> ( <i>Jatropha curcas</i> )	Euphorbiaceae	Cultivation	Diarrhea, feverish	Bark	Chewed, then spit out; Boiled, then drunk
25.	<i>Jeringo,</i> ( <i>Acorus calamus</i> )	Acoraceae	Cultivation	Fever	Rhizome	Chewed, then spit out
26.	<i>Jelateng,</i> ( <i>Laportea sp.</i> )	Urticaceae	Wild	Malaria	Roots	Boiled, then drunk
27.	<i>Jeruk nipis,</i> ( <i>Citrus aurantiifolia</i> )	Rutaceae	Cultivation	Itch, cough	Fruit	Squeezed, then smeared; Squeezed, then drunk
28.	<i>Jeruk monte,</i> ( <i>Citrus histrix</i> )	Rutaceae	Cultivation	Cough	Fruit	Squeezed, then drunk
29.	<i>Jepang,</i> ( <i>Sechium edule</i> )	Cucurbitaceae	Cultivation	High blood pressure, stomach ulcer	Fruit	Grated, then drunk
30.	<i>Kemangi,</i> ( <i>Ocimum sanctum</i> )	Lamiaceae	Cultivation	Vomiting blood	Leaf	Pounded, then drunk
31.	<i>Kenampokan,</i> ( <i>Physalis angulate L.</i> )	Solanaceae	Wild	Tootache	Roots	Pounded and mixed with salt, then pasted
32.	<i>Ketujur,</i> ( <i>Sesbania grandiflora</i> )	Fabaceae	Cultivation	Fever	Leaf	Boiled, then drunk
33.	<i>Kelapa muda,</i> ( <i>Cocos nucifera L.</i> )	Arecaceae	Cultivation	Anemia	Fruit	Drunk the water directly
34.	<i>Kersen,</i> ( <i>Muntingia calabura L.</i> )	Elaeocarpaceae	Wild	High blood pressure	Leaf	Boiled, then drunk
35.	<i>Kunyit,</i> ( <i>Curcuma longa</i> )	Zingiberaceae	Cultivation	Chickenpox, silu's bone	Rhizome	Grilled, then pounded and smeared
36.	<i>Kelor,</i> ( <i>Moringa oleifera L.</i> )	Moringaceae	Cultivation	Fever	Bark, Seed	Boiled, then drunk; Chewed, then spit out
37.	<i>Kolobeo</i> ( <i>Callicarpa sp.</i> )	Lamiaceae	Cultivation	Chickenpox	Leaf	Chewed, then spit out or spread
38.	<i>Kunci,</i> ( <i>Boesenbergia pandurata</i> )	Zingiberaceae	Cultivation	Feverish, Chickenpox, rheumatism	Rhizome	Boiled, then drunk
39.	<i>Kunyit putih,</i> ( <i>Curcuma zedoaria</i> )	Zingiberaceae	Cultivation	Chickenpox, rheumatism	Rhizome	Pounded, then smeared
40.	<i>Laos,</i> ( <i>Alpinia galangal</i> )	Zingiberaceae	Cultivation	Rheumatism, silu's bone, preventing diabetes	Leaf	Boiled, then drunk
41.	<i>Lego,</i> ( <i>Vitex trifolia L.</i> )	Verbenaceae	Wild	Rheumatism	Leaf	Chewed, then spit out
42.	<i>Lensune,</i> ( <i>Allium sativum</i> )	Alliaceae	Cultivation	Fever	Tubers	Chewed, then spit out

43.	<i>Lidah buaya,</i> ( <i>Aloe vera</i> L.)	Xanthorrhoeaceae	Cultivation	Heart disease	Leaf	Pounded, then the water was squeezed and drunk
44.	<i>Lomak,</i> ( <i>Colocasia esculenta</i> L.)	Araceae	Cultivation	Boils, diabetes	Stems	Pounded, then pasted; Boiled, then drunk
45.	<i>Lembain duri,</i> ( <i>Amaranthus spinosus</i> L.)	Amaranthaceae	Wild	Rheumatism	Leaf	Chewed, then spit out
46.	<i>Lobak,</i> ( <i>Raphanus sativus</i> )	Cruciferae	Cultivation	Feverish	Root tubers	Grated, then drunk
47.	<i>Mahkota dewa,</i> ( <i>Phaleria macrocarpa</i> )	Thymelaeaceae	Cultivation	Cancer	Fruit	Directly consumed
48.	<i>Mahuni,</i> ( <i>Swietenia macrophylla</i> )	Meliaceae	Cultivation	Malaria, diabetes	Seed	Directly consumed
49.	<i>Mimi</i> ( <i>Maera</i> sp.)	Primulaceae	Wild	Chickenpox	Leaf	Pounded, then smeared or, Chewed, then spit out
50.	<i>Nao,</i> ( <i>Arenga pinnata</i> )	Arecaceae	Wild	Kidney stones	Roots	Boiled, then drunk
51.	<i>Nyambuk klutuk,</i> ( <i>Psidium guajava</i> L.)	Myrtaceae	Cultivation	Diarrhea	Leaf, Bark	Directly consumed; Boiled, then drunk
52.	<i>Nyinyik</i>		Wild	Ringworm	Leaf	Boiled, then drunk
53.	<i>Pace,</i> ( <i>Marinda citrofolia</i> )	Rubiaceae	Cultivation	Rheumatism, goiter, Chickenpox, fracture	Leaf, Fruit	Boiled, then drunk, Grilled, then pasted
54.	<i>Pala,</i> ( <i>Myristica fragrans</i> )	Myrtaceae	Cultivation	Postpartum	Leaf	Boiled, then drunk
55.	<i>Papaya jepang,</i> ( <i>Pluchea aconitifolius</i> )	Asteraceae	Cultivation	Diabetes	Roots	Boiled, then drunk
56.	<i>Pinang,</i> ( <i>Areca catechu</i> L.)	Arecaceae	Cultivation	Fever	Fruit	Boiled, then drunk
57.	<i>Pudak,</i> ( <i>Pandanus amaryllifolius</i> )	Pandaceae	Cultivation	High blood pressure	Leaf	Boiled, then drunk
58.	<i>Panasilin,</i> ( <i>Jatropha multifida</i> L.)	Euphorbiaceae	Cultivation	Wound medicine	Latex	Directly smeared
59.	<i>Pokok bunga putih,</i> ( <i>Ageratum conyzoides</i> )	Asteraceae	Wild	Wound medicine	Leaf	Pounded, then smeared
60.	<i>Putri malu,</i> ( <i>Mimosa pudica</i> )	Fabaceae	Wild	Breast cancer	Leaf	Pounded, then pasted
61.	<i>Puntik mas,</i> ( <i>Musa acuminata colla</i> )	Musaceae	Cultivation	High blood pressure	Leaf	Boiled, then drunk
62.	<i>Prie,</i> ( <i>Mimordica charantia</i> )	Cucurbitaceae	Cultivation	Malaria	Leaf	Boiled, then drunk
63.	<i>Randu,</i> ( <i>Ceiba pentandra</i> )	Malvaceae	Wild	High blood pressure	Bark	Boiled, then drunk
64.	<i>Rebu kepatik,</i> ( <i>Euphorbiaceae hirta</i> L.)	Euphorbiaceae	Wild	Wound medicine, typhus	Latex	Directly smeared
65.	<i>Re,</i> ( <i>Imperata cylindrical</i> L.)	Poaceae	Wild	Rheumatism	Shoots	Boiled, then drunk
66.	<i>Sekuh,</i> ( <i>Kaempferia galangal</i> L.)	Zingiberaceae	Cultivation	Sore eyes, Fever	Rhizome	Chewed, then blew
67.	<i>Sebie,</i> ( <i>Capsicum frutescens</i> L.)	Solanaceae	Cultivation	Rheumatism, Fever	Leaf	Chewed, then spit out
68.	<i>Seledri,</i> ( <i>Apium graveolens</i> L.)	Apiaceae	Cultivation	High blood pressure	All parts	Boiled, then drunk
69.	<i>Sager,</i> ( <i>Sauropus androgynous</i> )	Phyllanthaceae	Wild	Canker sore, skin disease	Leaf	Pounded, then smeared; Boiled, then drunk
70.	<i>Semet meong,</i>	Lamiaceae	Wild	Cough, diabetes	Leaf	Boiled, then drunk

*(Orthosiphon aristatus)*

71.	<i>Serai, (Cymbopogon citratus)</i>	Poaceae	Cultivation	Feverish	Leaf	Boiled, then drunk
72.	<i>Semanggi, (Marsilea clover)</i>	Marsileaceae	Wild	Wound medicine	Leaf	Pounded, then smeared
73.	<i>Sambiloto, (Andrographis paniculata)</i>	Acanthaceae	Cultivation	Sprain, cramps, diabetes	Leaf	Pounded, then smeared
74.	<i>Sirih, (Piper betle)</i>	Piperaceae	Cultivation	Fever, diarrhea	Leaf	Boiled, then drunk
75.	<i>Sirih merah, (Piper ornatum)</i>	Piperaceae	Cultivation	High blood pressure, hemorrhoids	Leaf	Boiled, then drunk
76.	<i>Srikaye, (Annona squamosa L.)</i>	Annonaceae	Cultivation	Feverish	Leaf	Pounded, then smeared; Boiled, then drunk
77.	<i>Tapak liman, (Elephantopus scaber)</i>	Asteraceae	Wild	Diabetes, stomach ulcer, Dyspnea, hemorrhoids	Leaf	Boiled, then drunk
78.	<i>Triok iok, (Peperomia pellucida)</i>	Piperaceae	Wild	Sore aches, fatigue	All parts	Boiled, then drunk
79.	<i>Tenggansingan, (Sida rhombifolia L.)</i>	Malvaceae	Wild	Kidney stones, rheumatism	Leaf	Boiled, then drunk
80.	<i>Temulawak, (Curcuma zanthorrhiza)</i>	Zingiberaceae	Cultivation	Feverish, improving endurance, increasing appetite	Rhizome	Grated, then squeezed and drunk
81.	<i>Temu ireng, (Curcuma aeruginosa Roxb.)</i>	Zingiberaceae	Cultivation	Chickenpox, postpartum, a fluent menstruation	Rhizome	Grated, then the water was squeezed and drunk
82.	<i>Tereng, (Bambusa vulgaris)</i>	Poaceae	Cultivation	Rheumatism	Shoots	Pounded, then smeared
83.	<i>Tempolok (Urena lobata)</i>	Malvaceae	Wild	Diarrhea	Leaf	Chewed, then spit out
84.	<i>Waker, (Stachytarpheta jamicensis L.)</i>	Verbenaceae	Wild	Wound medicine, tonsils, rheumatism	Leaf	Pounded, then pasted; Boiled, then drunk

### 3.1.2 How to get medicinal plants

Communities obtained plants for traditional medicinal ingredients in several ways, such as searching in the wildland, planting, or cultivating themselves. In general, the community mostly obtained the medicinal plants by cultivation, or by growing their own, as many as 53 plants were cultivated by the community (Figure 3).

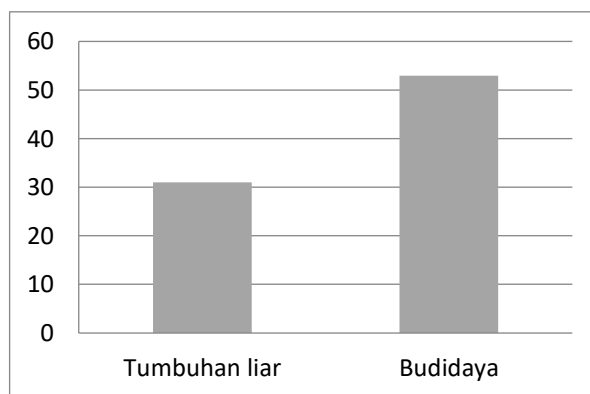


Figure 3. How to get medicinal plants

The percentage of plant parts used as medicine was presented in Figure 4.

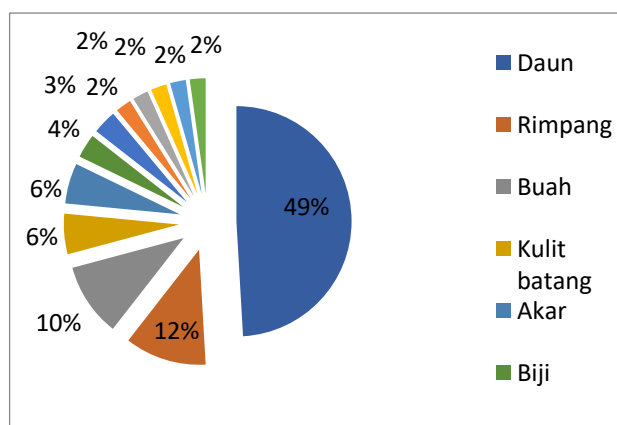


Figure 4. Diagram of the percentage of plant parts used

### 3.1.3 How to use and processing

Based on the processing and use of medicinal plants, the Lombok people used various methods, namely drunk, smeared, sprayed, dripped, pasted, blown, and direct consumption of fresh plants. The percentage of how to use medicinal plants can be seen in Figure 5.

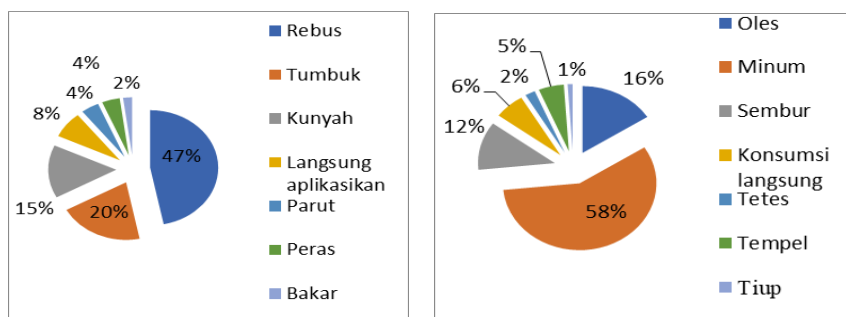


Figure 5. How to use medicinal plants



### 3.1.4 SUV, FUV, and FL Values

#### 1. Species Use Value (SUV)

“Species Use Value” (SUV) described the level of the use-value of plant species in treating disease based on the disease category that has been provided. The research results obtained as many as 84 species of plants used by the Sasak people as traditional medicine. The species found were used to treat several categories of diseases in Table 2.

**Table 2.** Species use value

No	Species Name	Use Value	No	Species Name	Use Value
1.	<i>Persea Americana</i>	0.2	46.	<i>Phaleria macrocarpa</i>	0.2
2.	<i>Ipomea batatas L.</i>	0.4	47.	<i>Swietenia macrophylla</i>	0.4
3.	<i>Maranta arundinacea</i>	0.2	48.	<i>Maera sp.</i>	0.2
4.	<i>Lannea coromandelica</i>	0.4	49.	<i>Arenga pinnata</i>	0.2
5.	<i>Erythrina subumbrans</i>	0.2	50.	<i>Psidium guajava L.</i>	0.2
6.	<i>Gnetum gnemon</i>	0.2	51.	<i>Nyinyik</i>	0.2
7.	<i>Centella asiatica L.</i>	0.2	52.	<i>Morinda citrifolia</i>	0.8
8.	<i>Averrhoa carambola L.)</i>	0.2	53.	<i>Myristica fragrans</i>	0.2
9.	<i>Benincasa hispida</i>	0.2	54.	<i>Pluchea aconitifolius</i>	0.2
10.	<i>Pluchea indica</i>	0.2	55.	<i>Areca catechu L.</i>	0.2
11.	<i>Phyllanthus niruri L.</i>	0.2	56.	<i>Pandanus amaryllifolius</i>	0.2
12.	<i>Anredera cordifolia</i>	0.2	57.	<i>Jatropha multifida L.</i>	0.2
13.	<i>Tamarindus indica L.</i>	0.2	58.	<i>Ageratum conyzoides</i>	0.2
14.	<i>Syzygium aromaticum</i>	0.4	59.	<i>Mimosa pudica</i>	0.2
15.	<i>Phyllanthus acidus</i>	0.2	60.	<i>Musa acuminata colla</i>	0.2
16.	<i>Punica granatum L.</i>	0.2	61.	<i>Mimordica charantia</i>	0.2
17.	<i>Grona trifolia</i>	0.2	62.	<i>Ceiba pentandra</i>	0.2
18.	<i>Panax ginseng</i>	0.2	63.	<i>Euphorbiaceae hirta L.</i>	0.4
19.	<i>Cleome gynandra</i>	0.2	64.	<i>Imperata cylindrical L.</i>	0.2
20.	<i>Carica papaya L.</i>	0.4	65.	<i>Kaempferia galangal L.</i>	0.4
21.	<i>Azadiractha indica</i>	0.4	66.	<i>Capsicum frutescens L.</i>	0.4
22.	<i>Zingiber officinale</i>	0.8	67.	<i>Apium graveolens L.</i>	0.2
23.	<i>Jatropha curcas</i>	0.4	68.	<i>Sauropus androgynous</i>	0.4
24.	<i>Acorus calamus</i>	0.2	69.	<i>Orthosiphon aristatus</i>	0.4
25.	<i>Laportea sp.</i>	0.2	70.	<i>Cymbopogon citratus</i>	0.2
26.	<i>Citrus aurantiifolia</i>	0.2	71.	<i>Marsilea clover</i>	0.2
27.	<i>Citrus histrix</i>	0.2	72.	<i>Andrographis paniculata</i>	0.4
28.	<i>Sechium edule</i>	0.4	73.	<i>Piper betle</i>	0.4
29.	<i>Ocimum sanctum</i>	0.2	74.	<i>Piper ornatum</i>	0.6
30.	<i>Physalis angulate L.</i>	0.4	75.	<i>Annona squamosa L.</i>	0.2
31.	<i>Sesbania grandiflora</i>	0.2	76.	<i>Elephantopus scaber</i>	0.8
32.	<i>Cocos nucifera L.</i>	0.2	77.	<i>Peperomia pellucida</i>	0.2
33.	<i>Muntingia calabura L.</i>	0.2	78.	<i>Sida rhombifolia L.</i>	0.4
34.	<i>Curcuma longa</i>	0.4	79.	<i>Curcuma aeruginosa Rox. B</i>	0.6
35.	<i>Moringa oleifera L.</i>	0.2	80.	<i>Bambusa vulgaris</i>	0.2
36.	<i>Callicarpa sp.</i>	0.2	81.	<i>Urena lobata</i>	0.2
37.	<i>Boesenbergia pandurata</i>	0.6	82.	<i>Stachytarpheta jamicensis L.</i>	0.6
38.	<i>Curcuma zedoaria</i>	0.4	83.	<i>Curcuma zanthorrhiza</i>	0.6
39.	<i>Alpinia galangal</i>	0.6	84.	<i>Allium cepa</i>	0.4
40.	<i>Vitex trifolia L.</i>	0.2			
41.	<i>Allium sativum</i>	0.2			

42.	<i>Aloe vera</i>	0.2
43.	<i>Colocasia esculenta L.</i>	0.4
44.	<i>Amaranthus spinosus L.</i>	0.2
45.	<i>Raphanus sativus</i>	0.2

## 2. Family Use Value (FUV)

The calculation of the use-value of the family was carried out to determine the family of medicinal plants that have used the value for Lombok people. Based on the results of the study, there were 84 species identified in the study and classified into 46 different families. Family use-value can be seen in Table 3.

**Table 3.** Family use value

No	Family	Family Use Value	No	Family	Family Use Value
1	<i>Lauraceae</i>	0.2	24	<i>Cruciferae</i>	0.2
2	<i>Musaceae</i>	0.2	25	<i>Elaeocarpaceae</i>	0.2
3	<i>Marantaceae</i>	0.2	26	<i>Moringaceae</i>	0.2
4	<i>Amaranthaceae</i>	0.2	27	<i>Xanthorrhoeaceae</i>	0.2
5	<i>Fabaceae</i>	0.2	28	<i>Alliaceae</i>	0.2
6	<i>Gnetaceae</i>	0.2	29	<i>Malvaceae</i>	0.26
7	<i>Mackinlayaceae</i>	0.2	30	<i>Cucurbitaceae</i>	0.26
8	<i>Oxalidaceae</i>	0.2	31	<i>Lamiaceae</i>	0.3
9	<i>Primulaceae</i>	0.2	32	<i>Arecaceae</i>	0.3
10	<i>Punicaceae</i>	0.2	33	<i>Phyllanthaceae</i>	0.3
11	<i>Basellaceae</i>	0.2	34	<i>Euphorbiaceae</i>	0.3
12	<i>Apiaceae</i>	0.2	35	<i>Asteraceae</i>	0.35
13	<i>Annonaceae</i>	0.2	36	<i>Acanthaceae</i>	0.4
14	<i>Marsileaceae</i>	0.2	37	<i>Verbenaceae</i>	0.4
15	<i>Poaceae</i>	0.2	38	<i>Piperaceae</i>	0.4
16	<i>Araliaceae</i>	0.2	39	<i>Solanaceae</i>	0.4
17	<i>Cleomaceae</i>	0.2	40	<i>Meliaceae</i>	0.4
18	<i>Pandanaceae</i>	0.2	41	<i>Amaryllidaceae</i>	0.4
19	<i>Lauraceae</i>	0.2	42	<i>Araceae</i>	0.4
20	<i>Urticaceae</i>	0.2	43	<i>Anacardiaceae</i>	0.4
21	<i>Acoraceae</i>	0.2	44	<i>Convolvulaceae</i>	0.4
22	<i>Rutaceae</i>	0.2	45	<i>Caricaceae</i>	0.4
23	<i>Thymelaeaceae</i>	0.2	46	<i>Zingiberaceae</i>	0.55

## 3. Fidelity Level (FL)

*Fidelity Level (FL)* was useful to determine the significance level of species related to a particular disease. Fidelity level showed the percentage of respondents who say that the use of plant species for the same purpose. It was designed to measure the importance of a species for a particular purpose. Fidelity level value can be seen in Table 4.

**Table 4. Fidelity level value**

No	Disease category	Disease name	Local name (FL)	
1.	Internal organ diseases	Hypertension	<i>Labu siam</i> (100)	
			<i>Pandan wangi</i> (50)	
			<i>Kersen</i> (100)	
			<i>Cermai</i> (100)	
			<i>Alpukat</i> (100)	
			<i>Seledri</i> (100)	
			<i>Randu</i> (100)	
			<i>Pisang mas</i> (50)	
			<i>Kunyit</i> (50)	
			<i>Lengkuas</i> (50)	
			<i>Jeruk</i> (100)	
			Fever	<i>Kelor</i> (100)
				<i>Cabe</i> (100)
				<i>Jeringau</i> (100)
<i>Turi</i> (50)				
<i>Pinang</i> (100)				
<i>Bawang putih</i> (100)				
<i>Sirih</i> (50)				
<i>Banten</i> (50)				
<i>Kencur</i> (50)				
Anemia	<i>Kelapa muda</i> (100)			
Typhus	<i>Patikan kebo</i> (50)			
	<i>Labu kundur</i> (50)			
2.	Skin Diseases	Chickenpox	<i>Kunyit putih</i> (100)	
			<i>Temu hitam</i> (100)	
			<i>Kunyit</i> (50)	
			<i>Asam jawa</i> (100)	
			<i>Mengkudu</i> (25)	
			<i>Mimi</i> (100)	
			<i>Kolobeo</i> (100)	
			Boils	<i>Ubi jalar</i> (50)
				<i>Talas</i> (100)
			Wound	<i>Bandotan</i> (100)
				<i>Patikan kebo</i> (50)
				<i>Panasilin</i> (100)
				<i>Semanggi</i> (100)
			Ringworm	<i>Nyinyik</i> (100)
Wart	<i>Pecut kuda</i> (33,3)			
3.	Sense organs	Sore eyes	<i>Kencur</i> (50)	
			<i>Banten</i> (50)	
		Vomiting	<i>Bawang merah</i> (50)	
		Asphyxiation	<i>Tapak liman</i> (25)	
		Feverish	<i>Beluntas</i> (100)	
			<i>Jahe</i> (25)	
<i>Srikaya</i> (100)				
			<i>Serai</i> (100)	

		<i>Temu kunci</i> (100)
		<i>Temulawak</i> (100)
		<i>Bawang merah</i> (50)
		<i>Lobak</i> (100)
		<i>Jarak pagar</i> (50)
	Tootache	<i>Cengkeh</i> (50)
		<i>Ciplukan</i> (50)
	Vomiting blood	<i>Kemangi</i> (100)
	Tonsils	<i>Pecut kuda</i> (33,3)
	Cough	<i>Kumis kucing</i> (50)
		<i>Jeruk purut</i> (100)
	Goiter	<i>Mengkudu</i> (25)
		<i>Ubi jalar</i> (50)
	Canker Sore	<i>Pecut kuda</i> (33,3)
4.	Muscles and Joints	
	Sore aches	<i>Cengkeh</i> (100)
		<i>Sidaguri</i> (50)
		<i>Ginseng</i> (100)
		<i>Suruhan</i> (100)
	Rheumatism	<i>Jahe</i> (25)
		<i>Meniran</i> (100)
		<i>Mengkudu</i> (25)
		<i>Bambu</i> (100)
		<i>Lengkuas</i> (50)
		<i>Ilalang</i> (100)
		<i>Cabe rawit</i> (50)
		<i>Maman putih</i> (100)
		<i>Bayam duri</i> (100)
		<i>Legundi</i> (100)
		<i>Melinjo</i> (100)
	Fracture	<i>Mengkudu</i>
	Sprain	<i>Sambiloto</i> (100)
5.	Digestive Tract Diseases	
	Diarrhea	<i>Sirih</i> (100)
		<i>Sirih merah</i> (100)
		<i>Papaya</i> (50)
		<i>Empet-empet</i> (100)
		<i>Jarak pagar</i> (50)
		<i>Tempolok</i> (100)
		<i>Jambu biji</i> (100)
		<i>Mimba</i> (50)
		<i>Jahe</i> (25)
	Hemorrhoid	<i>Tapak liman</i> (25)
	Stomach Ulcer	<i>Binahong</i> (100)
		<i>Papaya</i> (50)
		<i>Tapak liman</i> (25)
		<i>Labu siam</i> (50)
	Kidney stones/ lump of stones	<i>Enau</i> (100)
		<i>Sidaguri</i> (50)
	Diabetes	<i>Tapak liman</i> (25)
		<i>Belimbing</i> (100)

			<i>Talas</i> (100)
			<i>Mahuni</i> (50)
			<i>Arus</i> (100)
6.	Chronic Disease	Heart Disease	<i>Lidah buaya</i> (100)
		Cancer	<i>Delima</i> (100)
			<i>Mahkota dewa</i> (100)
		Malaria	<i>Mahuni</i> (50)
			<i>Jelatang</i> (100)
			<i>Pare</i> (100)
			<i>Mimba</i> (50)
			<i>Dadap serep</i> (100)
		Breast cancer	<i>Putri malu</i> (100)
		Tumor	<i>Jahe</i> (25)
7.	Others	Diabetes	<i>Papaya jepang</i> (100)
			<i>Kumis kucing</i> (50)
		Postpartum	<i>Temu hitam</i> (100)
			<i>Pala</i> (100)
	Jaundice	<i>Ciplukan</i> (50)	

### 3.2 Discussion

#### 3.2.1 Medicinal plant species in Lombok Island

In general, Lombok people recognized the plant species that have potential as traditional medicines for generations. This traditional knowledge became local wisdom that was unique to the Sasak people. Traditional medicine was defined as processed natural ingredients used as traditional medicine and derived from plants, animals, or a mixture of both. The interview results with informants in five villages, Lombok island, obtained information of 84 plant species from 76 genera and 46 families that were used as traditional medicine by the Sasak tribe in Lombok island.

The types of medicinal plants used by Lombok people varied from herb to tree level. *Habitus* is a form or stature of a plant that can be used to facilitate the description of a plant or for grouping purposes. The results of this study found that the distribution of medicinal plants based on habitus, namely herbs that were the most common habitus (38%), followed by trees (30%), shrubs (24%), climbing plants (5%), and creepers (3%). The frequent use of herbs as medicine among indigenous peoples was a form of the wealth of herbal plants in their environment (Morvin Yabesh et al., 2014). It was similar to the research conducted by Nurhaida et al. (2015) in Kelampk Hamlet, Tanah Pinoh Barat District, Melawi Regency. The most widely used habitus was herbs because they were easy to cultivate and did not require large land areas.

#### 3.2.2 How to get medicinal plants

The Sasak people in Lombok island obtained plants for traditional medicinal ingredients in several ways, namely looking in the wildland and planting or cultivating

themselves, as many as 53 species of plants were the result of the cultivation of the Sasak community. In addition to cultivation, Lombok people also obtained medicinal plants by looking for wild plants in their gardens, rice fields, or yards, found 31 wild plants that were used as medicine by Lombok people.

### 3.2.3 Part of the plant-used

Based on the research results of the part of the plant used as medicinal ingredients by Sasak people in Lombok island, it is known that 84 plant species have been known and used as traditional medicine, the part of the plant used consisted of roots, stems, leaves, fruits, seeds, tubers, bark, latex, shoots, and all parts of the plant. Almost all parts of the plant have medicinal value. Each part has a specific active ingredient that helped treat different types of ailments. Among the various parts used to make medicine, leaves were the most widely used (43 species; 49%), followed by rhizome (10 species; 12%), fruit (9 species; 10%), roots, and bark (5 species each; 6%), seeds and all parts of the plant (3 species each; 4%), stems, tubers, latex, and shoots (2 species each; 2%), and root tubers (1 species; 1%).

Leaves were the most used part in traditional medicine by Sasak people in Lombok because it was suspected that they contained many medicinal substances and were needed by patients (community) in the healing process. Because of its soft texture, it was almost the same as the research conducted by [Yabesh \*et al.\* \(2014\)](#), the most used part as an ingredient in traditional medicine was the leaf (36%), which was the most commonly used by indigenous peoples for traditional medicinal ingredients in various parts of the world, and it was easy to obtain when compared to other parts, such as roots, stems, flowers, fruit, *etc.*

A similar study was conducted by [Yetein \*et al.\* \(2013\)](#) regarding the study of ethnobotany of medicinal plants to treat malaria in Plateau Allada, Benin (West Africa), explained that leaves were the organ that was most widely used because it was the main photosynthetic organ in plants which contains many bioactive compounds and it was useful as medicine for the human body. In addition, leaves were also an organ or an active part for synthesizing secondary metabolism. Secondary metabolites were metabolites that were not essential for the growth of organisms and they were found in different forms in each species. Secondary metabolism produces a large number of special compounds including alkaloids, polyphenols, flavonoids, and terpenoids. In plants, secondary metabolites have several functions including as attractants (attracting pollinating insects), protecting from environmental stress, protecting from pests or diseases, protecting from ultraviolet rays, and so on, while the role of secondary metabolites for humans is for health (antibiotics, enzyme inhibitors, antitumor agents, and others), nutrition, and increase agricultural productivity.

Taking the leaves as ingredients for traditional medicine would not interfere with the existence of an individual plant because other plant organs could still support the survival of the plant. It was different if the part or organ used was the root or stem, where

the removal of the organ was likely tended to injure and harm an individual plant (Manuel et al., 2020). Utilization of plants as traditional medicine used only one part or organ of a plant species, but also used more than one organ/ part derived from one or several plant species which were combined to treat various types of diseases. It could be seen from the treatment of plants that more than one disease was used, and it meant that one species or type of plant could treat several types of diseases with the same plant parts or different parts.

### 3.2.4 The processing and the use of medicinal plants in Lombok

The processing and the use of plants as medicinal ingredients by Sasak people in Lombok island was carried out in various ways. The method used by the people of Lombok was a simple method and equipment and did not require a long time. Furthermore, the way to use these medicinal plants, including drunk, smeared, sprayed, dripped, affixed, blown, and fresh plants that consumed directly. Meanwhile, the processing method was by boiling, chewing, pounding, squeezing, burning, consuming, or applying directly and grating. The method of using medicinal plants was mostly done by Sasak people in Lombok, namely by drinking 57%. Similar research also had been carried out by Sukumaran et al. (2020), states that the use of medicinal plants by drinking is the most widely practiced. Meanwhile, the method of processing medicinal plants is mostly done by boiling. Lombok people suspected that the processing of medicinal plants by boiling could transfer the nutritious substances found in plants into a water solution.

According to Basenda et al. (2018), in their research entitled "*Review of Ethnopharmacology of Medicinal Plants in Banjarese Ethnicity in East Banjarmasin District, Banjarmasin City*", the method of processing medicinal plants was mostly done by Banjarmasin people by boiling and drinking. The boiling process of medicinal plants could reduce the bland and bitter taste when compared to being consumed directly. In addition, this method was more sterile because the boiling process could kill germs or pathogenic bacteria. There were methods of processing and using medicinal plants, either singly or using only one species of medicinal plants, and some were used in combination or the form of potions by mixing different medicinal plants. The dosages used in traditional medicine were based on adult estimates and grips. This knowledge was obtained from their parents or based on personal experience, and it has been done for generations and has proven its effectiveness.

Sasak people also used a lot of medicinal plants in combination or mixed with other medicinal plants. For example, to treat chickenpox, people used noni fruit (*Morinda citrifolia*) and turmeric (*Curcuma longa*). The processing was done using the noni fruit and turmeric rhizome grated then mixed and then squeezed out and applied to the body affected by chickenpox.

### 3.2.5 SUV, FUV, and FL Value

#### 1. *Species Use Value (SUV)*

*Species Use Value (SUV)* showed that the level of the use-value of plant species in treating disease was based on the disease category that has been provided, it is from the results of the study obtained that showed 84 species of plants used by the Sasak tribe as traditional medicine. The species found can be used to treat seven categories of diseases. The calculation results showed that three species had the highest use value including *Zingiber officinale* (ginger), *Elephantopus scaber* (*tapak liman*), and *Morinda citrifolia* (noni) with SUVs of 0.8 each. One of the plants that had the highest Species use value was ginger. It was similar to the research conducted by [Coal et al. \(2017\)](#), which stated that *Zingiber officinale* (ginger) had the highest use-value with a result of 2.3042. Meanwhile, medicinal plants that had the lowest species use-value were fragrant pandan, cherry, avocado, celery, areca nut, beluntas, and others with an SUV value of 0.2.

Ginger is one of the plants that had the highest species value because it had several benefits, including improving digestion, preventing nausea, relieving pain, expelling gas in the stomach, and treating wounds, anti-rheumatic, anti-microbial, and anti-inflammatory. Ginger contains active substances that are good for body health such as essential oils, curcumin, bisabolena, zingiberana, flavonoids, alkaloids, organic acids kamfena, zingiberol, gingerols, terpenoids, filandrena, and limonin. The results of the use-value species were included in the category of plants of little use or species that were not a priority. The number of plants used in traditional medicine made a variety of choices for the community. The ease of obtaining and the benefits of medicinal plants were the main factors that influenced the use of certain types of plants.

#### 2. *Family Use Value (FUV)*

The calculation of value used of the family was carried out to determine the family of medicinal plants that have the use-value for Lombok people. Based on the results of the study, there were 84 species identified in the study classified into 46 different families. The number of species in one family was calculated to obtain the use-value of each family. The results showed that the *Zingiberaceae* family had the highest family use value of 0.55, followed by the *Caricaceae*, *Convolvulaceae*, *Anacardiaceae*, *Araceae*, *Amarylidaceae*, *Meliaceae*, *Solanaceae*, *Piperaceae*, and *Verbenaceae* families with FUV of 0.4 each. Species from the *Zingiberaceae* family are easy to cultivate and can grow on various types of soil and can treat various diseases.

It was similar to the research of [Riadi et al. \(2019\)](#), which stated that the *Zingiberaceae* family was mostly used by the Kanayatn Dayak tribe in Mamek Village, Menyuke District, Landak Regency. *Zingiberaceae* has active compounds that have potential as drugs such as zingeron, essential oils, resins, alkaloids, and flavonoids. The *Zingiberaceae* family is widely used by the people of Indonesia as an ingredient in medicines, herbs, flavoring, and seasoning. In addition to the families that had been



mentioned, several families had low family use-values. These families included *Alliaceae*, *Moringaceae*, *Cruciferae*, *Rutaceae*, *Urticaceae*, and others that had an FUV value of 0.2. Furthermore, all results of the calculations illustrated that the Family Use Value of medicinal plants in the Lombok community was quite diverse.

### 3. Fidelity Level (FL)

*Fidelity Level* (FL) was useful to determine the significance level of a species related to a particular disease. Fidelity level showed the percentage of respondents who said that the use of plant species for the same main purpose. It was designed to measure the importance of a species for a particular purpose. Based on the results of the study, it can be seen that as many as 52 plant species have the highest FL value, each of which is 100%. One of the plant species that has the highest FL value was celery (*Apium graveolens L.*). Celery was commonly used by Sasak people in Lombok to treat high blood pressure or hypertension. Treatment of high blood pressure using celery leaves (*Apium graveolens L.*) was also carried out by the community in Ngadisari Village, Sukapura District, Probolinggo Regency, East Java (Kurniawan, 2015). In addition, three species have a low Fidelity Level percentage of 25% each. These species included ginger (*Zingiber officinale*), noni (*Morinda citrifolia*), and tapak liman (*Elephantopus scaber*).

### Conclusion

Based on the results of the study, it can be concluded as follows:

1. The types of medicinal plants used as traditional medicines by Sasak people in Lombok were 84 species and it was divided into 46 families.
2. Lombok people cultivated medicinal plants more than looking for wild plants in forests, gardens, and so on.
3. The part of the plant that was most often and widely used by the Lombok people was the leaves (49%).
4. The method of processing medicinal plants which were mostly done by the community was by boiling (47%). While the method of using medicinal plants was mostly done by the community, namely drinking (58%).
5. Plants with the highest use value included *Zingiber officinale Roscoe* (ginger), *Elephantopus scaber* (tread liman), and *Morinda citrifolia* (noni) with SUVs of 0.8. Then, the family that had the highest family use value was *Acanthaceae* with a value of 0.6. The plant species that had the highest fidelity level were 52 plant species.

### Reference

Arsyad, M. (2018). Studi Etnobotani Tumbuhan Obat Oleh Masyarakat Tamban Kabupaten Barito Kuala. *Insan Farmasi Indonesia*, 1(1), 85–95.

- Basenda, M. izzania, Noor, C., & Srikartika, V. M. (2018). Tinjauan Etnofarmakologi Tumbuhan Obat Pada Etnis Banjar di Kecamatan Banjarmasin Timur Kota Banjarmasin. *Indonesia Natural Research Pharmaceutical Journal*, 2(2), 1–12.
- Cahyaningsih, R., Magos Brehm, J., & Maxted, N. (2021). Gap analysis of Indonesian priority medicinal plant species as part of their conservation planning. *Global Ecology and Conservation*, 26, e01459. <https://doi.org/10.1016/j.gecco.2021.e01459>
- Kurniawan, E. (2015). *Studi Etnobotani Pemanfaatan Jenis-jenis Tumbuhan Sebagai Obat Tradisional Oleh Masyarakat Tengger Di Desa Ngadisari, Kecamatan Sukapura, Kabupaten Probolinggo-Jawa Timur*.
- Manuel, L., Bechel, A., Noormahomed, E. V., Hlashwayo, D. F., & Madureira, M. do C. (2020). Ethnobotanical study of plants used by the traditional healers to treat malaria in Mogovolas district, northern Mozambique. *Heliyon*, 6(12). <https://doi.org/10.1016/j.heliyon.2020.e05746>
- Morvin Yabesh, J. E., Prabhu, S., & Vijayakumar, S. (2014). An ethnobotanical study of medicinal plants used by traditional healers in silent valley of Kerala, India. *Journal of Ethnopharmacology*, 154(3), 774–789. <https://doi.org/10.1016/j.jep.2014.05.004>
- Nurhaida, F.H., Usma., Tavita, G. E. (2015). Studi Etnobotani Tumbuhan Obat Di Dusun Kelampuk Kecamatan Tanah Pinoh Barat Kabupaten Melawi. *Jutan Lestari*, 3(4), 526 – 537.
- Riadi, R., Oramahi, H. A., & Yusro, F. (2019). Pemanfaatan Tumbuhan Obat Oleh Suku Dayak Kanayatn Di Desa Mamek Kecamatan Menyuke Kabupaten Landak. *Jurnal Hutan Lestari*, 7(2), 905–915. <https://doi.org/10.26418/jhl.v7i2.34559>
- Safitri, S., Yolanda, R., & Brahmana, E. M. (2015). *Studi Etnobotani Tumbuhan Obat Di Kecamatan Rambah Samo Kabupaten Rokan Hulu. November 2014*, 1–4.
- Sukumaran, S., Mary, R., Sathia, V., & Jeeva, S. (2020). Ethnobotanical study of medicinal plants used by the Kani tribes of Pechiparai Hills , Western Ghats , India. *Acta Ecologica Sinica*, 1–12. <https://doi.org/10.1016/j.chnaes.2020.04.005>
- Yabesh, J. E. M., Prabhu, S., & Vijayakumar, S. (2014). An ethnobotanical study of medicinal plants used by traditional healers in silent valley of Kerala , India. *Journal of Ethnopharmacology*, 1–16. <https://doi.org/10.1016/j.jep.2014.05.004>
- Yetein, M. H., Houessou, L. G., Loughégnon, T. O., Teka, O., & Tente, B. (2013). Ethnobotanical study of medicinal plants used for the treatment of malaria in plateau of Allada, Benin (West Africa). *Journal of Ethnopharmacology*, 146(1), 154–163. <https://doi.org/10.1016/j.jep.2012.12.022>