

Ethnobotanical study of medicinal plants used by community in Jambur Labu Village, East Aceh, Indonesia

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Abstract. Elfrida, Tarigan NS, Suwardi AB. 2021. *Ethnobotanical study of medicinal plants used by community in Jambur Labu Village, East Aceh, Indonesia. Biodiversitas 22: 2893-2900.* Jambur Labu is a village in East Aceh that is home to various ethnic groups. The community in the village has used various plant species as a traditional medicine to treat diseases and disorders. The aim of this study was to investigate the medicinal plants used by the community in the Jambur Labu Village, Birem Bayeun Sub-district, East Aceh, Indonesia. This study was based on field surveys, plant collection, and interviews with the local people. Interviews were performed with 30 informants selected using the Snowball Sampling technique. A total of 107 medicinal plant species, belonging to 87 families, were documented to be used by the local community in Jambur Labu Village. Leaves were the most used plant part (38%), followed by fruit (22%), whole plant (9%), rhizome (8%), roots (7%), flowers and bark (4% each), sap (3%), stem and tuber (2% each), and seeds (1%) and the main mode of preparations are decoction (39%). *Breynia androgyna* (L.) Chakrab.dan N.P.Balacr., *Moringa oleifera* Lam, *Jatropha multifida* L., *Zingiber montanum* (J.Koenig) Link ex A.Dietr., *Zingiber officinale* Roscoe., and *Tagetes erecta* L. had the highest UV value (0.96), indicating the high importance of such species for the community. The high informant consensus factor (ICF=0.978) was assigned to the diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (DBF) category. The results of this study can enrich the existing study of medicinal uses of plant by communities, in this context is the use by a community in Aceh.

Keywords: Biodiversity, East Aceh, Jambur Labu, traditional medicine

INTRODUCTION

Indonesia is a mega-biodiversity country with over 30,000 flowering plant species, 6,000 of which are used for traditional healing processes (Elfahmi et al. 2014). However, only about 20-22% of them are cultivated, while the rest 78% are still harvested from the wild (Azmin et al. 2019). Local communities have long used various plant species for medicinal purposes (Jadid et al. 2020; Suwardi et al. 2021) as well as for food (Elfrida et al. 2020; Navia et al. 2015; Navia et al. 2020a; Suwardi et al. 2020a; Suwardi et al. 2020b; Navia et al. 2021), traditional ceremonies (Sutrisno et al. 2020), and household income (Suwardi et al. 2020c). The interaction between humans and plants has long been described as one of the factors influencing human civilization, particularly in medical fields (Yeung et al. 2020).

Ethnobotanical study is a method for investigating local and indigenous knowledge of certain communities regarding the use of plants to fulfill human needs including for medicinal purposes. Using ethnobotanical study, it is possible to investigate medicinal plants and how to use them as cultural characteristics in a specific community through these studies (Eldeen et al. 2016). Through the understanding of socio-cultural backgrounds, ethnobotanical information can provide valuable information for public health and environmental policies

(Weckmüller et al. 2019). Documenting plant medicinal uses through ethnobotanical studies allows for the development of modern drugs and treatments, and plant conservation (Calzada et al. 2020). The lack of documentation of medicinal plant use by local communities impedes the preservation of these plants (Rosita et al. 2007).

Many ethnobotanical studies in Indonesia describe the use of medicinal plants by the indigenous community for healing processes in which this knowledge has been practiced and inherited from generation to generation (Sujarwo et al. 2015; Batoro and Siswanto 2017; Mustofa et al. 2020; Rahmawati et al. 2020; Suwardi et al. 2021). In Indonesia, particularly in the Aceh province, there is a tendency of declining traditional knowledge among the younger generation (Navia et al. 2020b; Suwardi et al. 2020c). In addition, modernization has changed the lifestyle of the younger generation, resulting in a loss of local knowledge in certain communities (Weckmüller et al. 2019). As a result, efforts must be made to protect and maintain traditional knowledge, especially concerning the use of plants as traditional medicine. The aim of this study was therefore to investigate the medicinal plants used by the local community in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia.

MATERIALS AND METHODS

Study period and area

The study took place in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia from March to May 2020 (Figure 1). Jambur Labu Village is located between 4°24'37.5"N, 97°55'08.8"E with a total area of 7.11 km², a hilly topography, and an elevation of 500 m asl. The climatic condition in Jambur Labu Village is tropical humid with average rainfall ranging from 346 mm to 3220 mm and a monthly temperature ranging from 26-30°C. The Jambur Labu Village had a population of 2,289 people, with 1,188 men and 1,101 women. The Javanese and other tribes such as the Acehnese, Batak, and Minang are the dominant ethnic groups in this area (The Central Bureau of Statistics of East Aceh District 2020).

Data collection procedure

Data were obtained through semi-structured and structured interviews with informants who knew or used plants as medicine. Informant was selected using the Snowball Sampling technique by determining the key person (a figure that possesses strong power within society). The recommendation of the previous respondents determined the subsequent informants. In total, the

interviews were conducted with 30 respondents to determine and explore the traditional knowledge regarding the use of medicinal plant species for the specific ailment(s), the utilized part(s), and the mode(s) of preparation or method(s) of processing the plants. The age of the informants ranged from 17 to more than 65 years (Table 1).

The majority of Jambur Labu Village's residents are Javanese. According to local people, their ancestors came from Java, where the Dutch East Indies government employed them in oil palm plantations decades ago. Regarding Indonesia's independence, they established settlements around the oil palm plantation area. Over time, their descendants began to convert forest into agricultural land and settled in the area, forming a village known as Jambur Labu. Other tribes, including Aceh, Minang, Gayo, and Batak, also settled in the village.

Plant samples were collected, as well as information about their vernacular names, the number of species, and their use. The identification of plant species was carried out at the Biology Laboratory, Samudra University, Aceh, Indonesia. The botanical names were crosschecked using Plants of the World online

(<http://www.plantsoftheworldonline.org>).

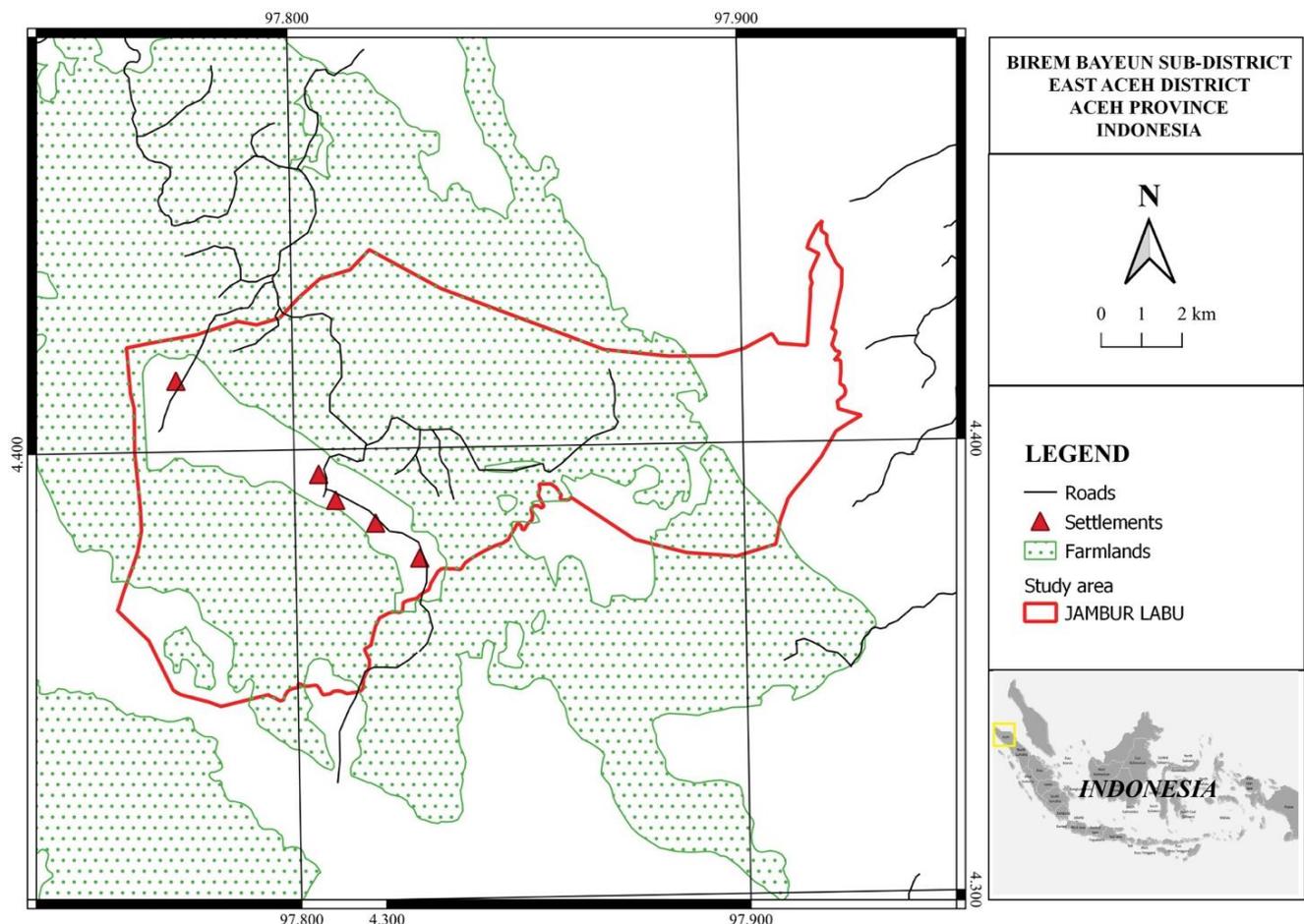


Figure 1. Map of the study area in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

Table 1. The characteristics of the respondents Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

Parameters	Specification	Freq.	Percentage
Gender	Male	4	13.3
	Female	26	86.7
Age (years)	17-27	5	16.7
	28-35	9	30.0
	36-45	7	23.3
	46-65	7	23.3
	>65	2	6.7
Education	Elementary School	19	63.3
	Junior High School	5	16.7
	Senior High School	4	13.3
	University	2	6.7
Tribe	Javanese	25	83.3
	Aceh	1	6.7
	Minang	1	3.3
	Batak	2	3.3
	Gayo	1	3.3

Data analysis

Use Value (UV)

The Use Value was calculated as the ratio of the number of citations per species (U) to the number of informants (N) using the following formula:

$$UV = U/N$$

A plant with a high UV index has a high number of use reports, implying that it is important in the local community, while a low UV indicates that there have been few reports about its use.

Informant Consensus Factor (ICF)

Informant Consensus Factor was calculated using the formula:

$$ICF = (Nur - Nt) / Nur - 1$$

Where: Nur defines the number of useful reports in each category, and Nt defines the total number of species used in a given category by all informants. The maximum value obtained in this Formula is 1, which indicates that the informants completely agree that the specific species cited could cure a specific ailment. A value of 0, the minimum value, indicates that there is no exchange of information about plants among the informants.

RESULTS AND DISCUSSION

Diversity of medicinal plants

A total of 107 medicinal plant species were identified from the ethnobotanical survey in the study area, which

was classified into 87 families and 52 genera (Table 2). The most represented family was Asteraceae with 8 species, followed by Euphorbiaceae (7 species), Rutaceae and Zingiberaceae (6 species each), Piperaceae (5 species), Myrtaceae (4 species), and Annonaceae and Rubiaceae (3 species each). The total species of medicinal plants found in this study (107 species) is higher than the medicinal plants found in the Subulussalam district, Aceh province (22 species) (Hasanuddin et al. 2021), and Kota Bahagia, South Aceh (96 species) (Suwardi et al. 2021). However, it is lower than the medicinal plants used by the sub-ethnic Batak Simalungun of North Sumatra (239 species) (Silalahi et al. 2015). The average number of species mentioned by each age category ranged from 10 ± 5.1 (17 – 27 years old) to 26.5 ± 0.7 (>65 years). Based on education level, the highest number of species was cited by respondents at the university level (20.5 ± 3.5), followed by junior high school (15.2 ± 8.1), elementary school (13.5 ± 6.5), and senior high school (8 ± 1.4).

Plant part used

The local community in the study area used different parts of the plants to treat various diseases. Leaves were the most used plant part (38%), followed by fruit (22%), whole plant (9%), rhizome (8%), roots (7%), flowers and bark (4% each), sap (3%), stem and tuber (2% each), and seeds (1%) (Figure 2).

Local people in Jambur Labu Village used all parts of the plant from roots to leaves for medicinal uses. The part of medicinal plants mostly used by the community was the leaves and the least was the seeds. Several ethnobotanical surveys reported similar results with the leaves as the most frequently used plant parts (Malini et al. 2017; Suwardi et al. 2019; Navia et al. 2020b; Adam et al. 2020; Suwardi et al. 2021). Respondents preferred leaves as a raw material for traditional medicine because harvesting the leaves is less harmful to the plants. Leaves are also easy to collect and have good medicinal properties compared to other parts and do not depend on the season. The use of leaves as ingredients for medicinal herbs is considered an easier way of processing than the bark, stems, and roots. In addition, the leaves are a place for photosynthate accumulation which is thought to contain elements of organic substances that have disease-curing properties, phenols, potassium compounds, and chlorophyll (Rusmina et al. 2015). The secondary metabolites from the leaves, such as alkaloids, saponins, and phenolic compounds, have been shown to have antimicrobial and antifungal effects, which may be capable for the pharmacological effects observed in the local communities. Nonetheless, certain diseases are treated with the whole plant. This accounts for 9% of the total plant species identified in this study.

Table 2. List of plant species with medicinal values stated by the local community in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

Scientific name	Family	Vernacular name	Part used	Mode of preparation	Disease/ ailment	Use value
<i>Acalypha indica</i> L.	Euphorbiaceae	Akar kucing	Whole plants	Decoction	Diarrhea	0.16
<i>Ageratum conyzoides</i> L.	Asteraceae	Bandotan	Root	Pounded, smeared	Wounds	0.33
<i>Allamanda cathartica</i> L.	Apocynaceae	Akar chempaka hutan	Leaves	Pounded, affixed	Boils	0.10
<i>Allium fistulosum</i> L.	Amaryllidaceae	Bawang kap	Leaves	Squeezed, affixed	Swollen	0.13
<i>Aloe vera</i> (L.) Burm.f.	Asphodelaceae	Lidah buaya	Leaves	Pounded, affixed	Boils	0.26
<i>Alpinia galanga</i> (L.) Willd.	Zingiberaceae	Laos	Rhizome	Pounded, smeared	Skin disorders	0.73
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Bayam eri	Whole plants	Pounded, smeared	Boils	0.20
<i>Anacardium occidentale</i> L.	Anacardiaceae	Jambu mente	Leaves	Decoction	Sore skin	0.36
<i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	Nanas	Fruit	Raw consumption	Constipation	0.10
<i>Andrographis paniculata</i> (Burm.F.) Nees	Acanthaceae	Takila	Leaves	Raw consumption	Diabetes	0.03
<i>Annona muricata</i> L.	Annonaceae	Nangka sabrang	Fruit	Raw consumption	Gallstones	0.03
<i>Annona squamosa</i> L.	Annonaceae	Srikaya	Leaves	Pounded, affixed	Boils	0.13
<i>Apium graveolens</i> L.	Apiaceae	Seledri	Whole plants	Raw consumption	Rheumatism	0.06
<i>Archidendron jiringa</i> (Jack) I.C.Nielsen	Fabaceae	Jengkol	Fruit	Eaten as vegetable	Flatulence	0.26
<i>Areca catechu</i> L.	Arecaceae	Pinang	Fruit	Raw consumption	Oral hygiene	0.26
<i>Artocarpus altilis</i> (Parkinson) Fosberg.	Moraceae	Sukun	Leaves	Decoction	Uric acid	0.13
<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Nangko	Fruit	Pounded, smeared	Antiacne	0.23
<i>Averrhoa bilimbi</i> L.	Oxalidaceae	Blimbing wuluh	Fruit	Pounded, affixed	Mumps	0.20
<i>Averrhoa carambola</i> L.	Oxalidaceae	Blimbing legi	Fruit	Decoction	Cough	0.40
<i>Bidens pilosa</i> L.	Asteraceae	Ketul	Root	Dropped	Sore eyes	0.06
<i>Bougainvillea spectabilis</i> Willd.	Nyctaginaceae	Bugenvil	Flower	Pounded, smeared	Boils	0.30
<i>Bryonia androgyna</i> (L.) Chakrab.& N.P.Balacr.	Phyllanthaceae	Katukan	Leaves	Eaten as vegetable	Breast milk	0.96
<i>Cananga odorata</i> (Lam.) Hook.f. & Thomson	Annonaceae	Kenongo	Fruit	Decoction	Bronchitis	0.50
<i>Canna indica</i> L.	Cannaceae	Ganyong	Seed	Pounded, smeared	Headache	0.13
<i>Capsicum annuum</i> L.	Solanaceae	Lombok jemprit	Fruit	Pounded, smeared	Hair growth	0.06
<i>Carica papaya</i> L.	Caricaceae	Kates	Fruit	Raw consumption	Flatulence	0.83
<i>Catharanthus roseus</i> (L.) G.Don	Apocynaceae	Tapak doro	Leaves	Decoction	Diabetes	0.06
<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Pacul goang	Whole plants	Pounded, affixed	Boils	0.30
<i>Cibotium barometz</i> (L.) J.Sm.	Cyatheaceae	Paku simpai	Rhizome	Decoction	Rheumatism	0.06
<i>Citrus hystrix</i> DC.	Rutaceae	Jeruk purut	Leaves	Decoction	Fatigue	0.66
<i>Citrus</i> L.	Rutaceae	Limau kuit	Fruit	Squeezed	Sprue	0.06
<i>Citrus x aurantiifolia</i> (Christm.) Swingle	Rutaceae	Jeruk pecel	Fruit	Squeezed	Cough	0.73
<i>Citrus x aurantium</i> L.	Rutaceae	Jeruk bali	Fruit	Raw consumption	Constipation	0.23
<i>Citrus x limon</i> (L.) Osbeck	Rutaceae	Jeruk lemon	Fruit	Squeezed	Sore throat	0.30
<i>Cocos nucifera</i> L.	Arecaceae	Kelapa	Fruit	Raw consumption	Heat inside	0.93
<i>Colocasia esculenta</i> (L.) Schoot	Araceae	Tales	Tubers	Decoction	Stomach	0.03
<i>Cucurbita pepo</i> L.	Cucurbitaceae	Labu	Fruit	Eaten as vegetable	Anthelmintic	0.03
<i>Curcuma longa</i> L.	Zingiberaceae	Kunir	Rhizome	Decoction	Typhus	0.93
<i>Curcuma mangga</i> Valetton & Zijp.	Zingiberaceae	Temu poh	Rhizome	Decoction	Menstrual laxative	0.73
<i>Cymbopogon citratus</i> (DC.) Stapf.	Poaceae	Sereh dapur	Whole plants	Decoction	Cough	0.13
<i>Cymbopogon winterianus</i> Jowitt ex Bor	Poaceae	Sere wangi	Rhizome	Decoction	Cough	0.70
<i>Datura metel</i> L.	Solanaceae	Kecubung	Leaves	Pounded, affixed	Dermatitis	0.33
<i>Dimocarpus aristatus</i> (Blume) Miq.	Sapindaceae	Kelengkeng	Fruit	Raw consumption	Digestive problems	0.06
<i>Dracaena trifasciata</i> (Prain) Mabb.	Asparagaceae	Lidah mertua	Rhizome	Decoction	Hemorrhoid	0.06
<i>Echinacea purpurea</i> (L.) Moench	Asteraceae	Kembang kertas	Whole plants	Pounded, affixed	Fever	0.06
<i>Elephantopus scaber</i> L.	Asteraceae	Tapak tangang	Root	Decoction	Hepatitis	0.26
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Kukon-kukon	Whole plants	Decoction	Asthma	0.33
<i>Euphorbia tithymaloides</i> L.	Euphorbiaceae	Pohon zigzag	Sap	Smeared	Wounds	0.26
<i>Garcinia mangostana</i> L.	Clusiaceae	Manggis	Skin	Decoction	Sprue	0.06
<i>Gardenia jasminoides</i> J.Ellis	Rubiaceae	Ceplong piring	Leaves	Pounded, affixed	Sprain	0.23
<i>Gerbera jamesonii</i> Bolus	Asteraceae	Gerbera	Leaves	Decoction	Calm the nerves	0.20
<i>Gomphrena globosa</i> L.	Amaranthaceae	Bunga kancing	Flower	Decoction	Asthma	0.06

<i>Graptophyllum pictum</i> (L.) Griff	Acanthaceae	Demung	Leaves	Decoction	Hemorrhoids	0.13
<i>Hippobroma longiflora</i> (L.) G.Don	Campanulaceae	Kitolod	Whole plants	Dripped	Eye inflammations	0.47
<i>Impatiens balsamina</i> L.	Balsaminaceae	Pacar banyu	Leaves	Pounded, affixed	Snakebite	0.03
<i>Ipomoea aquatica</i> Forssk.	Convolvulaceae	Kangkung	Stem	Eaten as vegetable	Constipation	0.23
<i>Ipomoea batatas</i> (L.) Lam.	Convolvulaceae	Ketela rambat	Leaves	Pounded, smeared	Boils	0.13
<i>Ixora javanica</i> (Blume) DC.	Rubiaceae	Soka	Leaves	Pounded, affixed	Sprains	0.16
<i>Jasminum sambac</i> (L.) Aiton	Oleaceae	Melati	Leaves	Decoction	Fever	0.36
<i>Jatropha curcas</i> L.	Euphorbiaceae	Jarak pager	Leaves	Affixed	Flatulence	0.93
<i>Jatropha multifida</i> L.	Euphorbiaceae	Betadine	Sap	Dripped	Wounds	0.96
<i>Kaempferia galanga</i> L.	Zingiberaceae	Kencur	Rhizome	Pounded, smeared	Sprain	0.63
<i>Kalanchoe pinnata</i> (Lam.) Pers.	Crassulaceae	Teres	Leaves	Pounded, smeared	Fever	0.06
<i>Lansium domesticum</i> Correa	Meliaceae	Duku	Skin	Pounded	Fever	0.20
<i>Mangifera indica</i> L.	Anacardiaceae	Mangga	Fruit	Raw consumption	Sprue	0.16
<i>Manihot esculenta</i> Crantz	Euphorbiaceae	Ubi kayu	Leaves	Pounded, smeared	Rheumatism	0.06
<i>Manilkara zapota</i> (L.) P.Royen	Sapotaceae	Sawo	Fruit	Raw consumption	Dysentery	0.13
<i>Melastoma malabathricum</i> L.	Melastomataceae	Senggani	Root	Decoction	Hemorrhoids	0.20
<i>Mirabilis jalapa</i> L.	Nyctaginaceae	Kembang pagi sore	Leaves	Pounded, smeared	Boils	0.16
<i>Morinda citrifolia</i> L.	Rubiaceae	Pace	Fruit	Squeezed	Hypertension	0.13
<i>Moringa oleifera</i> Lam.	Moringaceae	Kelor	Leaves	Pounded, smeared	Jaundice	0.96
<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Salam koja	Leaves	Decoction	Anemia	0.30
<i>Musa x paradisiaca</i> L.	Musaceae	Gedang	Fruit	Raw consumption	Jaundice	0.06
<i>Mussaenda frondosa</i> L.	Rubiaceae	Nusa indah putih	Leaves	Pounded, smeared	Boils	0.20
<i>Nephelium lappaceum</i> L.	Sapindaceae	Rambutan	Skin	Decoction	Dysentery	0.03
<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Kemangi	Leaves	Eaten as vegetable	Fever	0.43
<i>Orthosiphon aristatus</i> (Blume) Miq.	Lamiaceae	Kemuning	Root	Decoction	Uric acid	0.06
<i>Pandanus amaryllifolius</i> Roxb. ex Lindl.	Pandanaceae	Pandan	Leaves	Heated, rubbed	Sore	0.26
<i>Peperomia pellucida</i> (L.) Kunth	Piperaceae	Suruhan	Whole plants	Decoction	Stomach ache	0.06
<i>Persea americana</i> Mill.	Lauraceae	Alpokot	Leaves	Decoction	Hypertension	0.06
<i>Phaleria macrocarpa</i> (Scheff.) Boerl.	Thymelaeaceae	Makuto rojo	Leaves	Pounded, smeared	Wound	0.50
<i>Phragmanthera capitata</i> (Spreng.) Balle	Loranthaceae	Kembang sepatu	Leaves	Decoction	Malaria	0.06
<i>Phyllanthus niruri</i> L.	Phyllanthaceae	Meniran	Root	Decoction	Kidney medicine	0.23
<i>Piper aduncum</i> L.	Piperaceae	Sirihan	Sap	Smeared	Boils	0.83
<i>Piper betle</i> L.	Piperaceae	Sedah	Leaves	Pounded, affixed	Tooth ache	0.66
<i>Piper crocatum</i> Ruiz & Pav.	Piperaceae	Sirih merah	Leaves	Decoction	Nosebleed	0.66
<i>Piper nigrum</i> L.	Piperaceae	Marica	Leaves	Decoction	Asthma	0.30
<i>Polyscias scutellaria</i> (Burm.f.) Fosberg	Araliaceae	Godong mangkokan	Leaves	Pounded, smeared	Wounds	0.60
<i>Psidium guajava</i> L.	Myrtaceae	Jambu klutuk	Leaves	Squeezed	Diarrhea	0.46
<i>Ricinus communis</i> L.	Euphorbiaceae	Jarak kaliki	Leaves	Affixed	Digestive problems	0.30
<i>Saccharum officinarum</i> L.	Poaceae	Rosan	Stem	Squeezed	Cough	0.26
<i>Senna siamea</i> (Lam.) H.S.Irwin & Barneby	Fabaceae	Johar	Root	Decoction	Diabetes	0.10
<i>Sisyrinchium palmifolium</i> L.	Iridaceae	Teki sabrang	Tubers	Decoction	Jaundice	0.10
<i>Solanum stramonifolium</i> Jacq.	Solanaceae	Cokowana	Root	Decoction	Back pain	0.06
<i>Spondias dulcis</i> Parkinson	Anacardiaceae	Kedondong	Leaves	Decoction	Cough	0.16
<i>Strychnos lucida</i> R.Br	Loganiaceae	Dara laut	Skin	Decoction	Rheumatism	0.33
<i>Syzygium aqueum</i> (Burm.f.) Alston	Myrtaceae	Jambu air	Fruit	Raw consumption	Sprue	0.83
<i>Syzygium malaccense</i> (L.) Merr. & L.M.Perry	Myrtaceae	Jambu bold	Fruit	Raw consumption	Sprue	0.53
<i>Syzygium polyanthum</i> (Wight) Walp.	Myrtaceae	Salam	Leaves	Decoction	Uric acid	0.40
<i>Tagetes erecta</i> L.	Asteraceae	Bunga taik lincong	Flower	Pounded, affixed	Colds	0.96
<i>Tamarindus indica</i> L.	Fabaceae	Asam jawa	Fruit	Decoction	Sprue	0.26
<i>Theobroma cacao</i> L.	Malvaceae	Cokelat	Fruit	Raw consumption	Lower blood pressure	0.10
<i>Tithonia diversifolia</i> (Hemsl.) A. Gray	Asteraceae	Rondo noleh	Leaves	Decoction	Stomach ache	0.56
<i>Tradescantia spathacea</i> Sw.	Commelinaceae	Nanas kerang	Leaves	Pounded, smeared	Sprains	0.30
<i>Wollastonia biflora</i> (L.) DC.	Asteraceae	Widelia	Whole plants	Pounded, smeared	Pus sores	0.03
<i>Zingiber montanum</i> (J.Koenig) Link ex A.Dietr.	Zingiberaceae	Bengle	Rhizome	Pounded, smeared	Joint pain	0.96
<i>Zingiber officinale</i> Roscoe.	Zingiberaceae	Jae	Rhizome	Decoction	Body warmer	0.96

The local people frequently used various plants in the study area to treat minor ailments such as coughs, fevers, and wounds. *Citrus aurantiifolia* fruit, for example, is mixed with honey to treat coughs, while *Jasminum sambac* leaves are used to treat fever. This study is similar to Enejoh et al. (2015), who found a community in Nigeria used *C. aurantifolia* fruit juice mixed with sugar, palm oil, or honey to treat cough. *C. aurantifolia* contains a wide range of bioactive compounds, including flavonoids (Wang et al. 2007), which provide a strong inherent potential to modify the body's response to allergens, viruses, and carcinogens (Okwu 2005). Local tribes in the study area also used *Cymbopogon citratus* to treat coughs. *C. citratus* has been traditionally used by people worldwide to treat various diseases such as cough, carminative, expectorant, and depurative (Avoseh et al. 2015).

Mode of preparation

There were several modes of preparation of the medicinal plants used by the community surveyed in this study (Figure 3). The people of Jambur Labu usually processed the leaves by boiling them to drink the water. Other reports by Qasrin et al. (2020) found that the Malay tribal community of Lingga Regency, Riau Islands preferred the method of processing medicinal plants by boiling, soaking, pounding, brewing, squeezing, and without processing. Meanwhile, Rusmina et al. (2015) also found that the Mandar tribe in Sarude Sarjo village, North Mamuju District, West Sulawesi, used medicinal plants by drinking boiled water with a percentage of 43%. Treatment by drinking after boiling is known to have better efficacy than treatment by drinking without boiling.

Use-Value of medicinal plant species

The result of the calculation showed that the use-values (UV) of medicinal plants used by the Jambur Labu community ranged from 0.03 to 0.96 (Table 2). *Breynia androgyna*, *Moringa oleifera*, *Jatropha multifida*, *Zingiber montanum*, *Zingiber officinale*, and *Tagetes erecta* had the highest UV value (0.96). Plants with a high UV value are medicinal plants that have many benefits and are recognized by most respondents. In contrast, plants with low UV values are plants that have little or no efficacy recognized by respondents. This is in line with Beltrán-Rodríguez et al. (2014) which states that the use-value can be used to determine the level of traditional knowledge of local communities. The value of using plants as medicine is strongly influenced by culture, the spiritual beliefs of local communities (Cocks and Dold 2006), and geography (Pieroni 2001).

Informant consensus factor

The diseases mentioned by the informants were first classified according to the International Disease Classification. From these categories, ICF values were calculated (Table 3).

A total of 56 types of diseases were found in Jambur Labu Village which can be grouped into 18 categories (Table 3). The values of the Informant Consensus Factor (ICF) ranged from as low as 0.948 to as high as 0.978. ICF values determine the consistency of the utilisation of a plant species for a certain disease. The mental and behavioral disorders (MBD) and the diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (DBF) groups had the highest ICF value (0.978). The Diseases of the Digestive System had the second-highest ICF (0.976). Higher values indicated that the respondents only used a few plant species to treat a particular disease, whereas low values indicated low agreement on which plant to use for a specific disease. Anemia, fatigue, and toothache are common diseases among the people of the study area. In relation to adequate nutritional intake, anemia is more common in pregnant mothers and young women (Yadav et al. 2017; Sinawangwulan et al. 2018).

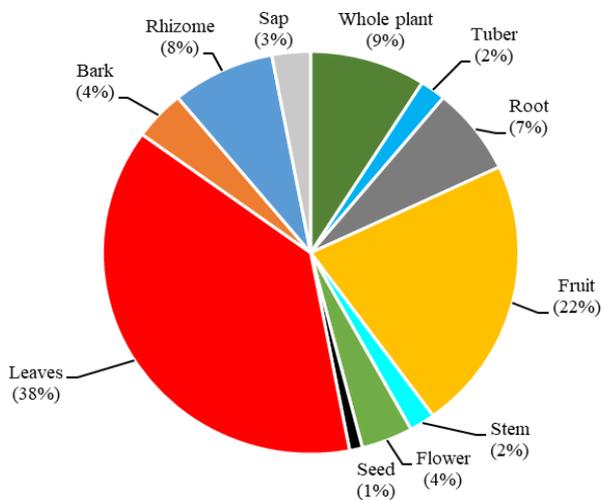


Figure 2. Parts of the medicinal plant species used by the local community in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

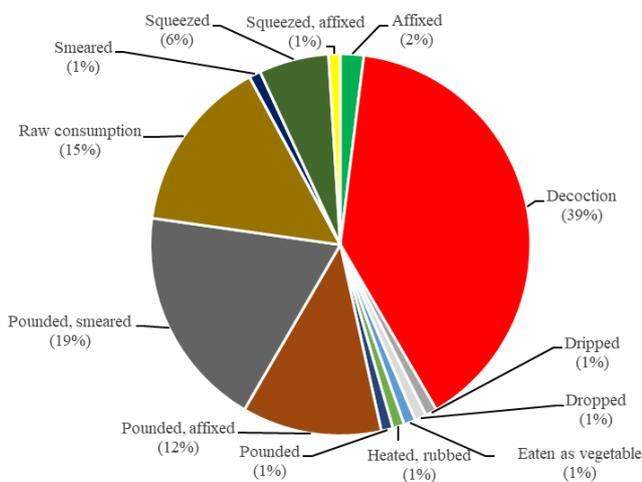


Figure 3. Mode of preparation of the medicinal plants used by the local community in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

Table 3. Category of ailment and the Informant Consensus Factor (ICF) stated by local community in Jambur Labu Village, Birem Bayeun Sub-district, East Aceh District, Aceh Province, Indonesia

Ailment category	Specified disease name	No. of use reports	ICF value
Certain infectious and parasitic diseases (CID)	Dysentery, diarrhea, mumps, wound, malaria, kidney medicine, sore, body warmer, skin disorders, typhus	592	0.967
Certain infectious and parasitic diseases (CIP)	Swollen, anthelmintic	367	0.969
Diseases of the circulatory system (CSD)	Hypertension	67	0.954
Certain conditions originating in the perinatal period (COP)	Breast milk	203	0.965
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (DBF)	Anemia	185	0.978
Diseases of the digestive system (DSD)	Hemorrhoids, constipation, sprue, hepatitis, hemorrhoid, gallstones	172	0.976
Diseases of the skin and subcutaneous tissue (DS)	Skin pain, dermatitis, scabies, anti-acne, boils	78	0.961
Diseases of the eye and adnexa (EAD)	Hypertension, eye inflammation	159	0.949
External causes of morbidity and mortality (EM)	Uric acid, digestive problems, flatulence, hot inside	488	0.969
Endocrine, nutritional and metabolic diseases (ENM)	Diabetes, nosebleed, digestive problems	116	0.956
Factors influencing health status and contact with health services (FHS)	Menstrual pain	61	0.966
Injury, poisoning, and certain other consequences of external causes (IPD)	Snakebite, sprain, lowering blood pressure, sprain	78	0.948
Mental and behavioral disorders (MBD)	Fatigue, toothache	47	0.978
Diseases of the musculoskeletal system and connective tissue (MCD)	Joint pain, rheumatism	74	0.972
Neoplasms (N)	Calms the nerves, hair growth, digestive problems	222	0.972
Diseases of the nervous system (NSD)	Sprain	166	0.975
Diseases of the respiratory system (RSD)	Cough, bronchitis, sore throat, asthma	416	0.966
Symptoms, signs, and abnormal clinical and laboratory (SSA)	Fever, jaundice, headache, cough	436	0.963

Traditional knowledge about medicinal plants has been passed down from generation to generation in the local community in the study area. During the discussion, respondents stated that many children were interested in learning about medicinal plants from traditional healers or elders in their village. This study consistent with Suwardi et al. (2021) reported that traditional knowledge education on the use of medicinal plants has been given to children in the Aneuk Jamee tribe from an early age.

Finally, the large number of medicinal plants cited by local communities illustrated valuable local knowledge in Jambur Labu Village. The findings revealed that local communities in Jambur Labu Village used 107 medicinal plant species from 87 families for medicinal purposes to treat 56 different diseases, with anemia, fatigue, and toothache being the most widely treated. *Breynia androgyna*, *Moringa oleifera*, *Jatropha multifida*, *Zingiber montanum*, *Zingiber officinale*, and *Tagetes erecta* were the most commonly used medicinal plants by local communities, with a use-value index of 0.96. Local communities recognized the leaf (38%) as the most commonly used plant part. The five most common plant families used by local communities were reported to be Euphorbiaceae, Rutaceae, Zingiberaceae, Piperaceae, and Myrtaceae. Furthermore, the traditional knowledge must be preserved by involving the Indonesian government through

the Education Office and incorporating traditional knowledge into the basic education curriculum. This activity could be used to conserve traditional knowledge, natural resources, and biodiversity.

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